PSYCHOLOGICAL FACTORS ASSOCIATED WITH RELAPSE (WEIGHT GAIN) AFTER SUCCESSFUL WEIGHT LOSS

by

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ABSTRACT

P PSYCHOLOGICAL FACTORS ASSOCIATED WITH RELAPSE (WEIGHT GAIN) AFTER SUCCESSFUL WEIGHT LOSS

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Obesity is a growing public health concern among Americans of all age groups. While behavioral treatments can help people achieve a weight loss that significantly improves their overall health, there continues to be a significant issue of relapse (i.e. weight regain) in this population. Several models of relapse have been reviewed in an effort to shed some light on the possible psychological mechanisms at play underlying a return to old consummatory behaviors. The overall purpose of the present study was to gain a deeper understanding of the process of a relapse or return to old eating patterns of overconsumption.

Participants in this study were primarily female (93.5%) and were recruited from a NIDDK (National Institute of Diabetes and Digestive and Kidney Diseases) funded randomized clinical weight loss trial (The Healthy Living Study) conducted at Baruch College by Principal Investigator Dr. Angela Marinilli Pinto. The psychological correlates of relapse were investigated in the following two ways: First, the relationship between weight regain (following success in a behavioral weight loss program) and the following three psychological factors: 1) emotion regulation, 2) impulsivity, and 3) aggressiveness, were examined through participant self-report. Secondly, qualitative interviews exploring the psychological aspects of weight loss and relapse were conducted in order gain insight as to the relevant themes associated with

peoples' struggle maintain controlled eating patterns. Investigators hypothesized that self-reports of emotion regulation, impulsiveness, and aggressiveness would be correlated to peoples' tendency to regain the weight they had previously lost. In addition, they predicted that data yielded through qualitative interviews would reveal themes related to difficulty with emotion regulation, overt or covert aggression, and impulsivity.

Overall, the hypothesis that self-report measures would be positively correlated with weight regain was not supported, a finding for which investigators propose several possible explanations. Qualitative interviews did however reveal themes related to difficulty with emotion regulation, aggression, and impulsivity, as well as several other important issues proposed to play a role in peoples' difficulty maintaining weight loss. Limitations of the present study as well as clinical implications stemming from its findings are discussed. Finally, directions for future research that may assist behavioral health practitioners in tailoring their treatments more effectively to their patient populations, as well as identifying which patients may need increased support around weight maintenance are also suggested.

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Chapter 1: Introduction

Obesity and Relapse after Weight Loss

Obesity is a grave health concern in the United States, with over 60% of American adults meeting criteria for being overweight or obese (criteria for overweight and obese are overweight: 25-29.9 kg/m^2; obese: ≥ 30 kg/m^2) (Flegal et al., 2010). Obesity negatively affects health-related quality of life even more than does smoking and is associated with comorbid conditions and risk factors including hypertension, cardiovascular problems, and diabetes. The prevalence of obesity in American adults has doubled in the past two decades, while the number of overweight children and adolescents has tripled during the same short period. Overall prevalence of obesity is predicted to double again in the next 30 years. Indirect and direct costs attributed to obesity in the United States are estimated at more than $100 billion per year and account for somewhere around 5.5% to 7% of total annual health costs (Wolf, 1998 & Thompson and Wolf, 2001). Research dedicated to understanding how people can successfully lose weight and maintain weight loss is crucial if health practitioners are to have any hope of reversing these devastating trends.

People lose weight for many reasons and through various methods. It is widely agreed that behavioral therapy is the most effective strategy for treating overweight and obese people (Wing and Hill, 2001). Behavior therapy imparts skills including self-monitoring of food-intake and physical activity, stimulus control, goal setting, and problem solving in order to help people restrict their caloric intake and increase their activity. Behavioral therapy for weight loss also typically incorporates cognitive restructuring, the introduction of beliefs that challenge existing thoughts about oneself and his/her situation in order to promote success (Latner, 2008).

A significant issue with regards to weight loss is peoples' ability to maintain their weight loss after completing a successful intervention (Stunkard & Penick, 1979). Behavioral treatments for obesity generally produce weight losses between 5% and 10% of initial weight loss in a span of 16 to 26 weeks (Wadden, Butryn, & Byrne, 2004.) A recent meta-analysis of behavioral weight loss programs using group or individual counseling or both indicated that subjects were able to lose 6% of their body weight within one year of the study start date (Dasinger, Tatsioni, Wong, Chung, & Balk, 2007). However the same report also showed that across studies, the majority of participants regained half of the weight lost within 3 years and all of the weight loss after within 5.5 years. Numerous other studies attest to the fact that most people who successfully lose weight in behavioral modification programs end up regaining at some point after treatment ends (Pinto et al., 2007).

What is certain about obesity is that it is a problem with a complex etiology. A multitude of biological, social, and psychological factors probably play a role in any one individual's development of weight issues. By the same token, the reasons behind why people may relapse after experiencing success w/weight loss are likely to be equally as intricate. The general aim of the proposed study is to shed on light on peoples' experience of relapse in weight gain following successful weight loss. In an effort to begin to carve out a psychological profile of those individuals who are most likely to continuously undo their previous successes, the study will examine the relationship of three personality factors that are thought to be related to disordered eating 1) emotion regulation 2) impulsivity, and 3) aggression, to relapse in weight gain. The hope is that findings from this study will help future investigators understand which factors are most predictive in causing a relapse to a previously modified pattern of consumption.

Chapter 2: Review of the Literature

What is Relapse?

How do clinical psychologists and other health professionals distinguish between a minor "slip" or set back in behavior, a recurrence of the original problem behavior, or an entirely new episode of the behavior? Behavioral researchers have traditionally defined relapse as any return of a problem behavior or symptoms of after a period of initial remission. Such a definition of relapse, however, has been criticized for the lack of nuance it offers in depicting the complexity of the actual experience of regressing to old behaviors (Brandon, Vidrine, & Litvin, 2007).

In order to deal with the problem of an overly simplistic conceptualization of relapse proposed thus far, researchers have moved in the direction of thinking about it as more of a dynamic process that ultimately results in the return of previous problematic behavioral patterns. However, regardless of the direction researchers' conceptualization of relapse may be taking, towards a more nuanced sequence of events rather than a discrete occurrence, empirical studies that look at relapse, whether it be from weight loss or another kind of addictive or compulsive behavior, still generally treat it as a discrete event (i.e. subject either did or did not relapse) in order to attempt to measure it (Brandon et al., 2007). Such a binary decision disregards some potentially important information about the chain of mental and physical events that make up the process.

Factors Associated with Long-Term Weight Loss Maintenance (i.e. Relapse Prevention) & The National Weight Control Registry

Most people who lose weight do so on their own, therefore the data collected on people who participate in clinical weight loss programs may reflect a class of somewhat weight-loss-

resistant dieters who have not been able to reach success on their own (Brownell, 1993 & Brownell et al, 1994). Much of what has come to light about people who successfully lose weight comes from the National Weight Control Registry (NWCR), an ongoing longitudinal study that began in 1994 in order to tracks adults, 18 years or older, who have lost at least 30 lbs (13.6 kg) and kept it off for at least one year. The NWCR currently has approximately 5,000 individuals, averaging 45 years of age about 80% of which are women. The average weight loss reported by NWCR participants is 30 kg, and the average duration of weight maintenance is 5.5 years (Catenacci et al, 2008)

As a part of their successful weight loss maintenance, members report the following: engaging in high levels of physical activity (~1 h/d), eating a low-calorie, low-fat diet, eating breakfast regularly, self-monitoring weight, and maintaining a consistent eating pattern across weekdays and weekends. Moreover, it appears that weight loss maintenance gets easier for people over time; after having successfully maintained their weight loss for 2-5 years, the chance of longer-term success greatly increases for people. In addition, continued compliance with diet and exercise regimens, low levels of depression and disinhibition, and medical triggers for weight loss are also associated with long-term success. NWCR members are proof that long-term weight loss maintenance is possible, providing much needed renewed hope to people who struggling with their weight. In addition, data collected from the online questionnaires completed by NWCR participants have allowed obesity researchers to identify key factors associated with successful weight loss and maintenance, promoting the optimization of participant success in national weight loss programs (Klem et al., 1997).

A Psychoanalytic Perspective about Disordered Eating

Though behavioral health researchers have an idea of how people keep weight off, the reasons as to why so many people are unable to keep it off are much murkier. It is likely that a wide range of environmental, physiological, and psychological variables play a role in people relapsing after even significant weight losses. Research into the subjective experience and psychological predictors of relapse is an area that is surprisingly not well studied. It is here that there is a need for further exploration to be done as to what personality traits or characterological attributes may be associated with the experience of relapsing where there was once control.

Relapse in overeating, from a psychodynamic perspective, may be conceptualized as a regression to an earlier state of development in which internal drives are not yet subject to the rigid demands of the superego as well as external cues from the environment. In the early stages of psychosexual development, libido is closely linked with survival functions, specifically eating and defecation. Frustration occurs when the needs of a particular stage are not adequately met, whereas overindulgence in those needs may cause the infant to exhibit difficulty to progress beyond the stage. In both cases, Freud believed that a person's libido had the potential to become closely linked and habitually tied to a certain stage, resulting in a regression to behaviors linked to that particular part of his/her development later in life (Freud, 1905).

Freud (1905) said that the contribution of the sexual instinct in neurotic and obsessive types is the "most important and only constant source of energy of the neurosis and that in consequence, the sexual life of the persons in question is expressed-whether exclusively or principally or only partly-in these symptoms" (p. 29). He viewed neurotic symptoms are a result of "emotionally cathected mental processes, wishes and desires", which owing to repression, have been "prevented from obtaining discharge in psychical activity that is admissible to

consciousness" (Freud, 1905, p. 30). On a whole, psychoanalytic thinkers have historically thought of abnormal eating patterns and obesity as neurotic symptom of sorts, whose roots can be traces back to Freud's first psychosexual stage of development, the oral stage.

The oral stage, which begins at birth and may last up to two years, is a time in development in which the oral cavity represents the center of the infant's libidinal energy. Therefore, the infant focuses on all the behaviors that bring pleasure to his or her mouth such as nursing, sucking, sticking objects and body parts into the mouth. Oral behavior is linked to active rather than passive agency, in the sense that the child develops the capacity for not only self-soothing behavior but also actively summoning to others' his needs as well as punishing those who might threaten their fulfillment. Psychoanalytic theory posits a relationship between affect and anxiety regulation and oral forms of self-soothing behavior (i.e. the consumption of "comfort food"). Eating disturbances are thus viewed as a regression to the oral stage of development; among people who are overweight or obese, overeating is thought to be related to unconscious oral aggressive drives associated with an unsatisfactory oral phase of development (Bornstein, 1996).

Some psychoanalytic thinkers focus on the conflicts associated with the oral stage, namely dependence versus independence and activity versus passivity and suggest that if such conflicts are not adequately worked through in infancy, one may exhibit orally driven behaviors in adulthood (Fisher and Greenberg, 1977). The orally-oriented adult is thus characterized as a highly dependent individual who is thought to experience " 'the source of all good' to be outside, and he believes that the only way to get what he wants … is to receive it from that outside source" (Fromm, 1947, p. 62). Along these lines, overconsumption of food can be understood as an attempt to "take in" what is not readily available within the self, namely a sense of autonomy

and competence. In addition, individuals with an oral character (so to speak) display infantile needs associated with the oral stage, thus they may be characterized as being dependant on others for sustenance and protection (Bornstein, 1996).

Feeding in infancy

In order to understand the significance of one's early relationship to food, it is useful to examine feeding in infancy. Early on, the act of feeding is a process that involves an interaction between infant and caregiver, and psychoanalytic literature abounds with theories as to the significance of this process for both parties involved. Some believe that for the child, the emotions that come up around feeding in infancy can affect their relationship around food for the rest of his/her life (Bruch, 1969). Freud specified that his concept of libido was akin to hunger which in and of itself he saw as a universal expression for the instinct of nutrition (Freud, 1905).

Indeed, psychoanalytic thinkers have long been fascinated with the multiple unconscious and symbolic meaning of foods, both in terms of uncontrollable and often life-threatening consumption and a staunch refusal to eat and thrive (Bruch, 1969). Bruch captures the essence of the variability of meaning food may carry:

> "[it]… may symbolically stand for an insatiable desire for unobtainable love, or expression of rage and hatred; it may substitute for sexual gratification or indicate ascetic denial; it may represent the wish to be a man and possess a penis, or the wish to be pregnant, or fear of it. Food may help one achieve a sense of spurious power and self-aggrandizement, or serve as a defense against adulthood and responsibility. Preoccupation with food may appear as helpless dependent clinging to parents, or as a hostile rejection of them (Bruch, 1969, p. 129-130)"

The question of what eating means for someone whose food intake is disturbed is necessarily relevant to the understanding of his or her disorder, and presumably the kind of approach that would be taken in the analysis of an obese patient.

Bruch points out that just as food may hold many different means, the notion of hunger may be equally complex. "Hunger", he states (1969), "refers to the physiologic state of severe food deprivation, starvation, or to widespread famine…[but also] denotes also a psychological experience, that is, the complex, unpleasant, and compelling sensation an individual feels when deprived of food…" (p. 129-130). It is very important that clinicians separate the physiological nutritional need from the perception of being in a hungry state, in other words, that they distinguish hunger as a literal state as opposed to a metaphorical one. Bruch suggests that we can also think of hunger as symbolic expression of a general state of need or of want in other areas of one's life (Bruch, 1969). We can therefore imagine that an overweight or obese individual who struggles with controlling the amount of food they consume, maybe be unconsciously acting out on "hunger" of a different kind than that of nutritional need.

In point of fact, psychoanalytic theorists have historically pointed to the important difference that exists between hunger and appetite and how feeding behavior is one that quickly becomes associated with a multitude of other emotions as the infant develops. Consequently, eating patterns may be reflective of a host of unconscious meanings and strivings. In the mid-1900's, psychoanalytic psychiatrist Hamburger suggested that while an individual's appetite begins out of a response to the physiological experience of hunger, it inevitably becomes imbued with a host of various emotions such as love, acceptance or defiance. Furthermore, he suggested that by the time a person is an adult, such emotional associations to hunger may have been long rendered unconscious (Hamburger, 1957).

Overeating as an Analog of Addiction

As early as the 1950's, certain kinds of overeating patterns were being compared to addictions (Hamburger, 1957). In a study on obesity conducted by a psychoanalytically-oriented psychiatrist in 1959, eight of eighteen patients were categorized as displaying ingestive behavior that was compulsive in nature, which was characterized by the investigator as "an intense kind of craving for food which is insatiable…The analogy to alcohol and other addictions is appropriate both in terms of the behavior and the personality structure of these patients" (Hamburger, 1957, p.778). The idea that overconsumption is behaviorally similar to addictions to substances and other behaviors that lend themselves to being engaged in compulsively (i.e. gambling and sex) has been fueled by both clinical observations and theoretical thought in the field of mental health and medicine for decades.

Shapiro and Zisk (1981) suggest that in order to understand the etiology and presentation of obesity, it is important not to separate it from other addictions at large. They believe that addictions of all sorts, whether to drugs, alcohol, tobacco, or food, represent a common constellation of personality factors, which result in the manifestation of a seemingly uncontrollable behavior (Shapiro and Zisk, 1981). The root of such behaviors, problematic eating being a subset of these, is then seen as a "progressive distortion of adaptive needs (intrapsychic tension)" (Shapiro and Zisk, 1981, p. 57). In infancy, they suggest, the primary caregiver satisfies the primary biological needs of thirst, hunger, warmth etc, and it is his or her responsibility to recognize when the infant needs what. They believe that if one traces the unconscious roots of addictive style eating, one finds the source to be a deeply ingrained fear of loss of nurturance and all that is associated with it (Shapiro and Zisk, 1981).

Along this line of thinking, ego psychologists have suggested that the compulsive ingestion

of drugs [or other addictive substances] may represent a coping mechanism for managing great rage and anxiety (Woolcott, 1981). Results from psychoanalytic studies of drug addicts have suggested that opiate use in addicted individuals may be the product of an attempt on the patient's part to prevent or undo a regressed or disorganized state associated with an earlier trauma (Woolcott, 1981). On a whole, psychoanalytic writers who draw their ideas directly from clinical material tend to agree that severely addicted people invariably have had some kind of early pre-oedipal disturbance in their relationship with their mother or primary caretaker (Woolcott, 1981).

Can food be addictive in the same way as mood altering substances such as drugs or alcohol? It is common for people in popular culture to speak of food as having addictive qualities. Popular diets are often founded on this notion, especially with the idea that sugar has addictive properties, while support groups such as Overeaters Anonymous promote the idea that for some, eating, is an addictive behavior that must be kept in check with the help of a group members and a sponsor (Gearheardt et al., 2009). Moreover, it is not uncommon to hear overweight or obese people who are struggling with weight loss to speak of their "addiction" to a particular food or group of foods (generally these are high in sugar and fat content).

Traditionally, the term addiction was reserved to describe behaviors involving excessive use of substances that lead to physical dependence that is then subject to tolerance and withdrawal. Other compulsive behaviors such as gambling, sex, and eating were not routinely thought of addictions because the drive to engage in such behaviors was considered to be purely psychological in nature, rather than physiological. However, there has been a growing trend in for researchers and clinicians to view these behaviors (when they are pathological) as being very similar in nature to addiction to substances and a current review of addictive behaviors reveals a

focus on the behavior of substance use rather than the kind of substance being abused.

In most cases being overweight or obese results from a caloric imbalance, that is, calories consumed exceed calories expended. Hypotheses abound as to what makes people overeat, ranging from hormonal imbalance, stress, for a desire for pleasure, as a response to anxiety or depression, or as a response to social cues (Wise, 2008). However, it is becoming increasingly clear that whatever the causes of overeating, obesity, like drug dependency is the result of the ingestion of unneeded substances. Wise (2008) suggests that the similarities between obesity and chemical dependency are hardly superficial resemblances, but instead are the result of common biological mechanisms and behavioral characteristics.

Overeating and substance use disorders are thought to have overlapping characteristics including, among other things, compulsive use/behavior despite adverse consequences, craving, denial, preoccupation, and guilt following excessive use/overeating, and relapse (Gold et al., 2003). Other similarities between addictive eating and substance use disorders may be neurochemical, genetic, environmental, and behavioral in nature. Furthermore, in both cases both loss of control and impulsivity are central, and emotional and environmental cues play an important role (Gold et al., 2003 and Joranby et al., 2005). As Gold et al., (2003) importantly point out, both chronic overeating and substance use revolve around "an acquired pathological attachment with the agent(s) of their ultimate compromise and possible destruction" (p. 122). Finally, in both cases of "use" a person generally experiences pleasure, thereby rendering repetition more likely (Gold et al., 2003).

Researchers who study addictive behaviors are becoming increasingly aware of the remarkable similarities that exist between overeating and substance use disorders. Though there is a diagnosis for Binge Eating Disorder in the Diagnostic and Statistical Manual (DSM) IV,

which refers to a loss of control over eating and ingestion of large quantities of food over a short period of time, there is at present, no diagnostic category for chronic overeating (DSM-IV-TR, 2000). According to the DSM-1V, substance dependence is defined as a "cluster of cognitive, behavioral, and physiological symptoms associated with the continued use of the substance despite significant substance-related problems" (DSM-IV-TR, 2000). A diagnosis of substance dependence is given when at least three of the seven criteria for a disorder are met and clinically significant impairment and/or distress is present.

Recent advances in brain imaging suggest that engaging in repetitive compulsive behaviors can lead to changes in the brain similar to those seen in drug addicted people (Barry et al., 2009). Neuroimaging studies have demonstrated that both food and substances that are abused are associated with elevated levels of the neurotransmitter dopamine in a part of the brain called the nucleus accumbens and parts of the extrapyramidal system (Volkow & Li, 2005). Animal models have corroborated the idea that eating in humans can take on a form similar to an addiction. A recent study demonstrated that rats that fed on an intermittent diet of sucrose tripled their daily sugar consumption, suggesting a tolerance to the effects of sugary foods (Rada et al., 2005). Sugar's addictive characteristics have been demonstrated in animal studies in which animals previously maintained on a sugary diet have exhibited behaviors typically associated with withdrawal, such as agitated and anxious movements, in response to being denied sugar (Gearheardt et al., 2009).

The reinforcing effects of drugs and food are a product of neuronal activity in parts of the brain where the neurotransmitter dopamine is released into synapses. Food intake, especially ingestion of very palatable and calorie rich foods, stimulates dopaminergic activity either directly or indirectly because of its effects on other neurotransmitters, yielding a feeling of satisfaction

and pleasure (Abizaid, et al., 2006). Blocking dopamine receptors results in an increase of appetite and weight gain, which suggests that overeating may be an attempt to overcome the blunting of the generally pleasurable response to eating (Barry et al., 2009).

The dopamine receptor that is most connected to eating behavior is the subtype D2 receptor. Research with Positron Emission Tomography (PET) have shown obese individuals have significantly fewer D2 receptors as compared with normal weight individuals and the higher a person's body mass, the fewer D2 receptors are present (Del Parigi et al., 2003 and Wang et al., 2001). Reduced levels of D2 receptors has also been observed in the brains of individuals with chronic drug and alcohol use disorders (Volkow & Fowler, 2000). Some researchers have therefore put forth the idea of a "Reward Deficiency Syndrome" characterized by low numbers of D2 receptors and a tendency towards uncontrollable engagement in rewarding behaviors such as drug use and eating (Barry et al., 2009).

Psychoanalyst and neuropsychologist Mark Solms offers additional insight into way in which dopamine actually propels addictive behaviors. He asserts that in order to understand the nature of appetitive behaviors such as hunger, thirst, and sexual arousal, one must look to the "seeking" system, which is one of the four fundamental emotions systems in the brain. The seeking system, Solms explains (2002), is often referred to as the "reward" system because attention is overly invested in the object one desires and seeks to obtain (i.e. food), rather than with the sense of curiosity, interest, and set of expectancies which actually *drives* the behavior (p.115). This system comprises one's perceptual sense, giving rise to the notion that something positive will result from interacting with one's environment and its objects, while simultaneously generating an individual's exploratory behaviors, such as foraging for the actual and/or imagined object.

According to Solms, the seeking system seems to be turned on in the same way by all triggers and thus when activated, is not seeking any *specific* object, but is rather in a general stating of *seeking*. Ultimately, the seeking system must refer to memory systems in the brain that contain representations of objects and ones' past experience with those objects in order to provide the seeking system with more specific direction to seek *something* in particular. The use of recreational drugs such as cocaine stimulates the seeking system and artificially produces positive expectancies, generating what Solms (2002) calls "pseudoappetitive behaviors", such as cravings, as well as "pseudoconsummatory behaviors" that generally bring with them associated pleasurable sensations (p. 121-22). Understanding the activation of the seeking system in this way, which can appropriate otherwise useful biological function in a person, allows us to understand how addictive behaviors are maintained.

A recent animal study suggests that there may be similar genetic underpinnings for distinct addictive-like behaviors (Mathes, Nehrenberg, Gorden, Hua, Garland, & Pomp, 2010). Specifically, results indicated that the expression of seemingly opposing phenotypes, such as excessive exercise and obesity may in fact be caused by similar changes to dopamine gene expression within certain neuronal reward pathways (p. 158). Given that the concept of overeating as an addiction arises from behavioral observations of drug and alcohol dependent individuals, such findings serve to strengthen the notion that similar mechanisms are at play when one engages in a behavior in a compulsive manner. Certainly, if similar dopaminergic activity underlies excessive consumption and excessive exercise, it supports the notion that people may have an addictive relationship with food just as they might with a certain substance.

As one group of researches puts eloquently puts it "Obesity and addiction are special cases of the consequences of ingestive behavior gone awry" (Volkow and Wise, 2005, p. 559). Indeed,

when considering the maladaptive behaviors that result in drug addiction and obesity, they are as alike as the suggested methods for prevention and treatment (excluding the fact that an abstinence model is not possible with regards to obesity) (Volkow and Wise, 2005). Finally, with both substance addiction and obesity, the rates of relapse following successful behavioral modification is ever-present obstacle that continues to have researchers studying the ways in which health-promoting behavioral changes may be maintained.

Relapse of Over-Consumption and other Addictive Behaviors

Understanding the nature of relapse is a crucial aspect of developing and optimizing treatments for obesity as well as host of other maladaptive health behaviors. One must be able to unpack and expound on the psychological elements and chain of behavioral reactions that characterize the phenomenon. It is useful to think of relapse as an experience in the shape of an arch, where at the start of the arch an individual is able to exercise control (and probably restraint) over their behavior, and at its end they have given over to the impulse to engage in the behavior and have effectively "fallen off the wagon" so to speak. While behaviors associated with the beginning and end of the arch can be easily distinguished from one another, aspects of an individual's experience between these two endpoints is more murky. As a result, behavioral researchers have put forth a number of models for understanding relapse in order to try to elucidate the way in which one "slips" from a state of having control into one of having none.

The extent to which the same models of relapse can be applied to different kinds of addictive behaviors has been a topic of debate among researchers. The reason for this is that not only do many differences exist among the wide spectrum of addictive disorders, but also there is great variability among the individuals suffering from them. Differences in individuals'

responses to psychological and environmental factors lead to the same kinds of addictions developing in disparate contexts. In addition, as the field of addictions research advances, other variables, such as genetic predisposition towards conditions, such as alcoholism and obesity, will likely both refine and further complicate our understanding as to why certain people develop and maintain specific behaviors (Brownell et al., 1986).

Despite all the variations that exist among addictive disorders and the people afflicted by them, there may be similar underlying psychological mechanisms that cause relapse, suggesting that key commonalities may exist between the addictive disorders. As early as over 30 years ago, the National Institute on Drug Abuse brought together a panel of researchers in alcoholism, obesity, smoking and drug abuse, who reported both conceptual and practical similarities across all these health issues (NIDA, 1979). Brownell et al. (1986) make the very important following point about this issue:

> "The question of whether the addictions are more similar than different is difficult to answer…It may be the case…that there are common psychological adaptations to different physiological pressures. Nicotine dependence may be the central issue for a smoker, excessive fat cells for a dieter, and disordered alcohol metabolism for an alcoholic, but there may be common social or psychological provocations for relapse, emotional reactions to initial slips, and problems in reestablishing control" (Brownell et al., 1986, p. 765).

The above statement articulates well the reasoning for aggregating empirical data across disorders as a starting point for beginning to understand what factors cause certain people to relapse and others not to. As with most behavioral phenomenon, there are likely to be several different causes for why people do what they do and therefore, many paths that lead to the same end. Similarly, there may be variable causes for why people relapse after abstaining from a certain behavior for a period of time, whether it is overeating or alcohol or drug use. The ways

in which problematic eating behavior can be viewed as a form of addiction will be explored further in a later section of this introduction.

Ceasing or alternating addictive eating patterns presents a great challenge to the obese person. Total abstinence from the substance (food), cannot be considered without risk of death; therefore at best, portions and kinds of food consumed may be manipulated to achieve weight loss and weight maintenance. Wise (2008) tells us "no matter how hard it is for the dieter or the addict to avoid the first bite or the first drink, it is much more difficult to avoid the second (p. 124). Here, Wise refers to the idea of a slippery slope that often leads one back into a routine of old behaviors. Indeed, relapse into old behaviors has a domino effect like quality to it, in that it is generally the result of a series of seemingly smaller decisions and behaviors.

Animal models of relapse have revealed that similar mechanisms are at play when it comes to relapse with addictive drugs and eating (Wise, 2008). In a laboratory (Wise, 2008), animals will reinstate a previously extinguished behavior under the following three conditions 1) they receive an unearned injection of a drug, called priming injections, 2) are subject to stressors such as mild food shock or food deprivation, and 3) are presented with drug predictive stimuli. When we think about the reasons that may be at play when people relapse in their addictive eating, they seem to be very similar. Indeed, when such animal models have also been used to study the reinstatement of feeding habits that were trained under food rewards, comparable results were found (Wise, 2008).

Understanding Relapse through a Behavioral Lens

Operant Learning and Cognitive Appraisal

One way behavioral researchers have to tried to understand relapse is through the concept of operant conditioning. In operant conditioning a given behavior is either reinforced or

punished leading it to become more or less common. Therefore if the consequences of a behavior are positive or pleasurable, then this behavior is likely to increase, whereas if the consequences of a behavior are negative or painful, the behavior is likely to decrease. In the context of people who struggle with excessive caloric consumption, the behavior of eating has become highly rewarding in at least one if not several meaningful ways, so that there is an increased likelihood of the behavior. A variety of stimuli or cues can "trigger" someone to engage in the rewarding behavior of consumption.

"Cue-reactivity", that is one's response to a specific cue in their environment, has been studied in other addictive behaviors in which relapse is a significant issue, such as eating disorders, food craving, and gambling (Brandon et al., 2007). A cue can be external or internal. In the case of overeating, the availability of certain foods at a social function would be an external cue, whereas anxiety, sadness or some other kind of affective experience would be an internal one. Internal cues may also be physiological in nature; an example of this would be when a state of extreme hunger cues an episode of binge eating. Cues are goal directive, in that they signify the presence and possible location of a desired object. Cues will serve as activators of reward-seeking behavior, thus placing an individual in a state of "primitive control" so to speak. What this means is that in the presence of such a cue, a person is less likely to be able to exercise motor control in response to certain stimuli.

Nearly all behavioral weight loss programs require participants to track their eating patterns, particularly as they correlate to internal and external cues, in an effort to identify "high risk" situations that a person should be aware of as they try to regulate their eating. Although consumption is a voluntary behavior, we can begin to understand how in face of certain cues, a person's ability to control their eating may not be entirely under their own volition. The

common saying "old habits die hard" refers to this idea, that behaviors that have been routinely enacted in response to a certain cue or set of cues, are often very trying to break. Habits, whether it be overeating or using a drug can activated in a variety of situations. If one thinks about a relatively common addictive behavior, such as a nicotine habit, it becomes easy to understand the highly routine pattern of behavior that becomes observable. What motivates the activation of that habit for the smoker will be different for different smokers; for some it may be primed by alcohol use, for others by feelings states such as anxiety or excitement, whereas for others it will be the physiological state of being full after a meal that will bring on a desire to smoke.

Now that we understand how certain situations may cue or trigger someone to engage in an addictive behavior, let us examine, cognitive appraisal models of relapse, which are based on the idea that an individual's perception and appraisal of a situation has the most influence in determining their behavior than does the situation itself (Festinger, Rubenstein, Marlowe, & Platt, 2001). This model posits that a person appraises a particular set of circumstances as positive, negative, or neutral, and their behavior follows in line, accordingly, with that appraisal.

A person's unique history, knowledge of available coping mechanisms and their ability to use them, all play a part in what kind of appraisal they will make. When the person lacks necessary coping skills, they may experience stress and other negative affect states that may increase in severity with further exposure to the stressful situation (Festinger et al., 2001). Along these lines, Litman (1986) stressed the importance of the individual and situational components of relapse (i.e. a person-situation model). He understood relapse as a process that takes place within the individual and one which involves an interaction between a perceived high-risk situation, his/her available coping skills, and the perceived effectiveness and applicability of these coping mechanisms to the threatening situation Thus, he posited, relapse is most likely to

occur in situations in which the individual feels that they do not have adequate coping mechanisms with which to handle the situation in which they find themselves.

Cognitive appraisal and Person-Situation models of relapse can enhance our understanding of how eating behavior, which has become highly rewarding for individuals who over consume, may become even more frequent based as a result of the way a person makes sense of the situation they find themselves, whether that situation is characterized more strongly by internal affect states or external circumstances. Furthermore, it is easy to see that in such cases, the way an individual interprets and reacts to aversive situations may lead to relapse following a period of abstinence from a particular unhealthy behavior. For instance, if a person chronically overeats in response to stressful emotions such as anger or sadness, they may have come to positively appraise their food addiction through experiences in which the felt food soothed them or relieved their anxiety about their emotions.

Repeatedly using food as a coping mechanism prevents the individual from learning alternative, healthier coping mechanisms, putting them at high risk for relapse when he/she finds themselves in stressful situations in which food was previously used for comfort (Festinger et al., 2001). This model speaks to how learned associations (i.e. stressful interpersonal situation + food = comfort) put a person at a high risk of relapse whenever they find themselves in any situation reminiscent of one associated with the addictive behavior.

Marlatt's Cognitive-Behavioral Model of Relapse

Perhaps the most influential model of relapse of health behaviors is that of Marlatt and Gordon that was put forth in a seminal book on the treatment of addictive behaviors in 1985. Their cognitive-behavioral theory of relapse incorporates the distinction between a lapse and a

relapse, the former being a single instance of violating a self-imposed role, and the latter being a complete violation of such a rule (George & Marlatt, 1989). The model is predicated on the notion that relapse occurs in response to high-risk situations in which one does not have adequate coping strategies.

The absence of a coping response leads to decreased self-efficacy, a lowered belief in one's ability to succeed in a specific situation, and/or to positive outcome expectancies for the initial effects of a substance. One's experience of lowered self-efficacy in turn leads to an anxiety that fuels repetition of the behavior. Initial reengagement in an old behavior may lead to a cognitive phenomenon Marlatt and his colleagues termed the "abstinence violation effect", a common but maladaptive response that involves the loss of control that results from violating self-imposed rules. The abstinence violation effect may also lead to increased self-attribution or the belief that the relapse is entirely one's own fault. Increased self-attribution may then stimulate feelings of guilt, perceived loss of control, and other negative affects. This sequence of cognitions, in turn, increases the likelihood of another relapse.

A key aspect of this model is that the potential for relapse is hastened by a high-risk situation, which may include various environmental as well as inter and intra-personal conditions that include negative affect and the presence of conditioned stimuli previously associated with the addictive behavior. Stimuli associated with the behavior can come in many forms; they can be people, places, situations, emotions, and so forth. The addictive behavior is thus a response to the feelings and physical sensations signaled by the given stimulus.

Another unique and important contribution of this model is the idea that relapse is not necessarily a discrete event, rather that there is way in which one progresses through a cognitive process in which they proceed from a lapse (a "minor" transgression) to a relapse (a "major"

transgression). The model posits that the probability of an individual progressing to a full relapse depends on their cognitive response to the initial lapse. Specifically, if they engage in the kind of dichotomous thinking characteristic of the abstinence violation effect, for example by saying to themselves "I've blown it" or "I fell off the wagon, I've ruined everything", a lapse is more likely to lead to a relapse (Brownell et al., 1986 & Brandon et al., 2007).

Marlatt and Gordon's model has received a considerable amount of attention in the field of addiction relapse research and has been valued for its face validity as well as how it appears to match up with clinical accounts of peoples' experiences with relapse. The individual constructs that make up the model, including cues associated with high-risk situations, affect, coping, self-efficacy and expectancies have received a lot of support over the past two decades with respect their correlation to clinical outcomes (Brownell et al., 1986 & Brandon et al., 2007), whereas little research has been done on the model as a whole or the causal relationships between the sequential cognitive and behavioral parts of the model. The model has received some criticism owing to its exclusion of certain factors that have been associated with relapse such as social support and the effects of withdrawal (Brandon et al., 2007).

Relapse in Weight Gain

Understanding what psychological factors may be implicated in a return to old eating behaviors is likely to play a critical role in effectively addressing the issue with relapse following success in weight loss programs. While in all probability, various biological, genetic, and socio-cultural influences impact whether or not someone is able to maintain health-promoting and weight maintaining behaviors, the focus of the proposed study will be on measurable, psychological features that may characterize the "relapser". Therefore, in the section that

follows, the relationship between overeating and three personality traits will be discussed. These personality traits (or characteristics) include emotion regulation, impulsivity, and aggressiveness.

Emotion Regulation-Definition

The concept of emotion regulation encompasses different aspects of an individual's control over their emotional experience. Some behavioral researchers emphasize one's expression of their emotional experience and reduction of emotional arousal in their understanding of emotion regulation (Garner & Spears, 2000; Kopp, 1989; Zeman & Garber, 1996), while others focus more on the functional nature of emotions (Cole, Michel, & Teti, 1994; Thompson, 1994). This latter approach purports that a deficiency in one's ability to experience and differentiate the full range of emotions and respond spontaneously to them may be just as maladaptive as are difficulties in managing and attenuating strong negative affect.

Along these lines, some researchers (Thompson & Calkins, 1996) have suggested that emotion regulation, in its most adaptive form, is the ability to monitor and evaluate emotional experience as well as modify it. Such an understanding of emotion regulation emphasizes the importance of one's awareness and understanding of their affective state rather than just their responses to it (Gratz & Roemer, 2004). Indeed, a focus on the functionality of emotions is consistent with research that points to the often disregulating effects of attempts to exert control over one's affective experience and expression (Gratz & Roemer, 2004). Some studies in fact have demonstrated that when one constricts or conceals (upon instruction) the expression of their emotions they experience increased physiological arousal. (Notarius & Levenson, 1979; Gross & Levenson, 1997). Such research suggests that focusing on the control of emotions rather than

the valuing and accepting of them, may compromise our ability to identify adaptive regulatory processes (Cole et al., 1994).

What is certain about emotion regulation is that it is a highly relevant construct that may be implicated in a range of clinical disorders (Gratz & Roemer, 2004). In an effort to provide researchers a comprehensive and organizing definition of emotion regulation that integrates its various components, Gratz and Roemer (2004) present the construct as follows: (a) an awareness and understanding of emotions, (b) an acceptance of emotions, (c) an ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and (d) an ability to use situationally appropriate emotion regulation strategies flexibly to modulate emotional responses as desired in order to meet individual goals and situational demands.

Emotion Regulation Deficits in People with Disordered Eating

It has been shown that negative emotions, in some people, lead to increased eating, which is a phenomenon called emotional eating (Bruch, 1973). Interestingly, from a biological standpoint, one would imagine that people would eat less in response to negative feelings. The reason for this is that negative affect is associated with a physiological state that resembles satiety (or fullness) (Schachter, Goldman, & Gordon, 1968). Indeed, increased autonomic emotional activity has been linked to the release of appetite-inhibiting hormones such as catecholamine and to a variety of gastric changes similar to those that are involved in satiety (Blair, Wing, & Wald, 1991). However, despite the seemingly irrational nature (at least from a biological perspective) of emotional eating, the behavior has been associated in both eating disordered and non-disordered populations (Evers, Marijn Stock, & T.D. de Ridder, D., 2010).

Behavioral researchers have put forth different theories as to why people engage in emotional eating. One theory (Heatherton & Baumeister, 1991) is that emotional eating allows a person to escape from negative self-awareness, allowing them to focus on the stimulus (food) instead of more significant or threatening feelings. A second theory (Lehman &Rodin, 1989) is based on the notion that eating increases, at least momentarily, the experience of positive emotions. According to this perspective people eat when they are feeling badly in order to counteract the effects of their negative affect with more pleasurable experiences derived from eating food that is pleasing in flavor and/or smell. Finally, some believe that emotional eating represents an individual's attempt to misattribute perceived stress to eating, in order to distract from the original source of distress (Herman & Polivy, 1988). This kind of "masking theory", as well as the previous two, all have one very important common point: they all assume that emotional eating results from a person's inability to effectively regulate their experiences of negative affect.

One review study examined eating after experiencing negative emotions (Macht, 2008) in normal, non-restrained eaters and found that in 40% of experimental studies, people ate more after experiencing negative affect, whereas in almost 40% of the studies, declined food intake was found. In the remaining proportion, no significant change in eating behavior was observed. Such results point to the fact that despite the evidence that emotional eating is a real observable phenomenon, it is still unclear, and therefore difficult to predict, how people will eat in response to negative feelings. One study focused on the specific negative emotional experience of shame (in women), found that chronic shame predicted disordered eating even more than did general negative affect (Gupta, Rosenthal, Mancini, Cheavens, & Lynch, 2008). Furthermore, the investigators found that difficulties with emotion regulation mediated the relationship between

chronic shame and disordered eating, suggesting that increased emotion regulation skills may reduced disordered eating resulting from the experience of shame.

Impulsivity-Definition

Shapiro (1965) defined impulsivity as a proclivity to act spontaneously without a period of premeditation or a solid notion of intent or desire, as though the capacity for planning and thinking through one's actions is not an option. Years later, Barratt (1993) a preeminent researcher on impulsivity, characterized the impulsive person similarly as one who acts without thinking, on the spur of the moment, tends to get restless when required to sit still, is a risk taker, has difficulty concentrating, and above all lives in a world of action rather than thought.

Others have suggested that impulsivity is a more complex trait than meets the eye. For example, Buss and Plomin (1975) suggested that impulsivity is composed of multiple dimensions of control and that while inhibitory control comprises the essence of impulsivity, decision time, persistence, and boredom or sensation seeking are other important aspects that must be considered when assessing the personality trait. Eyseneck and Eyseneck also thought of impulsiveness as a complex trait and therefore they proposed two factors that it could be broken down into: one they termed impulsiveness (in the traditional sense of the word) and the other venturesomeness, which was thought to be related to risk-taking and sensation seeking (Eyseneck and Esyseneck, 1977).

Owing to the many definitions of impulsivity, different scales have developed over the last 50 years in order to measure it. The widely used Barratt Impulsiveness Scale (BIS) was first developed to distinguish impulsiveness from anxiety and to describe impulsiveness in a nonclinical sample. In addition, to helping to determine the role of impulsiveness in

psychopathology the BIS has helped researchers think about how impulsiveness as a personality trait may be related to other traits (Barratt, 1994). In the latest version of the scale, BIS-II, Barratt suggests that there are three subtraits that make up impulsivity: 1) an 'ideomotor' impulsiveness, which refers to acting without thinking, 2) a 'careful planning' subtrait that involves attention to details, and 3) a future orientated 'coping stability' subtrait (Patton et al., 1995). This latter subtrait is thought to represent the core difference between "normals" and patients with psychopathology" (Evenden, 1999, p. 181).

It is widely agreed in the personality literature that the trait of impulsivity is multifactorial in its nature and that its factors are independent of one another, reflecting distinct facets of behavior. Though there may be discrepancy as to what these different facets of impulsiveness should be called, one distinction that exists is between a group of factors that reflect a failure to analyze and be thoughtful before engaging in a behavior and those that refer to a failure to consider the possible outcomes of a behavior, with a even a possible desire for a risky outcome (Evenden, 1999, p. 181).

In considering the kind of impulsivity that may be associated with overeating or engaging in other forms of addictive behavior, it is conceivable that both aspects of impulsivity may be at play; there may be an absence of awareness as to the psychological and physiological experience of the desire to engage in the behavior combined with a failure to consider its consequences. Currently the most widely agreed upon definition of impulsivity encompasses both these aspects of the trait and state that it is 1) the inclination to choose small, immediately available rewards over larger delayed rewards, and/or 2) the tendency to respond quickly without forethought and/or attention to possible consequences of one's behavior (Evenden, 1999).

Role of Impulsivity in Overeating

Limited work has been done on obesity and impulsivity. Moreover, impulsivity has many different facets and is quite a nuanced personality trait. Therefore, even if we say that obese people are more impulsive, what is really meant by it? Some studies using self-report measures have demonstrated that obese people are more impulsive than lean people, and have higher rates of comorbidity with other impulsive behaviors such as substance abuse (Jonsson, Bjorvell, Levander, & Rossner, 1986 & Hjordis & Gunnar, 1989). High rates of impulsivity in obese people has been associated with less weight loss during treatment and increased drop-off from weight loss programs in (Jonsson, Bjorvell, Levander, & Rossner, 1986 & Hjordis & Gunnar, 1989).

Another study demonstrated that poor decision-making, as assessed by a gambling task, was positively correlated with BMI in a group of women (Davis et al., 2004). Researchers who have examined the difference in being driven by immediate gratification versus the willingness to hold out for larger longer-term or delayed rewards found that obese women displayed a preference for immediate but smaller monetary rewards than non-obese woman (Weller et al., 2008). To account for this observation, the investigators point to both BMI and gender-related personality differences.

To what extent may obese people be unaware of their impulsive tendencies and the effect that they may have on their weight? One study found impulsivity to be higher in obese women versus normal weight controls as measured by a computerized behavioral task, but found no difference between groups as measured by self-report (Nederkoorn et al., 2006). Such results beg the question: if obese people were given tools to become better aware of their impulses as well as to control them, might they experience increased success with weight loss and weight

loss maintenance?

Increased impulsivity has been found in people with chemical dependencies including cocaine, alcohol, and nicotine as well as with behavioral addictions such as gambling, sex, and shopping (Nasser et al., 2004). Higher rates of impulsivity have been found in people who are overweight or obese who show symptoms of binge eating disorder (Nasser et al., 2004). Substance use disorders are associated with the same kind of elevated scores on measures of impulsivity, still furthering the idea that we may be able to conceive of overeating as a form of addiction (Barry et al., 2009).

Still, there are mixed findings as to the level of impulsivity amongst individuals with eating disorders, with some researchers reporting greater impulsivity but only in those in treatment programs (Kayloe, 2003). In one study, personality profiles were assessed in a sample of 80 obese women (with an average age of 43) who were part of a weight loss study. On a whole, the group was found to be well adjusted and characterized by little anxiety, depression, neurosis, or psychosis. However, the group was also less inhibited than most average people in the face of physical danger, discomfort or societal criticism. Sensation-seeking has been associated with this dimension and may represent a similar constellation of traits to those found in other addictive disorders (Kayloe, 2003).

Aggression-Definition

Seroczynksi (1999) reports that "…of the many symptoms of psychopathology that can co-exist within an individual, impulsivity and aggression are among the most common" (p. 42). One of the goals of the present study is to determine whether there is a co-occurrence of these two personality traits within people who experience relapse with weight loss, and if so, in which

specific ways do their interaction present an obstacle to successful weight loss maintenance. Aggression can be thought of as a point on a continuum of action, which in infancy symbolizes the earliest form of self-soothing behavior in which an individual can engage in order to reduce anxiety. While in adulthood aggression can take on different forms, it is useful to remember at its core, it is a trait that symbolizes some kind of activity (as opposed to passivity) on the part of the individual.

One trend that is common in the study of aggression is that the trait gets broken down into different subtraits. For example, some researchers believe that there are two very distinct kinds of aggression, reactive aggression and proactive aggression. The first refers to a "hostile, angry reaction to perceived frustration" in which reactions are typically viewed as exaggerated reactions to minor provocations. Reactions of these kinds are generally thought of as short-term and volatile. Proactive aggression, on the other hand is considered to be a behavior that is motivated by anticipated benefits. This type of aggression is reminiscent of a bully and may even be a criminal threat to society (Seroczynski et al., 1999).

Reactive aggression is more strongly linked with impulsive behavior than is proactive aggression, because the latter has a much more premeditated quality. Although this distinction between two types of aggression was suggested over 30 years ago, studies on aggressive behavior have rarely separated the two. The distinction, if it exists, would imply that impulsivity and aggression are two separate traits and that it is therefore possible to be aggressive without being impulsive and vice versa. Research on impulsive versus meditative criminals suggests that this may in fact be the case (Seroczynski et al., 1999).

Goldwater (1994) suggests that that there is a critical relationship between impulsivity and aggression that stems from the fact that impulsive people live only in the present. Actions, he

believes, can be characterized as either constructive or destructive, and it is almost always the case that constructive actions require more time and effort than do the destructive ones. "To create—whether it's a new watch, or a new life—takes longer than to destroy" (p. 21). Although he believed that this line of thinking was akin to common sense, he believed it held significant implications for the understanding of the impulsive person whose actions are a product of a limited time frame. Impulsive actions, he suggested, are inherently more destructive rather than constructive in nature; therefore in order to accomplish something quickly and or decisively, there is a certain amount of aggression that must be involved (Goldwater, 1994).

Increased Aggressive Feelings in Overeaters

Some studies have addressed the issue of aggression in overweight and obese people. One such study that yielded particularly fascinating results used the Buss-Durkee inventory scales to measure hostility and aggression, and reported a negative correlation between inhibition of aggression and percentage of weight loss after 3 and 4 years in a group of severely obese patients who were treated with jaw fixation (Hjordis, et al., 1989). Interestingly, this result was only found in subjects treated with jaw fixation, a controversial dental procedure that binds a patient's upper and lower teeth forcing them to consume a liquid diet, and not in those treated in a traditional behavioral modification program. Results suggest that the more one must inhibit their aggression, the less likely they are to succeed at weight loss, which begs the question, of to what extent eating, for some, can be conceptualized an expression of aggressive impulses?

Such results lead to more questions about the nature of the relationship between aggression, as a personality trait associated with obesity and weight gain relapse. Insofar as aggression is thought to reflect not only observable behavior, but also unconscious oral strivings

that may also have the quality of being destructive in nature, is it possible that it plays an instrumental role in relapsing to pre-treatment weights for those who are able to succeed in weight loss programs? The obvious issue that arises out of a study such as that of Hjordis et al., 1989, is that it forces us to consider how we can even reliably measure such a hypothesis, given that the aggression issue may be more multifaceted in nature, in that overconsumption and relapse in weight gain might be more connected to the inability to (consciously or unconsciously) access anger that results in the aggressive-like oral behavior.

If indeed overconsumption is on some level, a product of an inability to access or express anger and or hostility, then the behavior may be viewed as truly defensive in nature, as some psychoanalytic thinkers mentioned earlier have put forth. Along the lines of an inquiry into the possible defensive aspects of eating and its relationship to aggression, one study reported a positive relationship between certain defense mechanisms and oral strivings. In men, it was found that the defense mechanism Turning Against the Self (TAS), defined as "dealing with conflict by turning aggressive impulses back onto the self" is positively related to orality, while Turning Against Others (TAO), "dealing with conflict via aggression toward an external object that is perceived as threatening" was negatively related to it (Bornstein et al., 1990, p. 656).

Earlier studies have put forth the idea of a link between TAS-type of defensive style and alcoholism and depression (Negrete, 1973 & Scholtz, 1973). Highly oral men may harbor a host of emotions and anxieties that are directed inward and absorbed by the self, thus explaining their high TAS scores but low TAO scores. Researchers hypothesize that the lack of similar findings in women may be explained by societal pressures that lead to women's general underreporting of their aggressive feelings and fantasies (Bornstein, 1990).

Findings from a study that assessed psychological traits and eating patterns in a group of

moderately obese individuals indicated that inhibition of aggression was associated with different forms of overeating (Ryden and Johnsson, 1989). Along the same lines, other investigators have found that obese subjects tend to be unassertive and have difficulty expressing negative affect (Pomerantz et al., 1977 and Wolman, 1982). Results such as these have led some researchers to hypothesize that people who struggle with overeating and consequently controlling their weight may experience difficulties in the processing of their aggression. Overeating in such individuals may then serve to neutralize feelings of aggression that are psychically threatening (Ryden and Johnsson, 1989).

The Role of Binge Eating in Relapse

Binge eating was first recognized as a specific eating pattern among a subgroup of obese people in 1959 (Stunkard, 1959). Researchers estimate that about 25-50% of all obese patients who seek weight loss treatment suffer from binge eating problems (Bruce and Wilfley, 1996). Binge Eating Disorder (BED) was added to the DSM-IV as a disorder for further study, highlighting its importance as a distinct psychological condition and the increased attention it is receiving in the field of mental health. BED, often referred to as compulsive overeating, characterizes a condition in which people engage in recurrent episodes of consuming a large amount of food in a relatively small amount of time, without the purging (either through vomiting, laxatives or exercise) that is associated with the eating disorder Bulimia Nervosa. Binge eating differs from normal eating in that it is a highly emotional event with feelings of loss of control over what and how much one eats as well as marked distress (Bruce and Wilfley, 1996 and DSM IV, 2000).

Research on BED indicates that obese people who binge eat are both heavier and more

likely to have a history of what is often referred to as "yo-yo dieting", with average weight fluctuations of at least 20 pounds (Bruce and Wilfley, 1996). However, on a whole, little research has been done about the relationship between impulsivity and BED (Bruce and Wilfley, 1996). Using a laboratory test meal paradigm, one study found greater Motor Impulsivity (BIS) in obese women with binge eating disorder versus those without it (Nasser et al., 2004).

Statement of Hypotheses

Obesity is a growing public health concern among Americans of all age groups. While behavioral treatments can help people achieve a weight loss that significantly improves their overall health, there continues to be a significant issue of relapse (i.e. weight regain) in this population. Several models of relapse have been reviewed in an effort to shed some light on the possible psychological mechanisms at play underlying a return to old consummatory behaviors.

One way to conceptualize relapse in overeating is to understand it as a regression to an earlier developmental stage in development or what Freud (1905) termed the "oral" phase (p.29). Behaviors that are characteristic of the oral phase include difficulty to regulate one's emotions and physiological arousal, desire for instant gratification, and a preoccupation with obtaining pleasure through the mouth. The utility of such a framework for understanding relapse in weight gain is that it allows us to consider what the psychological implications of having oral-like characteristics in adulthood may have one one's ability to maintain their weight loss.

The overall purpose of the proposed study is gain a deeper understanding of the process of a relapse or return to old eating patterns of overconsumption. This will be done by in the following two ways: First, the relationship between weight regain (following success in a behavioral weight loss program) and the following three psychological factors: 1) emotion regulation, 2) impulsivity, and 3) aggressiveness, will be examined. Secondly, a qualitative

investigation into the nature of relapse will be performed in order to begin to establish what themes are most relevant for people in their struggle to maintain newer and more controlled eating patterns. It is proposed that emotion regulation, impulsiveness, and aggressiveness will be correlated to peoples' tendency to regain the weight they had previously lost. Findings from this study may assist behavioral health practitioners in tailoring their treatments more effectively to their patient populations, as well as identifying which patients may need increased support around weight maintenance.

Rational for hypotheses I

Emotion regulation is a highly relevant construct that may be implicated in a range of clinical disorders. Indeed, people's ability to effectively regulate their emotional states is thought to be related to their ability to exercise control over their behaviors (Gratz & Roemer, 2004). It has been shown that negative emotions, in some people, leads to increased eating, a phenomenon called emotional eating (Bruch, 1973). Therefore, examining people's ability to regulate their emotions may help reveal why certain individuals struggle more than others to their eating behavior.

I) Specifically, the first hypotheses states that within a sample of adult individuals who have participated in a behavioral treatment study for weight loss, participants' weight regain (in pounds) will be positively correlated with their scores self-report measures of difficulty with emotion regulation. This hypothesis will be tested through the administration, scoring, and analyzing of participants responses on the Difficulty in Emotion Regulation Scale (DERS).

Rational for hypotheses II

Goldwater (1994) suggests that that there is a critical relationship between impulsivity and aggression that stems from the fact that impulsive people live only in the present and have a compromised ability to fantasize. As a result, such people are then more likely to act on their impulses or act out their aggressive (oral) fantasies or needs. In people who struggle with controlling their food intake, this may result in increased consumption of calories or rich foods. Indeed, higher rates of impulsivity have been found in people who are overweight or obese who show symptoms of binge eating disorder (Nasser et al., 2004).

II) Specifically, the second hypotheses states that within a sample of adult individuals who have participated in a behavioral treatment study for weight loss, participants' amount of weight regain (in pounds) will be positively correlated with their scores self-report measures impulsivity. This hypothesis will be tested through the administration, scoring, and analyzing of participants responses on the Barratt Impulsiveness Scale-II.

Rationale for hypothesis III

Aggression is thought to reflect not only observable behavior, but also unconscious oral strivings that may also have the quality of being destructive in nature. Some research suggests that *inhibition* of aggression is associated with different forms of overeating (Ryden and Johnsson, 1989). Along the same lines, some studies (Pomerantz et al., 1977 and Wolman, 1982) have shown that obese subjects tend to be unassertive and have difficulty expressing negative affect. Such results suggest that people who struggle with overeating and consequently controlling their weight may experience difficulties in the processing of their aggression.

III) Specifically, the third hypotheses states that within a sample of adult individuals who

have participated in a behavioral treatment study for weight loss, participants' amount of weight regain (in pounds) will be positively correlated with their scores self-report measures of aggression (at least on subscales of hostility and anger). This hypothesis will be tested through the administration, scoring, and analyzing of participants responses on Buss and Perry Aggression Questionnaire.

Rational for hypotheses IV

When given an opportunity to speak about their experience in a non-threatening environment, people's narratives are often embedded with themes that can be very useful to the study of a particular phenomenon. Qualitative data has the potential to capture a more nuanced and probably more genuine account of peoples' subjective experience of a particular phenomenon (in this case, relapse following weight loss) than quantitative data. Moreover, as it provides an additional dimension of participant's subjective experience, qualitative data may enhance the investigator's understanding of quantitative results. Various methods of integrating qualitative and quantitative results may be employed in order to further the investigator's understanding of the psychological processes that may play a key role in the phenomenon that is being studied.

II). Specifically, the fourth hypothesis states that the qualitative interview will reveal themes related to difficulty with emotion regulation, overt or covert aggression, and impulsivity that will be correlated with participants' amount and/or rate of weight regained. In addition, the fourth hypothesis proposes that qualitative data will corroborate findings from self-report measures. This hypothesis is will be tested through the administration of an approximately hour-long qualitative interview in which participants will be invited to speak about their experience

with weight regain following a period of weight loss.

Chapter 3: Methods

The Healthy Living Study

Participants for this study were recruited from an NIDDK (National Institute of Diabetes and Digestive and Kidney Diseases) funded randomized clinical weight loss trial (The Healthy Living Study) conducted at Baruch College by Dr. Angela Marinilli Pinto, Assistant Professor of Psychology (.Pinto, Fava, Hoffmann, Wing (under review), The aim of this study was to evaluate the clinical effectiveness and cost effectiveness of three behavioral approaches to weight loss. The Healthy Living study was comprised of 144 overweight and obese men and women, between the ages of 30 and 65, with a baseline BMI between 27-50 kg/m^2. Participants were randomized to one of three weight loss treatments, with treatment duration of 12 months for each group: 1) Behavioral Weight Loss (BWL) 2) Combined Treatment (COMB), or 3) Weight Watchers. Assessment visits occurred at baseline, 12 weeks, 24 weeks, 48 weeks (end of treatment) and 72 weeks (6 months after the end of active treatment).

BWL Group

Participants in the BWL group attended weekly group meetings for the first 6 months and every other week meetings for the second 6 months of the program. Meetings were led by Dr. Pinto and are held at Baruch College. Participants were given standard dietary and physical activity prescriptions for weight loss and received instruction in behavioral strategies to modify diet and exercise (e.g., self-monitoring of diet and physical activity, goal setting, problem solving). Participants were weighed individually prior to each group meeting.

COMB Group

Subjects in the combined group attended weekly meetings led by Dr. Pinto for the first three months of the study. Participants were weighed individually prior to each meeting and receive the same dietary and physical activity prescription as the BWL group. The curriculum was condensed to fit within a 3-month time frame, however, participants received instruction in behavioral strategies to modify diet and exercise as in BWL (e.g., self-monitoring of diet and physical activity, goal setting, problem solving). For the final nine months of the study, COMB group members attended a Weight Watchers group of their choice on a weekly basis. Members of this group also had access to the Weight Watchers online program once they transitioned to Weight Watchers.

Weight Watchers Group

Participants in the Weight Watchers group attended a weekly Weight Watchers group meeting of their choice throughout the entire year of active treatment in the study. Weight Watchers group members had access to Weight Watchers online program for the duration of the year that they were in treatment.

Research Design

The current study was comprised of two parts. The aim of Part 1 of the study was to assess three aspects of personality: 1) Difficulty with Emotion Regulation, 2) Impulsivity, and 3) through the use of self-report scales. Former Healthy Living Study participants who had achieved "successful weight loss" (a minimum of 5% loss of baseline weight) in the course of the year-long active treatment portion of the study and attended their 18-month follow-up

assessment were eligible for participation.

The aim of Part 2 of the study was to obtain personal accounts of subjects' experiences with weight loss relapse and maintenance. Part 2 was comprised of a smaller subset of subjects, selected at random from Part 1, who were interviewed by the investigator about their experience losing weight, and particularly their experience of re-gaining the weight they had lost if they did in fact relapse.

Participants

Participants for Part 1 of this study were 31 participants (2 males, 29 females) who completed the final (72-week) assessment for the Healthy Living Study and achieved "successful weight loss" (at least a 5% loss from their initial weight at the start of the study) at some point in the course of the study..

Subjects were contacted between a few months and about one year after their 72 week follow-up date, provided that they had previously submitted written consent to Dr. Pinto that were interested in being contacted for future studies. The investigator contacted subjects who met the above criteria by telephone, in order to solicit their interest in participating in this study. 31 participants were recruited to participate in Part 1 of the study.

Once subjects expressed their interest to participate they were invited to come to Baruch College for either a 45-minute or two-hour long visit (if also partaking in Part 2 of study) during which they signed informed consent, completed the three self-report questionnaires, and (in some cases) participated in the interview. A subset of 12 participants from Part 1 of the study were selected at random to participate in Part 2 of the study, which was the qualitative interview.

Setting

This study was conducted in Dr. Pinto's Health Behaviors Lab in the William and Anita Newman Vertical Campus of Baruch College, located at 55 Lexington Avenue, New York, NY. Subjects met with Neta Tal for approximately 30 minutes to-two hours, during which they signed informed consent, filled out three self-report measures, and too part in a qualitative interview (only if they had been selected at random to be in Part 2 of study).

Procedures for Gathering Data

1. First Ms. Tal reviewed the informed consent, giving subjects an opportunity to ask any questions or address any concerns they had.
2. Next, subjects were asked to complete the following three questionnaires: The Barratt Impulsiveness Scale II (1995) and The Buss and Perry Aggression Questionnaire (1992), and the Difficulty in Emotion Regulation Scale (DERS) (2004).
3. Next (for only a subset of 12 subjects) subjects participated in an approximately hour-long interview that addressed different aspects of their weight loss and weight regain/maintenance experience.
4. At the end of successful completion of self-report scales and interview, subjects who had completed the self-reports scales AND the interview were compensated with $10.00 cash as well as a $5.00 metrocard for their participation in the study. Subjects who completed only the self-report scales received only a $5.00 metrocard.

Instruments

Demographic/Health History Questionnaire

Each participant in the Healthy Living Study completed a demographics questionnaire before the start of treatment. Questionnaire contains personal data about participants' age, marital status, vocation, income, and aspects of their health and weight loss history. Ms. Tal referred to demographic questionnaires as needed in order to gather additional information about participants in this study.

Weight Database

The weight database contains observed weights of Healthy Living participants who completed their 12-week, 24-week, 48-week, and 72-week assessment visits. .

Barratt Impulsiveness Scale II

The Barratt Impulsiveness Scale II (BIS II) (Patton et al., 1995), a 30-item self-report measure, will be given to subjects in order to assess their general level of impulsivity, while respecting the multi-faceted aspect of the personality trait of impulsiveness. The scale's structure permits for the measure of six "first-order factors" 1) attention 2) motor 3) self-control 4) cognitive complexity 5) perseverance and 6) cognitive instability and three "second-order factors" 1) attentional impulsiveness (indicates attentional and cognitive instability] 2) motor impulsiveness (motor and perseverance) and 3) non-planning impulsiveness (refers to self-control and cognitive complexity). All items appear with four-point likert scale (1=Rarely/Never, 2=Occasionally, 3=Often, and 4=Almost Always/Always) from which subjects will select a response that best describes them (Patton et al, 1995). A total score for the BIS II

will be calculated by summing responses from the first and second-order factors. Scores on this measure can range from 30-120, with higher scores indicating greater impulsivity.

The Buss and Perry Aggression Questionnaire

The Buss and Perry Aggression Questionnaire is a self-report measure designed to assess the following four factors of aggression: Physical Aggression (PA), Verbal Aggression (VA), Anger (A) and Hostility (H). The total score for aggression is the result of the sum of the factor scores. The instrument consists 29 items, which the subject must answer using the following likert scale: 1 = extremely uncharacteristic of me, 2 = somewhat uncharacteristic of me, 3 = neither uncharacteristic nor characteristic of me, 4 = somewhat characteristic of me, 5 = extremely characteristic of me (Buss and Perry, 1992). Scores on this measure can range from 29-145, with higher scores indicating greater aggression.

The Difficulty in Emotion Regulation Scale (DERS)

The DERS is as self-report questionnaire designed to assess multiple aspects of emotion dysregulation. The measure has 36 items and yields a total score as well as scores on the following six sub-scales: 1) Nonacceptance of emotional responses, 2) Difficulties engaging in goal directed behavior 3) Impulse control difficulties 4) Lack of emotional awareness 5) Limited access to emotion regulation strategies 6) Lack of emotional clarity (Gratz, 2004). Scores on this measure can range from 36-185, with higher scores indicating greater difficulty with emotion regulation.

Interview

Ms. Tal conducted an approximately hour-long semi-structured interview. Interview questions were designed to probe subjects' subjective experience of their weight loss and subsequent weight regain. Moreover, questions were intended to illuminate facets of subjects' personalities (with a focus on the traits of aggressiveness. Impulsiveness, and difficulty with emotion regulation) that may be implicated in the process of relapse towards old patterns of behavior. All interviews were recorded using on an Olympus Digital Voice Recorder WS-400S.

The Data

All data related to this study were kept locked and filed in Dr. Pinto's Health Behaviors Laboratory. The only people with access to these files were Ms. Tal and Dr. Pinto. Analysis of all the data was conducted by Ms. Tal along with the assistance of Dr. Sarai Batchelder, clinical psychologist and statistician. Drs. Hien, Fraenkel, and Pinto were also consulted as needed. Results from both self-report scales were entered into an Excel spreadsheet and later analyzed utilizing the SPSS statistical tool.

Data from the interview was coded qualitatively. First, all the audio files were downloaded onto a computer and saved in a password protected file. Ms. Tal listened to each interview and record key aspects of subjects' responses by converting them into a code that was entered into an excel file. Codes were units made up of a string of words or a short phrase that best captured the essence of what the participant had articulated in the interview. In some case, codes were comprised of direct quotes from participants. Codes were then grouped together into larger groups (or categories) that helped the investigator identify themes that were common across participants. Finally, a descriptive theory was drawn from the themes that emerged, revealing

salient aspects of participants' experiences with weight loss relapse.

The method was used for the coding of responses was founded on the principles of grounded theory, a qualitative research method developed by two sociologists, Barney Glaser and Anselm Strauss. Grounded theory prioritizes peoples' subjective experiences of an event or experience and therefore begins with data collection, which in this study will be the responses to the interview questions. The grounded theory approach has been described by psychologist Kathy Charmaz as:

> "The interpretive tradition relies on knowledge from the 'inside'. That is, this tradition starts with and develops analyses from the point of view of the experiencing person…Such studies aim to capture the worlds of people by describing their situations, thoughts, feelings and actions and by relying on portraying the research participants' lives and voices. Their concerns shape the direction and form the research. The researcher seeks to learn how they construct their experience through their actions, intentions, beliefs and feelings" (Charmaz, 1995, p.30).

While the qualitative portion of this study had a certain set of hypotheses about which themes may emerge from interviews with participants, the spirit of approach was still founded on the principles of grounded theory, in that participants' direct account of their own unique subjective experience first and foremost informed the investigator's developing theory.

Results from both qualitative and quantitative data were ultimately brought together in such a way so that they informed one another and deepened the investigator's understanding of the subject matter being examined. One way this was accomplished was by the comparison of both interview material as well as scores on self-reports for two participants that differed distinctly with regards to their weight loss trajectory. Other methods of integrating qualitative and quantitative were employed as well.

Chapter 4: Results

The results section is divided into two parts: 1) the results and analysis of the quantitative data that was gathered from the three measures that were given to all participants along with the demographic characteristics of the sample, and 2) the results gathered from the 12 qualitative interviews that were conducted and coded according to the grounded theory method detailed in the previous chapter.

Part 1: The Quantitative Data

Demographic Characteristics of the Sample

Preliminary analyses of the descriptive statistics of the sample were conducted. Out of the 35 participants that were recruited for the study, 31 completed the study protocol. Of the 31 participants that comprised the sample of this study, 29 (93.5%) were female and 2 (6.5%) were male. Of the 31 participants, 12 (38.7%) were Black, 14 (45.2%) were White, and 5 (16.1%) were "Other". The age range of the sample was 36 to 64 with a mean age of 52.10 years (SD = 8.33).

Mean baseline BMI of participants in the current study was not significantly different from that of Healthy Living Study participants not enrolled in this study. The subsample in the current study lost more weight than the HLS participants with complete data who were not part of the current study ($p<0.01$ for all time points) However, this was not surprising given that participants in the current study were drawn from the pool of most successful weight losers in the HLS.

Reliability of Scales

Scale internal consistency was computed using the Cronbach's alpha for the Aggression subscales (Anger and Hostility) as well as the total for the Aggression, DERS, and Impulsivity scales. These results are depicted in Table 1 and indicate that all the scales as well as the two aforementioned subscales on the Aggression scale have relatively high internal consistency.

Preliminary Results

Table 2 depicts the descriptive statistics for participants' weight over the course of the study, starting at baseline and at the four subsequent time points: 12, 24, 48, and 72-weeks. In addition, baseline body mass index (BMI) and height are also presented here. Weights are depicted in the following three ways: weight observed at each time point (lbs), weight loss at each time point (lbs), and percentage of baseline weight that was lost. Mean and standard deviations for all these descriptive statistics can also be found in Table 3. All the data presented in this table were normally distributed except for the weight loss (in lbs) at 12- and 24 weeks. At these points, the data were slightly kurtotic. This non-normality however, did not present an issue for subsequent analysis because slope of weight change at each time point, as opposed to amount lost in lbs, was used as the main outcome measure. See Figure 1 for the mean of the percentage weight loss at each of the four time points of the participants in the current study.

In order to examine the weight change trajectory for the sample, pair sample t-tests were computed between the different study time points. As depicted in Table 3, participants demonstrated significance in the trend of their weight change at all the time intervals except that between 24 weeks and 48 weeks. Between baseline and 12 weeks and between 12 weeks and 24 weeks, the direction of weight change was significantly negative, whereas between the 48 and

72-week time points, overall weight loss trajectories were in the opposite direction, indicating weight gain.

Descriptive statistics for self-report outcome measures are reported in Table 4. Both the Aggression subscales (Anger and Hostility) and well as the totals for the Aggression, DERS, and Impulsivity scales were normally distributed.

Bivariate preliminary analyses were conducted in order to examine the data for potential covariates and associations between key variables. Correlations among the self-report scales are reported in Table 5. These relationships were as would be expected based on emotion theory. There was a moderately sized positive correlation between the DERS and the Aggression scale r(p) =.44 (.01), which is not surprising given that people who struggle with difficulty regulating their emotions, may also have issues with processing and/or expression aggression (Ryden and Johnsson, 1989).

Relationship of Baseline Measures and Demographic Variables to Outcome Measures

Pearson Correlations were calculated in order to determine potential relationships between baseline measures (age, BMI, weight, and height) and dependent variables (percentage of weight lost at the four time points). As shown in Table 6 since there were no statistically significant association found in these analyses, we can conclude that there is no need for covariates among these variables.

Two one-way analyses of variance (ANOVA) were calculated in order to determine potential relationships among demographic variables (sex and race) and dependent variables (percentage of weight lost at the four time points). As shown in Tables 7 and 8, ANOVA results

indicated that there were no significant effects of sex and race on percentage of weight lost at any of the four time points in the study.

Tests of Hypotheses

In order to test the hypotheses in this study, it was necessary to determine whether a participant was gaining or losing weight in each time segment. To do this, the slope was calculated between each time point, with negative slopes indicating weight loss and positive slopes indicating weight gain. This enabled an analysis of the intermediate direction of weight change and not simply the overall change from baseline. For example, intermediate slope data can capture the process of someone who reversed progress and gained some weight mid-study (a positive slope for that time segment) while their percent weight change would remain negative indicating that they remained below their baseline weight.

The first hypotheses stated that participants' weight regain (in pounds) would be positively correlated with their scores on self-report measures of difficulty with emotion regulation as measured by the Difficulty in Emotion Regulation Scale (DERS). A Pearson correlation was conducted (see Table 9) to test this hypothesis. When the segment slopes were analyzed, only one significant negative association was found at the 48-week and 72-week segment.

The second hypotheses stated that participants' amount of weight regain (in pounds) would be positively correlated with their self-reported impulsivity scores. A Pearson correlation was computed to test this hypothesis (see Table 9). When the segment slopes were analyzed, no significant associations were found between weight change and scores on the Barratt Impulsiveness Scale-II.

The third hypotheses stated that participants' amount of weight regain (in pounds) would be positively correlated with their scores on self-report measures of aggression (specifically on subscales of hostility and anger) as measured by the Buss and Perry Aggression Questionnaire. A Pearson correlation was computed to test this hypothesis (see Table 9). This analysis revealed only one negative association between the 24-48 week segment and the Hostility Subscale of the Buss and Perry Aggression Questionnaire. No other significant associations were found in this analysis.

Part of the fourth hypothesis stated that qualitative data would corroborate findings from self-report measures. To test this, the Z scores on self-reports of two case examples, those of subjects #2 and subject #9 were computed and then compared (see Table 10). This comparison revealed that subject #2 was somewhat low on self-report measures of aggression and impulse control as compared to the sample as a whole and that subject #9 was somewhat low their DERS scores, again as compared with the mean of the sample.

Part 2: The Qualitative Data

An intensive transcript analysis of the 12 interviews that were conducted generated several hundred codes, according to the methodology outlined in the previous chapter. These codes were subsequently organized into higher order categories representing principal themes that emerged from the narrative data. The individual codes, listed in tables by category, can be found in Appendix X. These categories were then clustered around five distinct domains that bring into focus the participants' experiences with weight loss and relapse: Experience of the Study, Factors Associated with Unhealthy Eating Behavior/Relapse, Characteristics of Instances of Making Unhealthy Food Choice, Experience of Consumption of Something they Wish they

Had Not Eaten, and Beliefs about Cause(s) of Weight Loss/Weight Loss Maintenance Struggle. Each category is summarized below using participant quotes throughout, in order to highlight salient themes that will be discussed further in the next chapter. The presentation of these domains is followed by case examples of two participants who had divergent experiences of weight loss and/or relapse. Names of participants have been changed to protect their confidentiality.

Experience of the Study

Hope and Structure Provided by Study

When describing their associations to The Healthy Living Study, all participants expressed positive sentiments about their experience. Some spoke of their gratitude for having had the opportunity to take part in it, describing it as "a great experience" or as something that they "really enjoyed", or as one participant responded, her association to the study was "happiness".

In particular, many of them commented on benefiting from the structure and accountability that the study offered them (See Table 1). One participant stated that the study helped her "stick to a plan" another that it ensured that she "stayed focused", and another that it got her "back on track". Some participants emphasized the aspect of compliance fostered by the study, owing to the fact that they were, as one woman said, "doing what was expected of me".

Participants also talked about the sense of hope that being part of the study instilled in them. This sentiment was perhaps most poignantly noted by a participant who stated, "I really think it [study] kind of saved my life cause I was at my wits end, I had no idea what to do".

Another participant said that the study confirmed that "losing weight was doable" and described the sense of renewed hope she felt about her weight struggle as a result.

Social support Provided by Study

Another salient aspect of what participants had to say about the study, was how important was the support they received from other individuals struggling to lose weight as well as the research staff. There were different reactions among participants to the treatment groups to which they were assigned, with some feeling a sense of family in the group while others reported feeling disconnected.

Information Learned in Study

Nearly all participants referenced the information they acquired as a result of having been in the study (See Table 3). One woman said that the study had been "eye-opening" and that "learning new skills was the most important part" of what the study afforded her. Another participant said she learned that "loosing wasn't as difficult as maintaining", while another one said that she came to understand that it was normal for one's weight to fluctuate within a range of approximately five pounds.

Beliefs about Study "Performance"

The participants in the study had varying beliefs about how effective the study was in helping them lose weight and maintain that loss. They also expressed many different feelings about their relative success in the study (See Table 4). A couple of women spoke about the weight loss they achieved during the study, in some cases of up to 30 pounds or more. Others

spoke about additional behavioral changes they credit to their participation in the study, such as the increased sense of awareness they gained. One woman said that she was "thinking more" when she was in the study, while another said that the "group meetings made me feel more aware". A couple of women said that they were pleased with their success and/or the fact that they saw the study through till the end.

More frequently, however, the participants spoke of dissatisfaction with their weight loss/performance in the study, including not losing as much weight as they had hoped, disappointment in themselves for not following study instructions, and various other issues that they perceived to hinder their success at weight loss or weight loss maintenance (See Table 5). Nine of the 12 participants who were interviewed expressed dissatisfaction at the amount of weight they lost in the study, stating that they either wished they had lost more or that they did not achieve the goal they had had in mind.

Five participants described starting out doing well in the study, only to cease losing weight and or regaining the weight they had lost later on in the study. They articulated varying reasons for their discontinued success, which have been grouped into thematic categories and will be described in the next section along with all participants' thoughts and feelings about a time when they had difficulty maintaining healthy eating patterns. In addition, two woman alluded to an internal change they experienced during the study, one stating that she "lost sight of her goals" and another that she lost a sense of motivation.

Three women attributed discontinued success in the study and/or a relapse of weight gain to their experience in their particular treatment condition. One woman described feeling like she had been "hung out to dry" in her particular treatment condition, while another said that she didn't find her group leader adequately helpful and supportive.

Factors Associated with Unhealthy Eating Behavior/Relapse

When asked to describe a time when they felt it was difficult to maintain their healthy eating patterns, all 12 participants who were interviewed described a variety of situational, physical, and emotional factors that played a role in their behavior. In addition, the participants described the thoughts and feelings that accompanied their unhealthy eating shedding light on the psychological experience of relapsing into negative behavioral patterns.

Change of Context/Routine

One prominent theme that participants spoke about was some kind of contextual or environmental change that preceded or accompanied their relapse into unhealthy eating patterns (See Table 6). Indeed, 6 of the 12 participants cited some sort of change to their normal routine as being a precursor to a relapse. Three women talked about going on a trip and how the food options they had while away affected their eating patterns. One woman talked about how she lost complete control over her eating her while taking part in an emersion language program abroad where she had unlimited access to a variety of rich foods that she really enjoyed. She described how after a few days of trying to moderate her intake of her favorite foods, she then felt that "I wasn't in control…I mean, but I just kind of gave in, I just threw up my hands and said I'm just gonna eat whatever". Another woman talked about gaining weight on her all-inclusive cruise vacation, while another spoke about gaining weight when she was on a trip with a group in which she had no control over the restaurants she had to eat at.

Participants also mentioned various other situational changes that affected their eating behavior. These changes included working late hours, hosting out of town visitors, and traveling out of town frequently. Two women cited aspects of their treatment assignment as a factor that set the stage for their relapse. Another participant said that she had a difficult time eating healthy

on weekends when she was not working, and that this greatly affected her entire weight loss effort.

Behavioral Changes

Participants also described numerous behavioral changes that either preceded and/or accompanied unhealthy eating behavior (See Table 7). One theme that emerged was an indulgence in a particular food/drink. One woman stated that she started eating sweets very frequently while another said she began drinking alcohol daily. Three women talked about ceasing to perform the tasks recommended by the Healthy Living Study including tracking their daily food intake in a food journal and weighing themselves daily. One woman stated that she simply "abandoned" everything she had learned in the study, describing her relapse as follows:

> "There became a stretch of time where you know, one day of a bad habit became two days, then a week, then a month, and then two months, you know like that. And then eventually the good days, um, sort of got outweighed by the bad days, so it's very easy to lose, to get out of step and out of practice, so that's what happened"

Another who traced her initial relapse to her eating behavior on an all-inclusive vacation said that she "gave [herself] permission to eat" and that "I wanted to have fun and fun to me is food". Participants also talked about changes with regards to meals, two said that they ceased to plan their meals at the time of their relapse, two said that they increased the frequency with which they out at restaurants, and one said that she started skipping meals frequently.

Physical/physical Health Factors

Some participants talked about how they perceived issues related to their physical health as playing a role in their unhealthy eating and/or relapse in weight gain (See Table 8). One woman felt that her weight loss efforts were completely hindered by the fact that she was going

through menopause. Three women felt that either a reduction or cessation of their exercise regimen (for one reason or another) played an important role in their relapse.

Emotional Factors

Emotional factors were the most frequently mentioned cause and/or correlate of unhealthy eating patterns by participants (See Table 9). Several of the women interviewed cited a particular situation or event that took an emotional toll on them as a precursor to their relapse. Some of these pertained to how issues with loved ones affected them and included: a mother's illness, a daughter's emotional crises, death of parents, her divorce, and the death of a loved one. Three women said that they could attribute an increase in poor eating patterns to the emotions and stress associated with a romantic relationship, including loneliness, anger, and depression.

Eating as a response to anxiety or some form of stress was a prevalent theme described by participants. One woman who described overeating due to stress about an upcoming trip said that for her "food is a tranquilizer". Another woman who was dealing with a host of interpersonal and career-related stressors at the time of her relapse said that she "stuffs [her] emotions with food". She described feeling "untethered" upon the death of her brother, her last living relative other than her daughter, leaving her feeling that she had no one to talk to. Two participants talked about experiencing an increase in poor food choices in response to elevated stress levels associated with their work.

Feelings of Loss of Control Associated with Spiraling into a Relapse

Many of the participants described feelings of loss of control associated with their slips into unhealthy eating as well as full-fledged relapses where they re-gained a significant amount

of weight that they had lost (See Table 10). One woman who found herself frequently eating in response to unpleasant feeling associated with a strained romantic relationship, described the thoughts and feelings she had whenever she would engage in overeating in a compulsive way:

> " You think, how am I going to loose this. Then you start feeling badly, well I'm fat anyway. It's almost like you're going through a mourning, it's like your spiraling down into this abyss of feeling miserable and well I'm not going to do anything about it because I'm already here, so let me go get another bag of chips, you know that sort of thing and if I don't stop myself at that point, it'll just continue till one day I say, I'm tired of doing this, but that could be months, you know instead of a day or two."

This excerpt illustrates the chain of psychological experiences that the participant went through as fell further and further into a relapse. Another participant responded to being asked what she was thinking or feeling during the time of her relapse with: "That's hard, because if I could tell you that, that would probably be half the problem…if I would know what was going on in my head". Again, this quote illustrates that lack of awareness and/understanding of the psychological experience that the participant was undergoing at the time.

Several participants linked their relapse to feelings of loss of control and/or of awareness. Two women described feeling out of control and one of them connected this to her feeling that she had no control over the events of her life. One woman said she relapsed when she became "unmindful of me". Another participant who had trouble remembering her thoughts and feelings around the time of her relapse in weight gain said she was "mindless" at the time. One woman said that at a certain point in her relapse, she was "no longer conscious that I'd lost my healthy eating habits". Another participant being dissociated from the benefits of healthy eating during a period of relapse, saying "I get into it and then I forget the nice feelings". In contrast, another said that she remembers being aware that she was regaining weight, but did not recall thinking about she might be able to take control again.

Negative Feelings associated with Unhealthy Eating/Relapse

When asked to talk about phases during the study or in their lives when they have experience a relapse into unhealthy eating patterns, participant described a range of feelings (See Table 11). For a few of the women, guilt was at the core of their experience; they talked about feeling regretful and sad about their food choices as well as unhappy with their behavior. Another theme that emerged from several of the participants was that of concern that they may never regain control over their eating. One woman said that she wondered if she would be the same weight for the rest of her life, while another said that she felt overwhelmed by the amount of weight she still had to loose. One woman talked about how during a relapse she often experiences fear that she will forever "choose to punish [herself] with bad food", while another stated that returning to healthy eating seems very difficult once she has regained some weight that she had lost.

Getting back on Track after a Relapse

When participants were asked about what happened following a relapse into unhealthy eating behavior, many of them spoke about regaining control or getting back on track with their weight loss plan (See Table 12). A few of the woman referred to forms of self-talk in which they engage which helps them to regain control over their eating. For example, one said that she tells herself that she is having "a rough patch", another tells herself that she will "eventually" go back to healthy eating, and another said "I tell myself what I should and shouldn't be eating". One woman said she begins to focus on what she can eat as opposed to what she cannot and described getting back on track as a time when she "started to act like an adult". Another participant became tearful in the interview as she relayed how she had told herself that she had to be

"healthy" in order to care for her ailing mother. This same woman also said that she often reminded herself that "I didn't want to be big" during this time. In talking about getting back to healthy eating, one participant said she somehow knows "when I've had enough of something" and sets her own limits about "how far I'll allow myself to slip"

One participant who reported maintenance of the more than 30 pounds she had lost weight she had lost in the study at the time of the interview, described how she recovers from a minor relapse, for example after overeating while visiting relatives in another state.

> "You cannot get angry at yourself for having that piece of chocolate cake…if you had that piece of chocolate cake, just get over it! And go back to your eating habits. Just because you had that piece of chocolate cake, it's not the end of the world and it's not going to break you…so I kind of learned that it's OK. If I eat a little more, I can also exercise a little bit more, kind of evens out in the end."

It is interesting to note that this participant said that she *plans* for a period of overeating and has rituals around how she bounces back from them, such as by "eating more salads for awhile". This woman also expressed with conviction that she "refuses to allow myself to feel that I cannot go back to healthy eating" and that while she wants to keep off the weight she has lost, she does not want to "beat herself up" over minor relapses.

Some participants cited behavioral changes they made during a time when they felt they had lost control over their eating behavior. One woman said she joined another weight loss study that provided her with free access to diet pills. Another said that she started forcing herself to eat breakfast daily so that she would overeat at lunch as a result of being famished and also lowered her alcohol intake. One participant said she purposefully exercised more than usual in order to "make-up" for how she had eating while on a recent vacation. One woman initiated conversations with friends and coworkers she knew to be committed to a healthy lifestyle, in the hopes that the moral support would help her get back on track.

Characteristics of Instances of Making Unhealthy Food Choice

When participants were asked to describe a time when they ate something they wish they had not, the characteristics of the situations they described fell into the four general categories described in this section.

Social/Cultural Pressures to Eat

Four participants provided examples of eating something they wish they had not as a result of some perceived social pressure to eat (See Table 13). One woman said she almost always overeats when she is visiting her parents, due to the fact that she has little choice over what they are serving and also feels pressure from them to eat a large portion of whatever they have prepared. However, this participant specified to the interviewer that she actively "tries not to feel guilty" about her eating behavior and really does not "regret" any of the choices she makes. Another participant said that she frequently indulges in sweets, a habit she feels has been influenced and maintained by her Dominican culture. A third participant said she frequently eats more than she wants to at home on account of the fact that she feels she must have cookies and other treats available there for her children. Finally, a fourth woman, talked about finding herself eating foods she does not really want to in order to try to please a coworker that frequently treats her to lunch. It is interesting to note that this participant, who is African American, stated that she feels particularly compelled to "please" her coworker on account of the fact that he is white.

Eating in Response to Dysphoric Feelings

Four participants described situations in which they had eaten something they wish they had not in response to variety of dysphoric feelings (See Table 14). One woman, who felt drained by a demanding job that did not satisfy her said in speaking about a choice to eat a hamburger from a fast food restaurant late at night saying that "I knew it [the hamburger] would fill my two needs: my hunger and my depression." Another woman who was feeling "hopeless" following the loss of a job and death of a sibling described a night when she felt "almost incapable of not eating ice cream". This same participant described another instance-that of eating more of a pie than she wanted to, as her way of "filling myself up because I'm lonely". Another participant spoke of eating an entire large bag of potato chips in response to the rage she was feeling towards her lover after a fight. Another participant talked about drinking more alcohol than she wanted in response to her grief over her mother's recent death.

Eating as Response to Physical Feelings

A few participants cited physical states including feeling "starved", "tired", and "craving" a specific food item as a sort of trigger to eating something they then later regretted (See Table 15). In speaking about how she responds to her cravings, one participant said: "I have a dialogue all the time with myself, whether the decision is the best decision for me. Sometimes it's louder, sometimes it's quieter, so if you're not listening you may miss it."

Food Viewed as a Reward or a Ritual

Finally, a few participants talked about instances of eating something they later wished they had not either because they viewed the food as a reward or as part of a ritual (See Table 16).

One participant described an instance where she felt she "deserved" a calzone because she was working late. Another participant wanted to treat herself to a Starbucks Frappuccino and pastry on account of having been asked to leave a training for work that she had planned to attend. One participant spoke about daily rituals that she associates with the consumption of food that she often ends up wishing she had not eaten, including a daily cocktail hour with her husband and eating fat free ice cream when she takes her medication nightly.

Experience of Consumption of Something they Wish they Had Not Eaten

In order to shed light on the psychological processes that underlie unhealthy eating behavior, participants were asked to describe one (or two if they were able) experiences in which they ate something that they later wished they had not. Participants were asked to articulate the specific thoughts and feelings they remembered having before, during, and after having eaten whatever it was that they had deemed a poor food choice.

Thoughts, Feelings, and Behaviors Preceding Consumption of Poor Food Choice

Participants described a broad range of thoughts, feelings, and behaviors that were present for them before making a choice that they later regretted having made (See Table 17). All these descriptions some degree of conscious awareness of the participant's imminent food choice, and in some cases, a significant degree of thoughtfulness about it as well.

Some participants described what they tell themselves before consciously making a poor food choice. One participant described an "ongoing dialogue" she has with herself about her food choices like this: "I have a dialogue all the time with myself, whether the decision is the best decision for me. Sometimes it's louder, sometimes it's quieter, so if you're not listening you may miss it". Two participants described making mental "deals" with themselves so to speak,

prior to engaging in eating, one woman saying she was “prepared to pay the price of eating later” and another that she would compensate later with more exercise.

Others described thinking that the choice they were about to make was not a good one, saying things like “I should be eating the fruit I packed instead”, “I knew it wasn’t going to make me feel better”, and “I know I shouldn’t be eating ice cream every night”. In a few cases, participants also described feeling resigned to their decision and in some cases making a conscious effort to not to dwell on it. One person said she didn’t “want to think about what [she] should eat”, while another said that her decision-making process had a “mechanical” quality to it. Another participant went as far as saying that she felt “discouraged that the decision was out of [her] hands.

Thoughts and Feelings of Pleasure during Consumption Poor Food Choice

When asked to describe their experience while eating something they later wished they had not, five of the 12 participants talked about feelings of pleasure (See Table 18). In describing gorging on an enormous piece of delicious lasagna one of her favorite diners, one woman said, "I’m just sitting there, having a blast. I like, I'm as happy as a pig in dookie". Another woman who said that the taste of the cookies in which she indulged overrode any feelings of guilt she might have otherwise experienced. Another participant found pleasure in overeating during cocktail hour, because signified pleasurable quality time with her husband.

Dissociation during Consumption of Unhealthy Food Choice

Four participants described dissociative kinds of experiences while eating something that they deemed to be a poor food choice (See Table 19). Two participants described feeling “numb” while another said that she felt “zoned out”. One woman who cited a time when she ate

a densely caloric fast food meal after work late one night, said that the profound numbness she felt while eating her food kept her from being able to experience any pleasure from the taste. This same participant said that in other instances of poor food choices, she actively suppresses her thinking so that her sense of guilt will not threaten to override the enjoyment of whatever she is eating. One woman said the following about she often experiences eating something she knows she should not be: "Sometimes I don't care. Sometimes, like the hell with it, I'm screwing up so royally who cares…just eat and shut up!"

Negative Thoughts and Feelings during and after Consumption of Unhealthy Food Choice

A few of the participants interviewed described some kind of negative affective or cognitive experience *during* consumption of a poor food choice (See Table 20). One woman felt so badly while eating a large deli sandwich that she experienced as "nasty", she said she had been thinking about regurgitating it while she was eating. Others described having had the experience of thinking that they "shouldn't" be eating whatever it was that they were eating or some version of internally disapproving of their own behavior as it was happening.

However, most of the participants experienced some degree of negative thoughts and emotions *following* their indulgence. One participant said she felt "angry, empty, and frustrated", and another that she felt "so screwed up by it [poor food choice]". Many of the participants expressed that they had also felt highly critical of themselves for what they had done. Five women said they internally questioned their behavior, three said that they felt immediate regret and or a sense of guilt over what they had consumed. In addition, six of the participants described having had an aversive physical reaction to whatever they had eaten. A

few of them described feeling stuffed, heavy, or bloated, while two others said that their food intake directly resulted in acute physical pain. One woman said she felt "tired", probably on account of the alcohol that accompanied her food intake and another said she was in a state of being "high off the food", immediately preceding having intensely painful digestive pains.

Thoughts and Feelings Representing an Effort to "Move On" from Unhealthy Food Choice

In the transcripts of five of the 12 participants interviewed, themes associated with an effort to "move on" following an unhealthy food choice emerged (See Table 21). A few of the woman talked about having learned over time that minimizing their sense of guilt is an important part of resuming sensible eating behavior. One woman, who experienced tremendous success in the study without any significant relapse said, "I don't believe I've ever regretted eating anything", and spoke about how she refrains from beating herself up over decisions. A few of the woman used phrases that suggested spoke to a sense of acceptance, with one woman saying she is aware that "what's done is done" following an unhealthy food choice and another saying that "it's reality that [she] won't always make healthy choices".

Three women spoke about ways in which they alter their behavior following a poor food choice, representing another form of "damage control". They said they either eat less later in the day or compensate by exercising more than they had planned to.

Beliefs about Cause(s) of Weight Loss/Weight Loss Maintenance Struggle

Beliefs about how Weight Regain could have Been Avoided

After talking about a relapse into unhealthy eating behavior, participants were asked to share their beliefs about how weight regain could have been avoided (See Table 22). Three of the women initially answered this question with the word "me" and then proceeded to explain how had they altered their thoughts and behaviors in certain ways, they may not have relapsed.

A few participants articulated their belief that had their been some kind of social support their lives, they would not have relapsed. Three women said that they thought that had they joined a weight loss group such as WW following the end of the study, they might have been able to maintain their weight loss. Other participants mentioned other forms of support that might have helped to prevent a relapse, such as going to therapy or having been held accountable for the food choices by someone else.

Some of the participants mentioned certain behaviors that, had they engaged in regularly, might have helped them avoid a relapse. These included having had a routine, having had a specific weight loss goal, having made healthier food choices, and having been able to exercise more. One woman said that "a distraction my destructive thinking" might have helped her avoid a relapse, while another said that had she been able to tell herself that "excessive eating is a punishment even if it feels good in the short-term", she may have been more successful at weight loss maintenance.

Emotional Problems Associated with Weight Issue

When asked about what may be the cause(s) of their ongoing struggle to maintain a healthy weight, 10 of the 12 participants who were interviewed talked about various emotional

issues that they believe to be, at least in part, a cause of their weight problem (See Table 23). Five women said that they tend to overeat in response to emotional problems including low self-esteem, unhappiness with their career, lack of social support and/or stress associated with intimate relationships and family. One woman, who spoke about having gained 100 lbs while going through a painful divorce in a foreign country where she had little social support, described eating as a coping mechanism for difficult feelings by saying:

> "Food seems to be the [coping mechanism] that is the easiest and seems the least [harmful], even though it's not, it seems the least harmful…whereas if you're shooting heroin into your veins you kind of know, you know, what you're doing, but with food you just sort of, you know everyone eats, so it's not as negative as it could be, so that has always been my kind of coping mechanism".

Another woman said she had somehow over time learned to "medicate" her feelings, particularly those of deprivation, with food. Another participant said that she believes that her excessive intake of alcohol in response to various forms of stress is a major contributor to her weight problem. Interestingly, two woman articulated their belief that they had an obsessive relationship with food and spent what they perceived to be, abnormal amounts of time thinking about it.

Love of Food/Personality Characteristics Associated with Weight Issue

Three participants cited their love of food or eating as one of the reasons for their weight problem. (See Table 24) Four participants implicated various perceived inadequacies in their personality as part of the issue. These included being "easily swayed", unmindful, impulsive, unable to follow through with intentions, not being introspective enough, and having a poor ability to focus. Indeed, an inability or lack of desire to focus on healthy eating also emerged as a theme when participants talked about the (often multiple) aspects of their weight issue.

Early Experience/Familial/Cultural Roots of Weight Issue

Five of the 12 participants interviewed traced the cause(s) of their weight issue, at least in part, to experiences they had had in childhood and/or to the cultural context in which they were brought up (See Table 25). One woman spoke about wanting to be "invisible" after being molested as a child and wondering whether or not this resulted in her difficulties with weight as an adult. Another woman traces her overeating behavior to the way in which she was fed as a child:

> "they used to smack my face when they were feeding me…there was always this thing where they would make me finish something I didn't want to finish…because they [parents] came from parents who were from the depression and you didn't waste any food...I guess they just felt that I needed to eat all that they were giving me to eat".

She went on to say that she often thinks that had she not been forced to eat more than she wanted to during this formative time in her life, she might not feel compelled to consume the quantities of food she eats as an adult. The participant quoted in the previous paragraph that said that eating was the "least harmful coping mechanism" she had, said she never learned healthy eating habits while she was growing up and moreover, feels that she received a lot of misinformation about healthy eating in her community. Another participant talked about how having been raised by overweight parents who led a very sedentary lifestyle contributed to her leading a sedentary lifestyle as an adult. Finally, another woman said that she wonders if growing up in a "disorganized household", in which there was little predictability, may be one of the root causes of her inability to moderate her food intake.

Biological/Medical Reasons for Weight Issue

Finally, six participants gave biological/medical reasons for why they struggled with their weight (See Table 26). These included having had children, metabolism changing with age and due to menopause, and having a medical condition that predisposes one to retain weight. The participant who grew up with overweight parents who led a very sedentary life answered this question tearfully, stating "sometimes you can't help what you are".

Case Examples: Zoe and Jennifer

The following case examples represent a summary of the salient themes that emerged across the entire interview for two of the study participants. The participants presented, Zoe and Jennifer, were selected based on their contrasting experiences of weight loss success in the study as well as their ability to articulate the thoughts, feelings, and behaviors that went along with them. Some quotes that were presented as part of the descriptions of the various categories earlier will reappear in association with either of these two cases.

The Case of Zoe

Zoe is a white female, a married working professional who was 58 years old when she joined the HLS. While she experienced a net loss of 6.7 lbs in the study, as is evidenced in Figure 2, that Zoe exhibited the greatest amount of weight loss between baseline and month 3 of the HLS and then subsequently gained weight up throughout the final 18-month time point. And while she was not officially weighed at the time of the interview, Zoe informed the investigator that she had continued to gain more weight since the end of the HLS.

Zoe spoke about her spoke very highly of her experience in the early part of the study and attributed most if not all of her early success in the study to the treatment condition to which she was assigned. She said the group "felt like a family" and that she felt in control because she was "doing what [she] was supposed to". Zoe stated that she felt unsupported in the latter part of her treatment and her description of her experience in the HLS as a whole was dominated by negative statements about how unfortunate it was that she had been assigned to her particular treatment condition.

Zoe stated that going an all-inclusive vacation marked the beginning of the end of her period of successful loss. When asked about her thoughts and feelings at that time, she said that she had decided prior to her vacation that she would eat and drink whatever she wanted and said that "I wanted to have fun and fun to me is food". She also stated that she found the point system she had to use for tracking her food intake very difficult, and that moreover, she "didn't care" how she would be eating on the upcoming vacation. Zoe reported that she stopped going to treatment groups entirely shortly following her return from her vacation.

When asked about incidents in which she finds herself eating something she wished she hadn't, Zoe said that while she tries not to feel guilty about what she has eaten, she frequently feels that she shouldn't have consumed something. She described daily rituals such as having cocktail hour with her husband and eating ice cream when she takes her medications, in which she engages, despite her feeling that they are probably too indulgent. She also stated that she believes she generally "drinks too much", which she views as an additional impediment to her weight loss efforts. However, Zoe also said that she generally enjoys the actual experience of these indulgences, even if she comes to regret them later, which she often does. Indeed, Zoe described her frequent experience of feeling "badly" or disbelief at how much she consumed.

Other times however, Zoe described feeling total abandon about her actions and she is the participant who was quoted earlier as saying: "Sometimes I don't care. Sometimes, like the hell with it, I'm screwing up so royally who cares…just eat and shut up!"

Zoe described her relapse as a gradual process, one that felt as though it snuck up on her. She stated feeling extremely unhappy with herself at the time, but despite this, also unable for the most part to reverse the course she seemed to be on. She then described engaging in a self-soothing behavior in which she told herself that she was "just having a rough patch" and that she would "eventually" go back to healthy eating. Zoe also disclosed that she joined another study that involved taking diet pills because she felt so desperate to get back on track. She said that she stopped taking them after a short while however, on account of the fact that she wanted to consume alcohol, which she could not do while on the pills.

When asked about what she thought were the causes of her weight loss struggle, Zoe spoke about her aspects of her family and upbringing as well as her own internal issues. She talked about growing up living a very sedentary lifestyle among parents who themselves were quite overweight. She also stated that her parents began to comment on her weight problem when she was fairly young, and that as a result, maybe she just doesn't "feel comfortable when [she's] not struggling". Zoe became very emotional and tearful during this last portion of the interview and poignantly conveyed her sense of defeat when she said, "sometimes one can't help what they are" and "maybe I feel I don't deserve to be beautiful, thin, and comfortable". This comment however was followed with more matter of fact statements that expressed a sort of rebelliousness, as if she was sick and tired of the entire conversation she was having with the interviewer, such as "sometimes other things in life are more important than healthy eating" and "sometimes I'm just sick and tired of listening to weight loss tips".

Zoe had a difficult time imagining how her relapse following her weight loss could have possible been avoided. Initially she stated that maybe had she joined another weight loss group after the 12-month treatment portion of the HLS had ended, she may not have gained back the pounds she had lost. She then stated that she was not really sure that there was a way to have avoided her relapse and that the fact of the matter is that she "gets blinders on" when she wants to eat.

The Case of Jennifer

The case of Jennifer is that of a single professional Latina woman who was 46 years old at the time she entered the HLS. Jennifer steadily lost weight from baseline through the 12-month time point, with a total net loss of 20.4 lbs over the course of the 18 months, after which she essentially maintained the same weight till the final18-month time point.

When asked to describe her experience in the study, Jennifer proudly reported that she had lost several pants sizes, but that she hoped to lose additional weight. She also stated that she was happy that she had not gained back any of the weight she had lost. Jennifer described being in the study as a "great" experience that "confirmed that losing weight is doable". When asked to speak about a time when she had difficulty losing weight or maintaining what she had already lost, she initially could not think of a time when this had been the case since she had starting losing weight in the study. Instead she taking out a picture from her wallet from a couple of years ago, when she had been severely obese, showing it to the interviewer and saying with tears was very determined about her weight loss. Jennifer then explained that she makes a concerted effort to not let her eating ever get out of control and that she understands that infrequent indulgences can be balanced out with more exercise later.

Jennifer however was able to cite a time in the last year when she experienced a minor setback in her weight loss effort. She explained that it had occurred when she went to another state to visit her sister and had wanted to eat more while she was away. As was the case with Zoe, Jennifer described having thought about what her eating behavior would be like when she went away before she left. She also stated, however, that she was also prepared to "make-up for eating on vacation" before she left as well. About her minor weight gain while spending the holidays with her sister, where she went from one party to the next, Jennifer stated, "It's not the end of the world, world's gonna keep on going".

When asked to describe a specific instance in which she ate something she wished she had not, Jennifer could not provide even one example. She stated that actively tries not to feel guilty about what she eats and therefore could not remember a recent time when she had this experience. She did however say that she routinely feels pressure to eat a lot whenever she is around her family. Jennifer said she tries her best to load up whatever vegetable dish her mother has prepared when she is at her parents' house, but that she also just accepts that she will have to eat some of whatever she has prepared when she is visiting them.

When asked about how she copes with times it may be hard to imagine going back to healthy eating, Jennifer stated adamantly that "I refuse to allow myself to think that way". She said she feels she has "control over [her] eating" and that "one day of poor eating isn't the end of the world". Jennifer hinted that perhaps this insight is, at least in part, due to her unsuccessful experiences with weight loss from the past, when she said she doesn't want to go back to "a viscous dieting cycle of starvation and binging". She then went on to say that she sets limits with "how far I'll allow myself to slip" and that she "knows when I've had enough of something".

Finally, Jennifer said that she feels it is her responsibility to "model control for [her] son" by having a healthy and balanced diet.

Jennifer stated that she attributes her difficulty maintaining a healthy weight over the last two decades with a turbulent relationship history. She became very emotional when speaking about this topic and asked that the interviewer turn off the tape before she talked about her past in more detail. As per Jennifer's request, the details of what she said have not been included in this section. When the interviewer asked Jennifer to talk about what she thinks has helped her succeed in her weight loss effort, she said she was a "show off". She then laughed and said that what she really means is that she truly likes the way she looks and feels and that this serves as a constant source of motivation for her.

Chapter 5: Discussion

Obesity is a serious and pressing health concern in the United States, with over 60% of American adults meeting criteria for being overweight or obese (Flegal et al., 2010). It is widely agreed that behavioral therapy is the most effective strategy for treating overweight and obese people (Wing and Hill, 2001). Behavior therapy imparts skills including self-monitoring of food-intake and physical activity, stimulus control, goal setting, and problem solving in order to help people restrict their caloric intake and increase their activity (Latner, 2008).

A significant issue with regards to weight loss is peoples' ability to maintain their weight loss after completing a successful intervention (Stunkard & Penick, 1979). The overall purpose of this study was to gain a deeper understanding of the process of a relapse or return to old eating patterns of overconsumption. In this vein, the current study set out to examine three personality factors that have been linked to disordered eating patterns. The relationship between weight regain (following success in a behavioral weight loss program) and the following three psychological factors: 1) emotion regulation, 2) impulsivity, and 3) aggressiveness, were examined by the analysis of participant responses on three self-report questionnaires as well as the material that emerged in the context of 12 qualitative interviews.

This discussion section will examine the significance of both quantitative and qualitative findings. Qualitative data will be considered in light of the study's core purpose, which was to gain a deeper understanding of the psychological factors associated with relapse in unhealthy eating patterns (and generally weight gain) following successful relapse in a behaviorally-oriented weight loss program. While the main psychological themes that were proposed to play a role in relapse, including difficulty with emotion regulation, impulsivity, and aggression will be addressed, so too will other prominent themes that emerged through the analysis of the interview

transcripts. Furthermore, disparities between quantitative and qualitative findings will be examined.

In addition, findings drawn from the cases of "Jennifer" and "Zoe" will be compared and contrasted, in an effort to illustrate the underlying dynamics that may play a role in the processes of both weight loss relapse and maintenance. Finally, this section will also address the limitations of the current study as well its relevance for treatment of overweight and obese individuals. Finally, areas for future research will be suggested.

Difficulty with Emotion Regulation and Relapse

Previous studies have suggested that negative emotions, in some people, lead to increased eating, a phenomenon known as emotional eating (Bruch, 1973). As discussed earlier, theorists have posited a variety of as to why some people eat more in response to negative affect, despite the fact, increased autonomic emotional activity has been linked to the release of appetite-inhibiting hormones such as catecholamine and to a variety of gastric changes similar to those that are involved in satiety (Blair, Wing, & Wald, 1991).

In the current study, participants' overall weight regain (in pounds) across the 18-month period of the Healthy Living Study was not significantly associated with self reports of difficulty with emotion regulation as measured by the DERS. Only one significant negative association was found between the 48-72 week time points. There are a number of possible explanations for this finding.

The first and most straightforward of these is that of the limitation of the size of the current study. Indeed, the relatively small sample size (n=31) of the study had limited statistical power, rendering it less likely that significant results would be yielded. Another possibility is

that the sample in this study was, to an extent, self-selecting for people who are somewhat adept at regulating their emotions and therefore do not generally engage in emotional eating. In other words, on account of the the fact that in order to be eligible for the study, participants had to have achieved *some* level of weight loss success, it is conceivable that these individuals would generally be more aware of and in control of their affective experiences.

Part of the construct of emotion regulation is the ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions and to employ situationally-appropriate strategies in order to modulate emotional responses as desired in an effort to meet individual goals and situational demands (Gratz & Roemer, 2004). Indeed, controlling impulsive behaviors in order to achieve personal goals or desired outcomes (in this case, weight loss) is something that participants in this study, who had already achieved some level of weight loss, probably know, to some extent, how to do.

Finally, it is possible that difficulty with emotion regulation does not play a central a role across individuals in the process of relapse as the investigator had initially suspected. This would be in line with a recent review study that looked at experimental findings of people's eating behavior in response to negative emotions (Macht, 2008) and reported that in 40% of experimental studies, people ate more after experiencing negative affect, whereas in almost 40% of the studies, they ate less (with no significant change observed in the remaining 20%). Therefore, perhaps, the DERS, while a reliable measure of problems with emotion regulation, is not a reliable predictor of behavior that will result in a significant enough relapse into old patterns of behavior that would lead to weight regain.

Unhealthy Eating Behavior/Overeating/Relapse: A response to interpersonal or situational stress and the unpleasant emotions that accompany it

Despite the largely nonsignificant relationship between DERS scores and relapse in terms of actual pounds gained, within the context of the interviews, unpleasant emotions, arising in response to some form of interpersonal or situational stress were the most *frequently cited cause* of unhealthy eating and/or repeated indulgent behaviors that often resulted in a relapse following weight loss. Indeed as hypothesized, eating behavior, in many of the examples provided by participants, served as a form of emotion regulation.

Earlier in this paper, several theories as to why people engage in emotional eating were put forward. One theory (Heatherton & Baumeister, 1991) was that emotional eating allows a person to escape from negative self-awareness, allowing them to focus on the stimulus (food) instead of more significant or threatening feelings. Indeed, interviews revealed that for most of the participants, eating or binging on highly caloric food serves, at least at times, as a diversion from negative or uncomfortable feelings such as sadness, anger, fear, or frustration. The fact that many of the participants demonstrated that they possess quite a bit of insight about the role their emotions play in their poor food choices, does not negate the fact that they continue to struggle with this type of emotional eating.

Another theory of emotional eating (Lehman &Rodin, 1989) is based on the notion that eating increases, at least momentarily, the experience of positive emotions. According to this perspective people eat when they are feeling badly in order to counteract the effects of their negative affect with more pleasurable experiences derived from eating food that is pleasing in flavor and/or smell. Indeed, nearly half of the sample interviewed reported positive feelings associated with eating foods that they deemed to be poor choices in terms of their weight loss

goals. This finding supports the theory that that people engage in eating with the specific goal of having an experience of pleasure or other positive feelings, a behavior that would likely have a tendency to increase at times when a person finds themselves flooded with negative affect. It also lends additional support to a study by Macht and Simons (2000) that found that self reports of motivation to eat female subjects was increased during periods of negative emotion and that subjects reported a heightened tendency to cope with these negative emotions through eating.

However, while some people's experience corroborated this theory, another theme that emerged from the interviews is that eating in response to their dysphoric feelings does not always produce a pleasant experience. In fact, some people reported lack of enjoyment of poor food choices, though this seemed to be fueled largely by the negative thoughts that accompanied their eating decisions. One participant captured her inability to enjoy her food powerfully when she stated: "I wanted to throw it up".

Another important finding from the interviews was that for a third of participants, the predominant experience of eating in response to negative feelings is that of dissociation. Dissociation can be thought of as ranging from such common experiences as daydreaming, absorption, and lapses in attention to more pathological failures to integrate affect, perception, cognition, and behavior (Lyubomirsky et al., 2001). While the role of dissociative tendencies has been widely studied with regards to its role in eating disorders, primarily bulimia nervosa, it has only been recently examined in nonclinical samples such as the one in the current study. Lyubomirsky et al. (2001) found a significant link between dissociative tendencies and abnormal eating attitudes and behaviors in a group of nonbulimic women, even after controlling for other aspects of psychopathology and negative experiences, including a history of sexual abuse, emotional distress and suicidality, and impulsive behaviors. Moreover, they found that in

occasional (nonclinical) binge eaters, a combination of reported negative affect and dissociative experiences preceding a binge was associated with the highest levels of abnormal eating. While the current study did not examine participants' history of dissociative tendencies, the theme of being numb/mindless during unhealthy eating episodes emerged saliently enough in the interviews, to suggest that they may play a key role in relapse after weight loss.

Impulsivity and Relapse

In the current study, participants' overall weight regain (in pounds) across the 18-month period of the Healthy Living Study was not significantly associated with self reports of impulsivity as measured by the Barratt Impulsiveness Scale-II (BIS-II). The same was true when weight regain was broken down and assessment by individual segments of time.

Currently the most widely agreed upon definition of impulsivity in the personality literature is as follows 1) the inclination to choose small, immediately available rewards over larger delayed rewards, and/or 2) the tendency to respond quickly without forethought and/or attention to possible consequences of one's behavior (Evenden, 1999). Given that this definition of impulsivity is highly descriptive of the kinds of behaviors thought to be implicated in relapse, how can we understand the role that impulsivity may play in weight regain in light of these quantitative findings of the current study?

Once again, as with the results from the DERS, there is a chance that the relatively small sample size (n=31) of the current study resulted in rather low statistical power rendering it unlikely that significant results would be yielded in support of the investigator's hypothesis.

Another issue to consider is that high rates of impulsivity in obese people have been associated with less weight loss during treatment and increased drop-off from weight loss

programs. As was proposed with regards to the DERS findings, it is possible that the sample in the current study was self-selecting for individuals who would not score significantly on a measure of impulsiveness (Jonsson, Bjorvell, Levander, & Rossner, 1986 & Hjordis & Gunnar, 1989). In other words, perhaps the individuals for whom impulsiveness truly presents an obstacle to weight loss or weight loss maintenance, were those that were not even eligible for this study owing to the fact that they did not achieve the minimum (5%) weight loss required.

Another important point to consider is the extent to which self-reports of impulsivity in people who overeat are reliable. One study found impulsivity to be higher in obese women versus normal weight controls as measured by a computerized behavioral task, but found no difference between groups as measured by self-report, suggesting that some people are either unaware, of or unwilling to accurately report, their tendencies (Nederkoorn et al., 2006). Therefore, another possible explanation for why no significant association was found between self-reports of impulsivity and weight regain in this study, could be that the self-report did not accurately capture what it intended to.

Finally, one must consider the findings in light of the specific instrument that was used, BIS-II. While the scale intends to measure the multifaceted construct of impulsivity, which was discussed in the introduction of this paper, it is conceivable that it does not capture all the elements of impulsivity that may play a role in obesity and disordered eating behavior. The scale assesses six first-order factors (attention, motor, self-control, cognitive complexity, perseverance, and cognitive instability) and three second-order factors (attentional impulsiveness, motor impulsiveness, and nonplanning impulsiveness) (Patton et al., 1995).

The BIS-II fails to assess sensation seeking, a concept first introduced as venturesomeness by Eyseneck and Esyseneck (1977), which is thought to be related to sensitivity to reward and

punishment and has since been cited as a facet of impulsivity linked specifically to obesity (Mobbs et al., 2010). However, while sensation seeking may have eluded capture by the BIS-II, we should not assume that it is not a factor at play in relapse, a possibility supported by the fact that the theme of eating something as a reward for an accomplishment or as a compensation of sorts for some kind of predicament, came up for a number of participants' in their interviews. Moreover, in terms of sensitivity to reward, three participants said they believed they enjoyed or loved food more than most normal weight individuals, and that this was the main cause of their weight problem.

Despite the lack of significant findings between self-reports of impulsivity and relapse in weight gain, aspects of the multifaceted personality trait of impulsivity emerged from the interviews when participants' spoke about food choices that they later regretted. Some expressed the lack of self-control they felt they had in certain situations, in which they ate something that they wished they had not. In some cases, participants described situations in which they felt they just *had* to have something or just *couldn't* help themselves, reflecting the notion of impulsivity as comprising both the inclination to choose small, immediately available rewards over larger delayed rewards, and/or the tendency to respond quickly without forethought and/or attention to possible consequences of one's behavior (Evenden, 1999).

Often times, the transgressions were fueled by an intense emotional experience, such as in the case of the woman who was so angry at her partner she stormed out of her apartment to the bodega nearby to buy a bag of potato chips which she feverishly consumed in one sitting. Given what we have learned thus far about the participants' nearly uniform tendency to frequently and *knowingly* eat in response to negative feeling states, we must be careful not to undervalue the role of a person's emotional state in terms of their susceptibility to impulsive behavior. In fact,

qualitative findings from this study go as far as to suggest that people who struggle with their weight may routinely gloss over the role that their feelings play in their eating behavior. The investigator could not help but double and triple check her audio files when she heard, on several occasions, a participant report that they do not engage in "emotional eating" and then some minutes later, make a direct reference to eating something on impulse in response to feelings of sadness, anger, or some other kind of negative affect.

Impulsivity or The Power of the Situation?

The individuals in this study achieved a moderate level of weight loss success, and on the whole, were people whose thoughtfulness about their eating behavior came through saliently in their interviews. That is, they were generally able to recount what/how/and why their behavior was what it was. Indeed, participants demonstrated a consistent ability to articulate their thoughts and feelings as to what lead them to behave as they did, even when their behavior was directly opposed to their weight loss and/or weight loss maintenance goals. Despite the variance in their success/relapse rates, they were all able to identify and reflect upon the internal and external factors that most strongly influenced their behaviors and ultimately, the trajectory of their weight.

Aside from emotional factors, the qualitative data suggested that people who struggle with their weight are very prone to the power of their external environment and that they frequently understand their poor eating behavior as a result of their immediate circumstances. Indeed, many of the participants cited one more instance of being "stuck" (often by their own doing) in some kind of momentary or extended situation that resulted in a poor food choice or a full-fledged relapse into the kind of unhealthy eating that resulted in weight gain. For some,

these situations involved some kind of holiday/trip/or extended stay at a location where they did not have immediate control over the kinds of food that were available to them. In one case, as with the participant who went on an all-inclusive cruise vacation, this meant she could not control the kinds/amounts of foods by which she was surrounded. For another, living abroad in a language emersion program with a prepaid meal plan loaded with calorie-rich foods, left her feeling she had very little options in the way of not gain weight she had recently lost.

It seems that these participants were experiencing a sort of "cue-reactivity", that is, a response to a specific cue (their favorite foods for no additional cost) in their environment. These examples from participants who were, by their own account, highly motivated to maintain their weight loss, highlight the role that external cues may play in relapse in addictive behaviors in which relapse is a significant issue, such as eating disorders, food craving, and gambling (Brandon et al., 2007). Indeed, one would not advise their newly abstinent from alcohol friend to visit a bar or club, would they? Perhaps, as health providers, we do overweight and obese individuals a disservice by not promoting the same kind of avoidance of high-risk situations until a time when more adequate coping mechanisms have been established? This thinking is in line with Litman (1986), who understood relapse as a process that takes place within the individual and one which involves an interaction between a perceived high-risk situation, his/her available coping skills, and the perceived effectiveness and applicability of these coping mechanisms to the threatening situation. Thus, he posited, relapse is most likely to occur in situations in which the individual feels that they do not have adequate coping mechanisms with which to handle the situation in which they find themselves.

For other participants, seemingly benign changes to their daily routine resulted in a perceived lack of control over the kinds of food choices they had available to them. For

example, there was the participant who implicated her limited dinner options when she worked late and many restaurants were already closed, in her relapse. Another participant cited the behavioral changes (lack of sleep and time to cook) that went along with changes in her daily schedule as problematic. She found that overextending herself between a very demanding job, a sick parent, and an unsupportive partner, left her craving sugary alcoholic drinks to get through her day as opposed to sensible nutritious meals. Of course, in both these examples, the role of emotional factors cannot and should not be ignored, despite the fact that the two participants treated them as secondary in their relevance.

Moments of Impulsive Behavior Fuel Overwhelming Feelings of Powerlessness over Eating

Marlatt and Gordon's cognitive behavioral model of relapse espouses the idea that relapse is not necessarily a discrete event, rather that there is way in which one progresses through a cognitive process in which they proceed from a lapse (a "minor" transgression) to a relapse (a "major" transgression). The model states that whether or not an individual will progress into a full relapse following a lapse depends on their cognitive response to the initial lapse (George & Marlatt, 1989). Dichotomous or "all or nothing" thinking results in the experience of a lapse as a catastrophic event which then gives rise to thoughts such as "I've blown it" or "I fell off the wagon, in which case a lapse is more likely to lead to a relapse (Brownell et al., 1986 & Brandon et al., 2007).

If we consider the role of impulsivity through the lens of this model of relapse, it becomes clearer how the accumulation of separate acts of impulsive eating often leads to a full-fledged return to old behavior. Indeed, this pattern was strongly reflected in participants' descriptions of periods of unhealthy eating and/or relapses in weight gain, most participants conveyed feelings

powerlessness and loss of control. Much in line with Marlatt's theory, when it came to their prolonged lapses or relapses, they used language that conveyed to the investigator the sense that that they had felt truly defeated by their experience. Some of the most poignant descriptions of relapses were as follows "I felt out of control", "I lost motivation", "I felt powerless", and "I gave up". It is interesting to note the difference in the quality of the language here as compared with the earlier descriptions of just an instance of impulsivity that resulted in one discrete food choice. Participants' accounts of their lapses had much more of a defeated quality and long gone quality to it, as one would expect following a more difficult to reverse trend, than a one-off or weekend binge. Later, a comparison of the cases of Jennifer and Zoe, will help to illustrate how critical the cognitive patterns and ensuing behaviors following a lapse are for people who are trying to lose weight and maintain it.

Aggression and Relapse

In the current study, participants' overall weight regain (in pounds) across the 18-month period of the Healthy Living Study was not significantly associated with self reports of aggression as measured by the Buss and Perry Aggression Questionnaire. The same was true when weight change was examined in relation to both the Hostility and Anger subscales of the Aggression questionnaire. Analyses did however reveal a significant negative association between the 24-48 week time segment of weight regain and the Hostility Subscale of the questionnaire.

In considering these findings, it is once again important to consider how the study design may have impacted the results yielded by the study. As suggested in reference to findings from the DERS and the Barratt Impulsiveness Scale-II, the relatively small sample size (N=31) in this

study may have limited its ability to produce significant findings.

An alternative explanation for the lack of significant findings is that the aggression questionnaire used in this study mainly focuses on outward expressions of aggression including Physical Aggression, Verbal Aggression, and Anger (in the form of angry outbursts), and therefore may not adequately assess difficult with anger processing (Buss & Perry, 1992). Findings from one study that was reviewed suggest a negative correlation between inhibition of aggression and percentage of weight loss after 3 and 4 years in a group of severely obese patients (Hjordis, et al., 1989). And although subjects in the study had undergone with jaw fixation, a controversial dental procedure that binds a patient's upper and lower teeth forcing them to consume a liquid diet, the findings do suggest that the more one must inhibit their aggression the less likely they are to succeed at weight loss. Therefore, it is possible that if people struggle to process their anger, they may also have difficulty being aware of it and accurately reporting it on a questionnaire. It then follows that it is possible that for these people, the very act of eating, and more often than not *over*eating, may be one of the only ways they actually express their anger.

Finally, given that researchers have speculated that women may generally underreport their aggressive feelings and fantasies and that the great majority (93.5%) of participants in the current study were female, it is possible that the data from the aggression questionnaire reflects a trend towards underreporting (Bornstein, 1990).

As for the significant negative association found between the 24-48 week months segment of weight regain and the Hostility Subscale of the questionnaire, perhaps this is a reflection of participants' "reactive aggression", a type of aggression that has been linked with impulsive behavior by theorists (Seroczynski et al., 1999). Indeed, reactive aggression, characterized by a "hostile, angry reaction to perceived frustration" and generally thought of as short-term and

volatile, may have played a role in participant's relapse, in that it may have lead to a series of discrete lapses that snowballed into a more full-fledged slip back into unhealthy eating.

The Role of Anger

Some researchers have hypothesized that people who struggle with overeating and consequently controlling their weight may experience difficulties in the processing of their aggression and that over consumption in such individuals may represent an effort to neutralize feelings of aggression that are psychically threatening (Ryden and Johnsson, 1989). While the investigator had hoped to understand more about the relationship between aggressive impulses, overeating, and relapse, findings from the qualitative interviews seem to have yielded more questions than answers.

Anger did emerge as a predominant theme for two of the participants who were interviewed. Both these women recounted instances in which they consciously experienced feelings of rage towards a particular person or situation, which then led them to consume something they wished they hadn't. However in both these cases, the role of anger, in the sense of *reactive anger,* defined earlier as a hostile, angry reaction to perceived frustration, seemed mainly confined to discrete lapses as opposed to prolonged relapses. Moreover, the woman who cited eating in response to angry feelings reflected that her experience of being angry was a conscious one, as opposed to an unprocessed or conscious one.

Regardless of both these points, it stills seems reasonable to extrapolate from the findings to suppose that people who routinely respond to their anger by indulging in unhealthy foods are probably at a higher risk for relapse than are those who find alternative methods to coping with their angry feelings. Unfortunately, the reality is that measuring eating behavior as a direct

response to aggressive feelings that an individual seems to possess no other way to express, is a challenging task. This issue will be addressed at the end of this chapter in the section on directions for future research.

What we can learn from the Cases of Zoe and Jennifer

The cases of Zoe and Jennifer were presented in the previous chapter in an effort to convey the very divergent experiences of people who maintain weight loss and those who relapse. The weight trajectories of the two case examples throughout the 72-week long HLS convey two different outcomes. Zoe's case, of initial weight loss followed by weight gain, illustrates what the obesity literature has reported time an again, that most people who successfully lose weight in behavioral modification programs end up regaining at some point after treatment ends (Pinto et al., 2007). Jennifer's case, on the other hand, is one of weight loss that, while it tapers off, is fully maintained over time. What can we learn from examining the differences between these two women, who bravely shared their stories about their emotional and taxing struggle to live healthier lives in bodies in which they feel comfortable?

One very salient theme that emerged Zoe's narrative was that of externalization or more specifically, how social and environmental factors have contributed to her weight problem. First, she imbued the treatment condition to which she was assigned in the HLS with significant power over her weight loss outcome. Indeed, she spoke at length about the lack of support she had felt in her treatment group and directly correlated this to her relapse following having lost quite a bit of weight in the earlier part of the study. Zoe also talked about external factors that she feels are to blame, at least in part, for her lifelong struggle with her weight, including unsupportive and sedentary parents. Finally, she frequently referenced how her environment had impeded her

weight loss effort, such as the time when she gained weight on an all-inclusive vacation or how married she is to certain rituals in her life such as her nightly medication and ice cream or excessively snacking during cocktail hours with her husband.

Jennifer, on the other hand, seemed to attribute significantly less importance to her the circumstances of her environment. In fact, it seems that the treatment condition to which she was assigned in the HLS was so insignificant, that she did not even disclose it to the interviewer. While she acknowledged the inherent challenges of disruptions to her normal routine or surroundings, such as going on vacation to visit her sister or having to eat dinner at her parents' house, she did not seem to be nearly as affected by them as Zoe was. On the contrary, when Jennifer talked about these situations in which it is more difficult for her to eat or exercise as she normally would, she focused on the way she adapts her behavior so as not to sabotage her weight loss goal, for example eating mostly vegetables at her parents' house or exercising more following an indulgent vacation.

Locus of control has become an increasingly studied psychological construct among obese populations (Mills et al., 1994). Developed by Rotter, Seeman, and Liverant (1962), within the context of Rotter's (1954) social learning theory, locus of control refers to the belief individuals have in the amount of perceived control they have over their lives and how this belief then influences their behavior. The cases of Jennifer and Zoe raise the issue of how one's perceived sense of what/who is controlling their behavior, their environment (external locus of control) or themselves (internal locus of control) may impact their ability to successfully lose and maintain weight. Indeed, results from the analysis of these two cases suggest that this may be an important construct to examine when attempting to understand the role of different psychological processes that are implicated in relapse phenomena.

Another important difference between Zoe and Jennifer's accounts of their weight loss effort is the way in which each of them understands their experience of indulgence or a minor relapse, in which they regain some weight that had been lost. Zoe reported that she very frequently feels guilty about what she has eaten, whereas Jennifer could not even identify one instance of having experienced regret over a food choice. By the same token, Zoe seems to perceive herself as someone who is always struggling to make good choices about her food intake, and perhaps on account of this, often seems to find herself teetering on the edge of giving up her effort entirely. One gets the sense with Zoe that her expectation is that she will eventually disappoint herself, so why not fast forward to that ultimate ending and "give up", as she herself said she repeatedly does. Jennifer, on the other hand, seems to be able to intervene in some way, either by increasing her exercise regimen or "eating more salads" as she says, in time that her behavior does not lead to a significant relapse.

Perhaps what is moderating the different processes that are taking place in these two women has something to do with what we have learned about the role of affect regulation with regards to eating behavior and or the impact of dichotomous thinking that Marlatt and his colleagues so importantly brought to our attention. Of course, we must also consider that there are probably many variables at play affecting both these issues, such as how long someone has been struggling to lose weight, what kinds of social supports are available to them, and how biological factors and processes are either impeding or supporting their effort. To summarize, while there is no doubt much to be learned by examining the contrasting experiences of those who succeed in maintaining weight loss versus those who do not, such as Zoe and Jennifer, the tremendously challenging endeavor of weight loss continues to be extremely complex. Finally, it is important to remember that these are just twocase studies and are not representative of all

successful weight losers/unsuccessful weight losers.

Limitations of the Current Study

The mixed methods approach used in this study allowed for a varied sampling of participants' experiences. Quantitative personality data gathered through self-report measures was augmented by transcripts from semi-structured interviews with a subset of participants, providing a complex and varied examination of the topic at hand. Indeed, participants' personal experiences came alive in the interviews and helped to shed light onto the complex nature of relapse, not just the quantifiable behaviors with which it's associated, but also the more subtle psychological and cognitive processes that accompany it. However, despite this potential advantage, there were also several significant limitations to this study that must be mentioned.

The first limitation of the current study was the relatively small sample size (n=31) that comprised the quantitative analysis. Given that in order to be eligible for the study, participants had to have lost at least 5% of their initial weight and had to consent to being contacted for future research, the pool from which to recruit participants was fairly limited. Moreover, because the participants were recruited from a weight loss treatment study in which 90% were women, the current sample was also made up of predominantly women. Thus, results cannot be generalized to men.

In addition, while the qualitative approach used in the study allowed for in-depth exploration and analyses of participants experiences' with weight loss and relapse, the relatively small number of participants interviewed (n=12) also means that the results cannot necessarily be generalized to a population of overweight and/or obese individuals at large. Furthermore, the random selection of 12 participants who completed the interviews were all women. Therefore, the qualitative findings from this study cannot be generalized to men.

Another limitation of the qualitative approach is that is relies purely on participants' subjective recollections and reporting of their experience. Retrospective accounts are subject to distortions and/or failures in memory as well as either conscious or unconscious attempts to represent themselves in a certain fashion or cast a particular light on their experience. Moreover, since study participants had completed a behavioral weight loss treatment study it is unknown to what extent psycho-educational material from the treatment groups or research staff or personal stories they heard from other participants affected their account or memory of their own unique experience.

Moreover, the investigator did not control for the treatment group to which participants had been assigned, meaning that that the sample was comprised of a random assortment of participants from all three conditions of the HLS. Therefore, it is not known to what extent group assignment in the HLS affected participants' outcome measures in terms of their weight loss, self-report measures, or the information they provided in qualitative interviews. The current study design did not provide a way for the investigator to account for how individual group differences such as this one may have affected participant results.

In addition, another limitation of the study's design was that the investigator did not collect the current weights of the participants at the time of the current study. The reason for this was that study participants were recruited from different cohorts within the HLS and therefore completed the HLS at different times. Thus there were varying amounts of time between when their tenure in that study ended and when they were recruited into the current study, creating a situation in which actual relapse vs. relapse *potential* would be difficult if not impossible to measure. However, the downside to not having recorded participants' weights at the time of this study was that the investigator did not have access to their weight trajectories beyond the 18-

month span of the HLS, data that could have been interesting to examine in light of participants' qualitative accounts.

Finally, two additional limitations concerning the sample in this study must be considered. The first is the somewhat self-selecting nature of the sample. That is, participants who agreed to be in this study were individuals who were willing, for very minimal compensation, to give their time to provide information that might help to further psychologists' understanding of the process of weight loss and subsequent relapse or maintenance. These individuals may have different perceptions of their weight loss experience than those who were unwilling to engage in this type of further exploration. Secondly, given that the sample was drawn from participants who volunteered to participate in a year-long weight loss study, there is a possibility that they may possess a higher level of motivation for weight loss than then the general population of overweight and obese individuals. . It is unknown to what extent this potentially varying level of motivation affected the kinds of experiences they reported or the way in which they responded on self-report measures.

Clinical Implications and Directions for Future Research

Findings from the qualitative component of this study underscore the role that problems with affect regulation play in people's ability to lose weight and maintain their weight loss. The participants in this study were, for the most part, highly motivated to lose weight and well aware of the behavioral changes they needed to implement and upkeep in order to do so. However despite this, they demonstrated a significant lack of coping mechanisms to address the emotional experiences, particularly anger and sadness, which accompany the ups and downs of the human experience. As a consequence of this, they often found themselves lacking the tools necessary to

weather the vacillations of both their attitudes and beliefs about their ability to succeed in their weight loss goal as well as the reality of normal weight fluctuations.

Thus, one important avenue for future research is to learn how to identify people with affect regulation difficulties *prior* to their enrollment in evidence-based treatments for weight loss. This would allow healthcare clinicians to begin to make predictions as to who will be most likely to be susceptible to relapse. More research into the personality characteristics associated not only with obesity, but also with resistance to change, might be helpful in laying the groundwork for such an undertaking. Indeed, it seems that being overweight, while it may in some cases reflect a certain biological proclivity, does not have to be a lifelong condition. While we know what helps people lose weight, psychologists continue to be tasked with understanding more about who is particularly prone to relapse.

What would naturally then follow from this, of course, would be research into what types of interventions would be most effective in helping people identify the ways in which their difficulty with emotion regulation is sabotaging their weight loss efforts and then provide them with alternative coping strategies that do not evolve excessive caloric consumption. Much in the same way that mental health clinicians emphasize the importance of relapse prevention in substance abuse treatment, so must psychologists, dieticians, and medical doctors pay increased attention to what happens after someone loses weight.

Moreover, the current study's finding that people with weight issues may be highly susceptible to the cues in their environment, lends additional support to the notion that people who have recently lost weight successfully may need to follow some of the same guidelines for relapse prevention that are routinely made for people with other addictive behaviors, such as drug and alcohol abuse. Perhaps initial avoidance of "high-risk" people, places, and emotional

states (if feasible), would prove as instrumental to long-term maintenance of healthy behaviors as it does in the case of those who abuse substances.

Another important issue that became clear to the investigator in the course of her research as well as through the interviews was that many individuals struggle with their own ambivalence as to whether or not they can ever truly succeed in their weight loss endeavor and whether or not it is actually worth the effort. In many cases, this ambivalence continues long after people have joined a weight loss program and sometimes even after they have achieved moderated success. In this vein, research into how interventions, such as Motivational Interviewing, developed by William Miller and Stephen Rollnick, that provide the therapeutic space for people to contemplate and resolve their ambivalence about behavioral change, can help people who struggle with relapse after weight loss, is warranted. While it is safe to assume that people who enroll themselves in a weight loss program, even those coerced by a doctor or loved one, have some intrinsic motivation for change, current evidence-based weight loss treatments do not appear to provide adequate space for participants to truly consider the pros and cons of embarking on often very challenging changes to their lifestyle. Studies that examine the impact Motivational Interviewing interventions either before or during weight loss studies may represent a potentially very promising new direction in the field.

Finally, one area that also demands much more attention are the ways in which race, culture, socioeconomic status, and level of education intersect to either promote or discourage lasting change in individuals who participate in weight loss programs. We know that an individual is the sum of his/her genetics, biological disposition, cultural background, and upbringing; to name only a few of the factors that coalesce comprise the complexity of the human experience. It therefore follows that research into how these multiple aspects of a person

affect their ability or sense of their ability to cope with the obstacles that threaten weight loss maintenance, might provide tool clinicians additional tools in intervening to prevent relapse.

In conclusion, there are several important directions that future research in obesity and specifically with regards to the issue of relapse could take. Qualitative findings from the current study suggest that, among other things, a variety of psychological issues including difficulty with emotion regulation, unprocessed feelings of aggression, and susceptibility to the power of situational cues present significant challenges to weight loss maintenance for some individuals. Ultimately, the optimization of weight loss treatment relies to an extent, on researchers' ability to continue to explore these and other factors that make it so hard for people to live the healthy lives they seem to want so desperately to live.

Appendix A: Tables and Figures of Quantitative Results

Table 1.
Internal Consistency Alphas for Study Measures

Scale Total	Alpha
DERS	.88
Aggression	.86
Anger Subscale	.78
Hostility Subscale	.79
Impulsiveness	.82

Note: DERS=Difficulty with Emotion Regulation Scale, (Gratz, 2004).

Table 2.
Means and Standard Deviations for Participant Weight at Study Assessment Timepoints

	N	*M*	*SD*
Baseline Body Mass Index (kg/m2)	31	36.52	5.29
Baseline weight in pounds (lbs)	31	207.33	33.88
12 weeks weight in pounds (lbs)	31	194.54	32.85
24 weeks weight (lbs)	31	188.98	31.59
48 weeks weight (lbs)	31	187.85	32.92
72 weeks weight (lbs)	31	190.77	34.80
Weight change at 12 weeks (lbs)	31	-12.78	6.46
Weight change at 24 weeks (lbs)	31	-18.35	9.88
Weight change at 48 weeks (lbs)	31	-19.48	10.60
Weight change at 72 weeks (lbs)	31	-16.56	14.00
% Weight change at 12 weeks (lbs)	31	-6.22	2.90
% Weight change at 24 weeks (lbs)	31	-8.84	4.08
% Weight change at 48 weeks (lbs)	31	-9.46	5.11
% Weight change at 72 weeks (lbs)	31	-8.07	6.85

Table 3.
Paired sample t-tests: Differences in percent of weight change weight between pairs of time points (n = 31)

Compared Time Points (Months)		Percent Weight Change Time A		Percent Weight Change Time B				
Time A	Time B	*M*	*(SD)*	*M*	*(SD)*	*t*	*df*	*P*
BL	12 wks	00.00	(0.00)	-6.23	(2.90)	11.96	30	< .001
12 wks	24 wks	-6.23	(2.90)	-8.85	(4.08)	6.02	30	< .001
24 wks	48 wks	-8.85	(4.08)	-9.47	(5.12)	0.90	30	.38
48 wks	72 wks	-9.47	(5.12)	-8.07	(6.85)	-2.29	30	.03

*p < .05. **p < .01
BL=Baseline

Table 4.
Means and Standard Deviations for Study Measures
(n=31)

Scales	*M*	*SD*
Anger Subscale	12.29	4.46
Hostility Subscale	18.51	5.74
Aggression	59.55	14.04
Impulsiveness	56.25	8.64
DERS	65.19	13.43

Table 5.
Associations between Impulsivity, Aggression, and DERS Scales (n=31)

	r (p)		
	Impulsivity Scale	Aggression Scale	DERS Scale
Impulsiveness Scale	--	--	--
Aggression Scale	.10 (.60)	--	--
DERS Scale Total	.30 (.10)	.44 (.01)*	--

**Correlation is significant at the 0.05 level (2-tailed) when p < .05.*
Note: DERS=Difficulty with Emotion Regulation Scale, (Gratz, 2004).

Table 6.
Associations between Age, Baseline BMI & Baseline Weight and Height with Percent Weight Loss (n=31)

	r (p)			
% Weight Change	Age	Baseline BMI (kg/m2)	Baseline Weight (lbs)	Baseline Height (in)
12 weeks	-.01 (.974)	.18 (.344)	.13 (.479)	-.02 (.915)
24 weeks	.07 (.709)	.10 (.593)	-.01 (.966)	-.13 (.480)
48 weeks	-.06 (.739)	.24 (.180)	.09 (.648)	-.21 (.248)
72 weeks	-.06 (.763)	.25 (.185)	.08 (.680)	-.21 (.250)

Table 7.
Analysis of Variance for Race and Percent Weight Change for Study Sample (n=31)

% Weight Change	*F (df, df)*	*p-value*
12 weeks	.53 (2, 28)	.60
24 weeks	.45 (2, 28)	.64
48 weeks	1.16 (2, 28)	.33
72 weeks	1.83 (2, 28)	.18

Table 8.
F-Test for Sex and Weight Loss for Study Sample (n=31)

% Weight Change	Male	Female	Total		
	M (SD)	*M (SD)*	*M (SD)*	*F (df, df)*	*p-value*
12 weeks	-6.04 (1.65)	-6.24 (2.98)	-6.25 (2.90)	0.01 (1, 29)	.93
24 weeks	-11.18 (4.22)	-8.68 (4.10)	-8.85 (4.98)	0.69 (1, 29)	.41
48 weeks	-11.16 (11.24)	-9.34 (4.83)	-9.47 (5.12)	0.23 (1, 29)	.64
72 weeks	-8.87 (10.37)	-8.01 (6.82)	-8.07 (6.85)	.03 (1, 29)	.87

Table 9.
Associations between Slope of Weight Loss between time points and Impulsiveness Scale, Aggression Scale, Aggression Subscales, and DERS Scale (n=31)

	r (p-value)				
Slope of Weight Change per Monthly Time Period	DERS	Impulsiveness Scale	Aggression Scale (Total)	Aggression Scale (Anger subscale)	Aggression Scale (Hostility subscale)
Segment Slope					
BL – 12 wks	-.13 (.49)	.11 (.55)	-.19 (.32)	-.11 (.56)	-.04 (.82)
12 wks - 24 wks	-.06 (.77)	.05 (.81)	-.01 (.96)	-.02 (.91)	.09 (.62)
24 wks - 48 wks	-.03 (.86)	.22 (.24)	-.14 (.49)	-.039 (.84)	-.38 (.04)*
48 wks - 72 wks	-.40 (.03)*	-.13 (.47)	-.05 (.79)	-.09 (.64)	.06 (.76)

*Correlation is significant at the 0.05 level (2-tailed)
Note: DERS=Difficulty with Emotion Regulation Scale, (Gratz, 2004).
BL=Baseline

Table 10. Z Scores on Self-Report Measures for Subject #2 (Jennifer) and Subject #9 (Zoe)

	Z-Scores		
	DERS	Aggression Scale	Impulsivity Scale
Subject 2	.21	-1.53	-.17
Subject 9	-1.56	-.96	-1.53

Note: DERS=Difficulty with Emotion Regulation Scale, (Gratz, 2004).

Figure 1.
Average Weight Change over 18-months for Participants in Current Study (n=31)

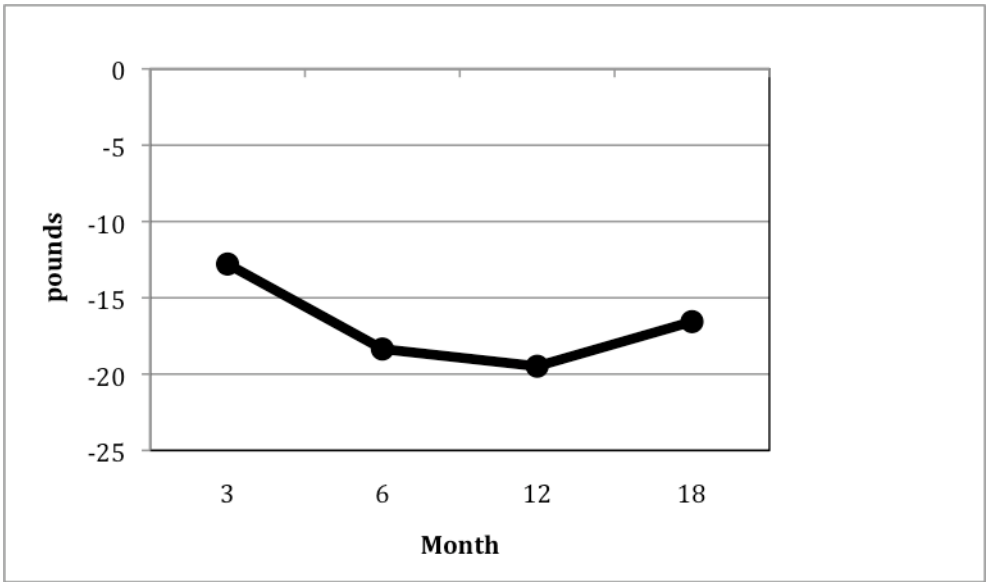
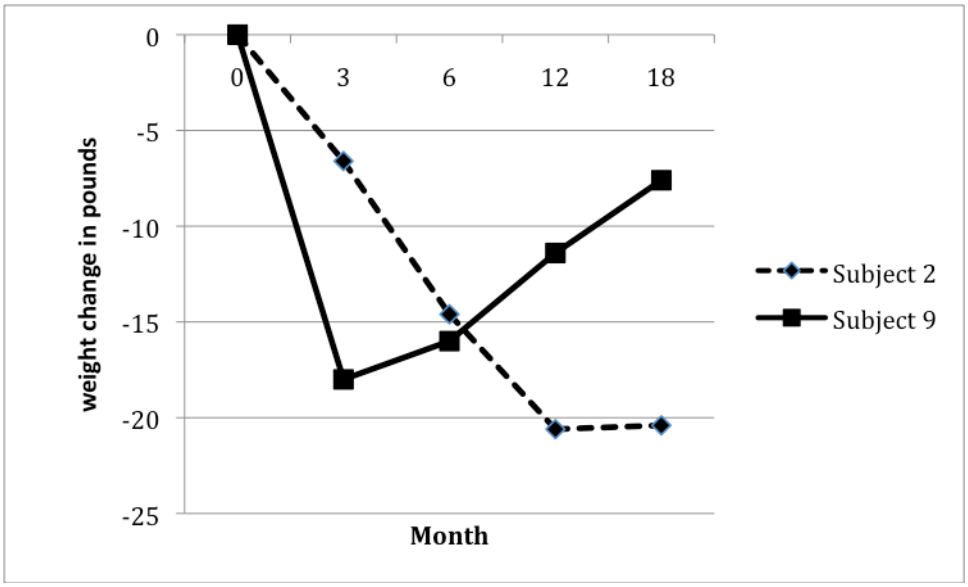


Figure 2.
Weight Change over 18-months for Participant #2 (Jennifer) and Participant #9 (Zoe)



Appendix B: Study Measures

Barratt Impulsiveness Scale II

DIRECTIONS: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and put an X on the appropriate circle on the right side of this page. Do not spend too much time on any statement. Answer quickly and honestly.

0	0	0	0
Rarely/Never	Occasionally	Often	Almost Always/Always

1	I plan tasks carefully.	0	0	0	0
2	I do things without thinking.	0	0	0	0
3	I make-up my mind quickly.	0	0	0	0
4	I am happy-go-lucky.	0	0	0	0
5	I don't "pay attention."	0	0	0	0
6	I have "racing" thoughts.	0	0	0	0
7	I plan trips well ahead of time.	0	0	0	0
8	I am self controlled.	0	0	0	0
9	I concentrate easily.	0	0	0	0
10	I save regularly.	0	0	0	0
11	I "squirm" at plays or lectures.	0	0	0	0
12	I am a careful thinker.	0	0	0	0
13	I plan for job security.	0	0	0	0
14	I say things without thinking.	0	0	0	0
15	I like to think about complex problems.	0	0	0	0
16	I change jobs.	0	0	0	0
17	I act "on impulse."	0	0	0	0
18	I get easily bored when solving thought problems.	0	0	0	0
19	I act on the spur of the moment.	0	0	0	0
20	I am a steady thinker.	0	0	0	0
21	I change residences.	0	0	0	0
22	I buy things on impulse.	0	0	0	0
23	I can only think about one thing at a time.	0	0	0	0
24	I change hobbies.	0	0	0	0
25	I spend or charge more than I earn.	0	0	0	0
26	I often have extraneous thoughts when thinking.	0	0	0	0
27	I am more interested in the present than the future.	0	0	0	0
28	I am restless at the theater or lectures.	0	0	0	0
29	I like puzzles.	0	0	0	0
30	I am future oriented.	0	0	0	0

Aggression Questionnaire (Buss & Perry, 1992)

Instructions:
Using the 5 point scale shown below, indicate how uncharacteristic or characteristic each of the following statements is in describing you. Place your rating in the box to the right of the statement.

1 = extremely uncharacteristic of me
2 = somewhat uncharacteristic of me
3 = neither uncharacteristic nor characteristic of me
4 = somewhat characteristic of me
5 = extremely characteristic of me

1. Some of my friends think I am a hothead
2. If I have to resort to violence to protect my rights, I will.
3. When people are especially nice to me, I wonder what they want.
4. I tell my friends openly when I disagree with them.
5. I have become so mad that I have broken things.
6. I can't help getting into arguments when people disagree with me.
7. I wonder why sometimes I feel so bitter about things.
8. Once in a while, I can't control the urge to strike another person.
9. I am an even-tempered person.
10. I am suspicious of overly friendly strangers.
11. I have threatened people I know.
12. I flare up quickly but get over it quickly.
13. Given enough provocation, I may hit another person.
14. When people annoy me, I may tell them what I think of them.
15. I am sometimes eaten up with jealousy.
16. I can think of no good reason for ever hitting a person.
17. At times I feel I have gotten a raw deal out of life.
18. I have trouble controlling my temper.
19. When frustrated, I let my irritation show.
20. I sometimes feel that people are laughing at me behind my back.
21. I often find myself disagreeing with people.
22. If somebody hits me, I hit back.
23. I sometimes feel like a powder keg ready to explode.
24. Other people always seem to get the breaks.
25. There are people who pushed me so far that we came to blows.
26. I know that "friends" talk about me behind my back.
27. My friends say that I'm somewhat argumentative.
28. Sometimes I fly off the handle for no good reason.
29. I get into fights a little more than the average person.

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item:

-----1----------2----------3----------4----------5-------

almost never	sometimes	about half the time	most of the time	almost always
(0-10%)	(11-35%)	(36-65%)	(66-90%)	(91-100%)

_____ 1) I am clear about my feelings.

_____ 2) I pay attention to how I feel.

_____ 3) I experience my emotions as overwhelming and out of control.

_____ 4) I have no idea how I am feeling.

_____ 5) I have difficulty making sense out of my feelings.

_____ 6) I am attentive to my feelings.

_____ 7) I know exactly how I am feeling.

_____ 8) I care about what I am feeling.

_____ 9) I am confused about how I feel.

_____ 10) When I'm upset, I acknowledge my emotions.

_____ 11) When I'm upset, I become angry with myself for feeling that way.

_____ 12) When I'm upset, I become embarrassed for feeling that way.

_____ 13) When I'm upset, I have difficulty getting work done.

_____ 14) When I'm upset, I become out of control.

_____ 15) When I'm upset, I believe that I will remain that way for a long time.

_____ 16) When I'm upset, I believe that I'll end up feeling very depressed.

_____ 17) When I'm upset, I believe that my feelings are valid and important.

_____ 18) When I'm upset, I have difficulty focusing on other things.

_____ 19) When I'm upset, I feel out of control.

_____ 20) When I'm upset, I can still get things done.

_____ 21) When I'm upset, I feel ashamed with myself for feeling that way.

_____ 22) When I'm upset, I know that I can find a way to eventually feel better.

_____ 23) When I'm upset, I feel like I am weak.

_____ 24) When I'm upset, I feel like I can remain in control of my behaviors.

_____ 25) When I'm upset, I feel guilty for feeling that way.

_____ 26) When I'm upset, I have difficulty concentrating.

_____ 27) When I'm upset, I have difficulty controlling my behaviors.

_____ 28) When I'm upset, I believe that there is nothing I can do to make myself feel better.

_____ 29) When I'm upset, I become irritated with myself for feeling that way.

_____ 30) When I'm upset, I start to feel very bad about myself.

_____ 31) When I'm upset, I believe that wallowing in it is all I can do.

_____ 32) When I'm upset, I lose control over my behaviors.

_____ 33) When I'm upset, I have difficulty thinking about anything else.

_____ 34) When I'm upset, I take time to figure out what I'm really feeling.

_____ 35) When I'm upset, it takes me a long time to feel better.

_____ 36) When I'm upset, my emotions feel overwhelming.

Interview

(Introduction)
"I'm going to be asking you some questions about your experience in the last 18 months as a participant in the Healthy Living Study at Baruch College. You do not need to answer anything you do not want to and we can stop the interview at any time, should you choose to. Please let me know if you have any questions at any point or you need a break. Ok, let's begin".

1. I'd like to start by hearing about what you're doing in life right now, in terms of work, school, family, hobbies, and so forth.

    a. Which aspects of your life do you most enjoy?
    b. Which ones do you least enjoy and why?

2. When you think about your involvement in this weight loss program what comes to mind?

3. Overall, how do you think you've done over the past 18 months in terms of your weight?

4. Sometimes when people successfully change a behavior (such as eating too much) for a certain period of time, there comes a time when it becomes increasingly challenging to maintain the change and they find themselves slowly and sometimes seemingly unknowingly reverting back to old patterns…I'd like you think about when you may have had such an experience yourself in the last 18 months… Can you pinpoint a moment in time, after which you'd already achieved your weight loss goal that you consider to be the moment when you "lost control" over maintaining your weight loss and began to regain weight?

5. I'd like you to bring yourself back to that time, when it seemed that you were losing a grasp on the control you felt you had over your eating behavior and for you to explain to me what that was like for you.

    a. Describe to me, in as much detail as possible, the time period leading up to the change…

        i. Do any moments from this pre-slip time stick out for you? What do you remember thinking and feeling at those moments.

    b. Describe a moment in time during this period in which you ate something you wished you hadn't eaten…

        i. What were you thinking and feeling in the moments prior to eating it?
        ii. What were you thinking and feeling after eating it?

iii. Do you recall the next instance a similar thing happened, when you ate something you wish you hadn't? Again, please tell me, what were you thinking and feeling in the moments prior to eating it? What were you thinking and feeling after eating it?

c. Was there a moment that you can recall in which you had the feeling that it was "too late" to go back to the kind of behaviors that had allowed you to lose and maintain your weight loss earlier?

i. What do you remember feeling at that moment?
ii. Do you think that realization impacted your eating behavior from that moment forward? If so, how?

6. What do you imagine was the cause(s) for your weight gain relapse?

7. What (or who?), if anything, do you imagine could have reversed the trend of your behavior during that time?

8. Are there aspects of your personality that you imagine contributed to your relapse in old behaviors? If so, tell me about them and how specifically they may have played a role in your reverting back to old behaviors.

Appendix C: Tables of Codes

Table 1. Hope and Structure Provided by Study
Helped her stick to a plan
Felt responsibility to study
Study fostered compliance
Got her back on track
Study helped her stay focused
Felt in control because she was doing what was expected of her
Glad she had opportunity to make her weight a priority
Study confirmed that losing weight is doable
Study was great experience
Felt hopeless about weight issue before study
Feels study saved her life
Really enjoyed participating in study
Happiness
Very happy to participate in study
Grateful for having participated in study

Table 2. Social support Provided by Study
Grateful for friends she made in weight loss group
Missed supportive group environment
Camaraderie of group
Treatment group felt like a family
Felt research staff was very welcoming and nonjudgmental
Felt group was very supportive

Table 3. Information Learned in Study
Gained practical information from study
Being aware of food choices
Learned that losing wasn't as difficult as maintaining
Listened to what the group leader said
Most valuable part was learning new skills
Study taught her how to make informed decisions about food
Feels she learned a lot
Study showed her that maintaining your weight is a life long process
Reminded her of her eating habits from youth
Came to accept that it's normal for one's weight to fluctuate within a 5 lb range
Was an eye opening experience/revealing
Study shed light as to why past weight loss efforts had been unsuccessful
Realized she'd been misinformed about how to loose weight before study

Table 4. Positive Feelings and Beliefs about Study "Performance"
Started out doing well in study
Pleased with her success in the study
Is proud of herself for seeing the study through till the end

Happy she hasn't gained any weight back
Joined a gym while in study
Felt she was thinking more while in study
Group meetings helped her feel more aware
Eating healthier
Exercise had major impact on ability to lose weight during study
Was losing the weight she was supposed to lose
Lost several pant sizes
Lost more than 30 lbs.
Lost about 30 lbs in study

Table 5. Negative Feelings and Beliefs about Study "Performance"
Wants to lose some additional weight than lost in study
Transition to another weight loss group felt insurmountable
Wasn't as successful as she would have liked to have been
Experienced a failure to stay connected to group
Felt group was condescending
Felt group ended prematurely
Wanted to lose more weight than she did in study
Didn't reach her weight loss goal
Lost motivation during study, but still able to maintain initial loss
Lost sight of her goals during the study
Doesn't know why she has always been unsuccessful at in a weight loss group treatment
Realized that the older one gets the harder it is to undo habits
Believes that menopause prevented her from achieving her goal
Attributes discontinued weight loss progress to interruption in exercise routine
Blames group leaders for her failure to succeed with her weight loss
Feedback about her progress at in treatment group impacted her
Relapsed as result of her treatment condition
Hard to maintain weight when she was home recovering from surgery
Associates difficulty with tracking food with not losing weight
Loss of favorite exercise instructor at gym hindered weight loss efforts
Weight loss became more difficult after she was in a car accident
Attributes relapse to combination of things
Has a hard time keeping promises to herself
Wonders if issue with her apt took precedence over maintaining her weight
Relapse in study not as severe as in the past
Didn't realize she'd relapsed for as long as she did
Experienced time as going by very quickly
Thought she was eating as she should be
Isn't aware of impact of what she eats on her weight

Table 6. Change of Context/Routine
Went on a trip
Was in a situation in which she couldn't exercise as normally would
Bad eating habits returned when her routine changed

Lost support of weight conscious friends at work
Went on a cruise
Decided she was going to eat and drink whatever she wanted on upcoming all-inclusive vacation
Wanted to enjoy eating more on vacation
Had no control over available food
Eating healthy on weekends is a challenge
Holidays
Was working more
Started gaining back weight a few months after study ended
Was working late hours at job
Found the treatment group weight loss system difficult to follow
Altered eating schedule due to physical therapy sessions
Made unhealthy choices while hosting visitors from abroad
Threw herself into work as diversion from relationship issues
Was traveling out of state frequently to visit sick relative

Table 7. Behavioral Changes associated with Unhealthy Eating/Relapse
Exploring new food vendors
Started eating a lot of sweets
Frequently skipped meals
Attributes weight gain to drinking alcohol
Started eating out a lot when planning meals became too difficult
Doesn't weigh herself daily as she used to
Started drinking alcohol daily
Wasn't doing anything to counteract weight regain
Stopped attending treatment group meetings shortly after vacation
Stopped planning her meals after the study ended
Started having outdoor drinks with friends when weather warmed up
Abandoned habits formed during study
Stopped loosing weight when she stopped tracking food intake
Made unhealthy dinner choices when working late
Went back to therapy
Lost access to her gym
Views not tracking food intake as main reason for relapse
Gave herself permission to eat

Table 8. Physical/ Physical Health Factors associated with Unhealthy Eating/Relapse
Going through menopause
Wasn't exercising enough
Didn't exercise due to fatigue from work
Has difficulty adhering to exercise regimen
Stopped exercising midway through study due to an injury
Being stationary at home
Being confined to her home made it hard to structure her eating
Lost ability to exercise due to an injury

Remembers feeling her skin got looser from loosing weight, making her appear older

Table 9. Emotional Factors Associated with Unhealthy Eating/Relapse

Although aware she was turning to food for comfort, she couldn't stop
Affected by death of loved one
Affected by her child's emotional crisis
Was under a lot of stress at work
Reacted strongly to 9/11
Completely lost control over her eating around her divorce
Was dealing with mother's illness
Annoyed that she couldn't find a class she liked at her gym
Felt ridiculed at treatment group meetings
Felt frustrated about weight regain
Stressed about upcoming trip
Was upset things were taken away from her home (she was mandated to clear out apt-she's a hoarder)
Wonders if death of close family member contributed to weight regain
Stress associated with a romantic relationship
Food is response to anxiety
Felt disrespected by partner
Felt unheard by partner
Lost emotional security
Felt fearful about the future
Felt "untethered" by loss of a sibling
Attributes development of bad eating habits over time to parents' death
Had no one to talk to about issues in her life
Sought comfort in food when she was upset
Felt sad about wasted weight loss effort
Felt sad about inability to maintain weight loss
Felt depressed
Felt lonely
Felt angry
"Stuffs emotions with food"
Lost sense of financial security
Felt guilty at start of relapse
Got tired of feeling guilty
Was hard to see herself looking older
Gets obsessed with certain foods
Tried to block out guilty feelings
One poor choice made her feel as though future healthy choices wouldn't count
Became harder and harder to see past bad eating habits
Felt like she was on never-ending rollercoaster of changing habits
When she's eating to "fill herself up" because she's lonely
Felt lack of incentive to monitor food without supportive group
Feels she can't act until she's very fed up with her weight
Acts impulsively at times

Table 10. Feelings of Loss of Control Associated with Spiraling into a Relapse

Felt she was sabotaging herself
Felt out of control
Lost motivation
Felt powerless
Doesn’t remember what was going on for her at the time
Felt she wasn't thinking
Was mindless at that time
Gave in/up
Felt she could still eat what she wanted to eat even though she wasn't exercising
Constantly struggles with weight
Loss of personal possessions may be linked to weight regain
Isn’t sure what was going on
Became unmindful of "me"
Forgets positive feelings associated with healthy eating
Felt she had no control over events in her life
Felt she'd lost her healthy eating habits
At some point she was no longer conscious that she'd lost her healthy eating habits
Didn’t care how she'd be eating on upcoming vacation
Lost control over eating at breakfast
Remembers being aware of regaining weight but not thinking about how to take control

Table 11. Negative Feelings associated with Unhealthy Eating/Relapse

Gaining weight is discouraging
Experienced treatment group as too impersonal
Regretful about eating pattern
Feelings shifted between sadness, guilt, and optimism depending on eating habits
Was probably upset about her weight regain at the time
Feels as though going back to healthy eating is difficult
Very unhappy with herself
Knew that reality would set in after her vacation
Felt it had been easier to lose healthy eating habits than it had been to gain them
Felt she'd be at this weight for the rest of her life
Feels overwhelmed by amount of weight she wants to loose.
Feeling like she can't hide behind her summer clothes
Wonders if she'll go back to healthy eating
Fears she may choose to "punish" herself with poor food choices
Was afraid that her unhealthy eating might go on forever
Didn’t know when she would be able to return to healthy eating
Feels she's having trouble maintaining weight loss whenever she makes a poor food choice
Feels maybe it's ok to allow herself to feel bad and eat poorly

Table 12. Getting back on Track after a Relapse

Thought she would never be out of control again
Sets limits with how far she'll allow herself to slip

Knows when she's had enough of something
Feels she must model control for her son
Talks about desire to loose weight with friends who also struggle with their weight
Eventually goes back trying to lose weight
Tells herself she's having a rough patch
Tells herself she'll eventually go back to healthy eating
Joined another weight loss study involving diet pills
Decided she needed to stay healthy so she could take care of ill mother
Reduced her alcohol intake
Started eating breakfast
Thought about not wanting to be big
Woke up one day and forced herself to start trying to loose weight again
Told herself what she should and shouldn't be eating
Considered joining WW again
Focused on what she could eat, rather than on what she couldn't
Started acting like "an adult"
Feels able to go back to her healthy eating routine
Immediately loses any weight gained during after vacation or holidays
Tries hard not to let her eating get out of hand
Felt determined to succeed in weight loss
Felt she couldn't allow herself to have a significant relapse
Tried to exercise to offset heavy eating
Didn't want to beat herself up over weight regain
Prepared to "make-up" for vacation eating upon return
Refuses to allow the feeling that she can't go back to healthy eating
Never thought it would be impossible to go back to healthy eating
Has always been up and down with her weight loss
Knew she'd be able to go back to planning healthy meals when she got home after vacation
Was aware of how she should be eating
Thought about changing behavior when she no longer had excuse
Viewed relapse as non-catastrophic
Doesn't want to be on a viscous dieting cycle of starvation and binging
Doesn't feel that staying focused on weight loss goal has been a challenge for her

Table 13. Social/Cultural Pressures to Eat
Feels pressure to eat a lot with family
Treated to lunch by a coworker
Felt obligated to go along with restaurant choice of coworker who was paying for meal
Ordered meal based on what her coworker wanted her to have
Accepts she'll have to eat whatever is available when visiting her parents
Sees her culture (Dominican) as promoting eating sweets
Can be challenging to maintain healthy eating within her home

Table 14. Eating in Response to Dysphoric Feelings
Felt bad about her craving
Upset over fight with partner

Had urge to physically hurt partner
Felt very angry
Was upset about recent conversation with her partner
Was feeling down about her mother who'd recently died
Felt hopeless about her future
Wasn't in the mood for the restaurant her coworker picked
Feeling fed up with work
Imagined food would fill her two needs: hunger and depression
Recognized how empty she felt
Equates poor eating with temper tantrums from her childhood

Table 15. Eating as Response to Physical Feelings
Was starving
Felt urgency to eat
Feeling tired
Too tired to cook
Craved an unhealthy choice she had made in the past

Table 16. Food Viewed as a Reward or a Ritual
Planned to enjoy what she was going to eat since she'd been eating well lately
Felt she deserved calzone because she was working late
Wanted to treat herself after having gotten "kicked out" of a training
Felt she hadn't made a bad food choice in a very long time
Was working late so, she could eat from whatever restaurant was open at the time
Eats fat free ice cream almost every night
Looked forward to daily cocktail hour with husband
Happy with herself that she hadn't spent money window shopping

Table 17. Thoughts, Feelings, and Behaviors Preceding Consumption of Poor Food Choice
Has ongoing dialogue with herself about her food choices
Can sometimes talk herself out of eating something
Knew she'd go back to weight loss plan after her holiday
Eats light before knowing she'll eat a lot later
Looking forward to enjoying herself on her holiday
Told herself she'd paid for her holiday and should enjoy herself
Told herself to be careful not to eat too much on her trip
Was thinking about another half cookie she'd seen in the cookie box
Thought about how good cookies were
Felt she had to have the cookies
Feeling full from meal
Thought she should eat fruit she'd packed
Saw Starbucks and thought about having a Frappuccino
Thinks about what she's going to eat
Looked forward to cocktail hour
Knows she shouldn't be eating ice cream every night
That she would chosen a healthier meal if other restaurants had been open

Thought she had some free time to kill
Felt discouraged that choice was out of her hands
Understood why she was making her food choice
Felt her choice was the easiest
Felt resolved to make that choice
Decision making process felt mechanical
Wanted to find an affordable dish on restaurant menu
Wanted a light meal
Knew that food wasn't going to make her feel better
Thought she'd probably eat more than she planned on
Prepared to pay price of eating later
Didn't want to think about what she should eat
Wasn't thinking about how she might feel afterwards
Didn't consider whether or not her emotional state was affecting her food choice
Didn't analyze her food choice

Table 18. Thoughts and Feelings of Pleasure during Consumption Poor Food Choice
Feels good
Didn't allow eating to cause her emotional turmoil
Enjoyed herself while she ate/experienced food to be very good
Good taste of cookie overrode feelings of guilt
Enjoyed the quality time (while eating) with her husband
Enjoys ice cream
Was thinking food was delicious and she wanted to enjoy it
Happy

Table 19. Dissociation during Consumption of Unhealthy Food Choice
Felt numb
Wasn't thinking about what she was eating
Suppresses thinking so guilt won't override enjoyment of food
Numbness affects her enjoyment of food
Watching TV (being distracted) helped her enjoy hamburger
Mindless
Was zoned out
Doesn't want to hear what conscious is telling her

Table 20. Negative Thoughts and Feelings during and after Consumption of Unhealthy Food Choice
Frequently doesn't enjoy what she eats
In the back of her mind, she knew she shouldn't be eating a hamburger
Wanted to regurgitate food
Felt she was wasting money
Internally questioned her behavior
Didn't want to eat what she was eating
Thinking food was nasty
Upset that she was forcing herself to eat something to make someone else happy

Immediately regretful after eating
Feels stuffed/heavy/bloated
Regrets eating if she gets sick after
Feels guilty about food choices
Feels like a failure
Feels badly
Felt sad about not having an alternative coping mechanism
Disappointed in self for not being satisfied with less
Relieved the pie was finished so she wouldn't have to eat more
Was in a food daze
Felt empty
Felt angry
Felt frustrated
Wonders how she'll loose the weight she just gained
Physical pain from overeating
Wonders if she'll ever change
Was aware that eating wasn't going to fill her needs
Knew she shouldn't have had the pastry
Sometimes can't believe she ate so much
Felt disgusting for eating something she didn't want to eat
Felt so "screwed up by it"
Thought that frappuccino wasn't enough
Often thinks food wasn't as good as she'd thought it would be
Wouldn't have bought hamburger if new restaurant wasn't on way home
Feels tired (b/c alcohol accompanied food)
Sometimes doesn't care about how much she has eaten

Table 21. Thoughts and Feelings Representing an Effort to "Move On" from Unhealthy Food Choice

Tries not to feel guilty about eating
Feels one day of poor eating isn't end of world
Feels she has control over her eating
Understood that indulging could be balanced out with more exercise later
Accepts reality that she won't always make healthy choices
Doesn't think she's ever regretted eating anything
Believes she never regrets choices because she's mindful of making them
Believes her personality is one that never looks back
Tries not to feel guilty about what she has eaten
Has learned not to beat herself up over what she's eaten
Compensates by eating less or exercising longer afterwards
Aware that what's done is done
Didn't feel too guilty because she hadn't eaten much that day
Thought about what she'd eaten and decided she wouldn't eat anything else for rest of the day
Can block out guilty feelings if she tries hard enough
Considers every day a new opportunity for eating well
Has internal dialogue about needing to change future behavior

Questions her behavior
Parents herself
Remains conscious about her feelings about her behavior
Thought about what she'd eaten and decided she wouldn't eat anything else for rest of the day

Table 22. Beliefs about how Weight Regain could have Been Avoided

Tells herself that excessive eating is a punishment even though it may feel good in short-term
Having own desire to look a certain way or maintain health
Herself, "me"
Had she had a support system
Had she gone to therapy
Having had a routine
Had she specific goals regarding weight
Maybe had she gone to a group like WW after study, she may have not re-gained weight
Had she made different choices, she may not have re-gained weight
Had she kept healthier foods in her fridge, she may not have re-gained weight
Not allowing trying new foods to destroy eating plan
If she hadn't been in a car accident
Had she been held accountable by someone
Had she had a distraction from her destructive thinking
Can’t imagine how weight regain could have been avoided

Table 23. Emotional Problems Associated with Weight Issue

Feelings of deprivation
Obsessions with certain foods
Learned to medicate self with food
Abnormal preoccupation with food
Stress associated with romantic relationships/marriage
Has a hard time staying focused on her goals
Being unhappy at work
Sometimes she doesn't have willpower
Wonders if she might be an emotional eater
Emotional problems
Negative feelings about self
Maybe she doesn't feel she deserves to be beautiful, thin, and comfortable
Eating is a coping mechanism for difficult feelings
Her emotions
Both weight gain and weight loss are result of her emotions
Generally, both weight gain and weight loss are result of her emotions
Relationships
Choice of romantic partners
Gained 100 lbs during period she was considering a divorce
Lack of social support
Stress associated with work
Stress associated with lack of clear life goals
Frustration around not being able to achieve certain goals

Stress associated with familial responsibilities
Eating appears to be the least harmful coping mechanism she has
Thinks her weight gain is sometimes from stress rather than eating
Gains weight from consuming excessive alcohol when under emotional stress
Low self-esteem
Didn't want to be attractive after her divorce
Bitterness following her divorce
Fearful about losing weight after being obese for so long
Had nothing else to do but eat
Obsessed with food whether she's thin or heavy

Table 24. Personality Characteristics/Lifestyle Choices Associated with Weight Issue
Doesn't like to exercise
Sometimes other things in life are more important than healthy eating
Likes to eat
Loves food
Has interest in food network shows on TV
Believes her enjoyment of food is main reason for weight issue
Sometimes she just doesn't want to think about healthy eating
Lack of vanity led her not to take her of herself
Difficulty with focusing may contribute to weight problem
Impulse to try new things
Easily swayed
Sidetracked by other issues/tasks to focus on weight loss
Inability to follow through with her intentions (especially to exercise).
Not mindful
Consequence of decisions that she's made in her life
Feels she's not very introspective
Maybe she doesn't feel comfortable when she's not struggling
Doesn't make herself a priority
Doesn't generally think about why she struggles with her weight

Table 25. Early Experience/Familial/Cultural Roots of Weight Issue
Past
Came from disorganized household
When she was a toddler, she was forced to eat
Has never had structure in her life
Parents were overweight
Lived a very sedentary life growing up
Felt unsupported by parents when watching weight as a child
Family history of addiction
Mother was addicted to food
Didn't learn healthy eating habits as a child
Has received a lot of misinformation about healthy eating
Doesn't want to be noticed due to childhood molestation
Has always struggled with her weight

Table 26. Biological/Medical Reasons for Weight Issue

Thinks brain is wired differently (from people w/o weight issues)
Metabolism changed at a certain age
Having had children
Body was unable to sustain excessive exercise that allowed her to stay thin when she was younger
Part of issue may be medical (pituitary tumor)
Having quit smoking
Believes part of her issue may be genetic
Sometimes one can't help what they are
Menopause

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