LIFE TRIGGERS, SUSTAINING MECHANISMS AND SUCCESSFUL WEIGHT LOSS: HOW ARE THEY RELATED?

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ABSTRACT

Although the majority of obese and overweight individuals successfully lose weight only a minority maintain weight loss in the long term. This thesis, through a mixed model methods approach, examined the factors which reinforced healthy behavior change in a group of obese and overweight individuals and assessed the factors which underlined sustained behavior change in the minority of individuals who successfully maintained at least 10% of their initial weight loss. In particular, the thesis focuses on the role of life events in triggering behaviour change and the impact of sustaining conditions in maintaining this change in the long term.

Study 1 was a quantitative study. Members of a commercial weight loss program \( N = 1093 \) were invited to participate in the study through an online advertisement. The aim of the study was to examine participants' different weight patterns, based on their weight history, and to assess whether these patterns were explained by participants' weight and demographic characteristics. The results showed that weight histories could be categorized into 5 independent patterns which were: a) weight cycling with overall increase, b) weight cycling with initial weight stability, c) weight cycling with return to baseline, d) weight loss and e) gradual gain. Concerning participants' demographic and weight characteristics, results also revealed significant differences between the different weight patterns. In addition, obese and overweight individuals indicated significant differences in their weight histories.
Based on their weight histories, and in particular, their percentage of weight loss, participants could be also categorized into those individuals who regained some or all of their weight loss (unsuccessful participants; \(N = 592\)) and those who managed to maintain at least 10% of their initial weight loss and which they maintained for a minimum of one year (successful participants; \(N = 431\)). Study 2 then focused on these two groups and aimed to examine the role of life events and sustaining conditions in behavior change and behavior maintenance. Variables such as participants’ health status and experiences with consultants were also included in the analysis. Results revealed significant differences between the two groups with successful participants indicating more life events, less benefits from their unhealthy behavior, more choice over their healthy behavior and more psychological beliefs about causality which were related to their behavioral solutions. Also, successful participants were more positive concerning their health status and experiences with their consultants.

Study 3 applied a within subjects design which aimed to examine the differences within the successful group between Time 1 (Their heaviest) and Time 2 (sustained weight loss) in regards to their health status and sustaining conditions of disruption of function, reduction of choice and solutions for their increased weight. The results showed that maintaining weight loss was linked to an improved health status, more choice and perceived benefits over the healthy behavior and an endorsement of an improved and healthier lifestyle.
Study 4, using a qualitative approach, aimed to further explore whether maintenance of behavior was related not only to the sustaining mechanisms but also to a shift in identity and perception of self. 10 successful individuals were invited to participate. Using IPA results indicated that weight loss maintenance is related to an identity shift from a previously restrained individual towards a liberated person who tends to redefine themselves based on new qualities apart from their weight.

Overall, this thesis indicates that the minority of individuals who are finally successful in losing and maintaining weight loss are more likely to experience some life events central to their goals and identity. These events enhance maintenance when they are accompanied by sustaining mechanisms and by a shift in mental representations about their self.
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CHAPTER 1  LITERATURE REVIEW

1.1  OBESITY

1.1.1  Introduction

National surveys indicate that the prevalence of overweight and obesity is significantly increased in recent years. Recent reports in the USA indicate that the prevalence of overweight among children and adolescents and the prevalence of obesity among men are significantly increased between 1999 and 2004 (Ogden et al., 2006). However, during the same period, no significant increases were reported for the prevalence of obesity among women in the USA probably because women are more concerned with their weight and appearance. Contrary to the US obesity prevalence for women reports in the UK indicated that obesity levels, for women, have increased from 16.4% in 1993 to 24.8% in 2005. The Health Survey for England, (2006) also showed significant increases in obesity for men from 13.2% in 1993 to 23.1% in 2005. Finally, Australian reports showed that the prevalence of obesity in adults was 2.5 times higher in 2000 compared to the prevalence in 1980 (Thorburn, 2005). Thus, considering the increased prevalence of obesity worldwide along with the various physical, psychological and social costs which are related to this chronic disease much need to be done to prevent future increases and successfully manage the current levels of obesity.

A variety of theories have been developed to explain the aetiology of obesity with physiological theories supporting the role of genetics, fat cells and metabolic rate and
behavioral theories suggesting that unhealthy eating, increased fat consumption and sedentary lifestyle are the reasons behind increased weight.

Apart from the causes of obesity, research has also focused attention to the various medical (e.g. sleep apnea, Type II diabetes, etc), psychological (e.g. depression, low self-esteem) and social problems (e.g. increased public costs) which are related to the condition. Consequently, due to these negative outcomes many interventions have been developed with the aim to aid weight reduction and maintenance and thus minimize most of the related negative outcomes.

Therefore, this chapter will initially describe the various definitions which are utilised to define obesity and then provide details on the prevalence of obesity in the UK, the USA and the world. The chapter will continue with an exploration of the various physical, behavioural and psychological causes of obesity and carry on with the various physical, psychological and social consequences related to this chronic condition. The chapter will close with the different interventions invented to help people manage their weight.

1.1.2 Definition of obesity

In previous years obesity was defined as the weight which departed from some ideal height and weight tables (Anderson and Wadden, 1999; Sarafino, 2002). Today obesity is usually evaluated by calculating individuals’ BMI. But, because BMI is only the ratio of weight and height without calculating body fat it is not a clear indicator of health.
Therefore, other measures such as the waist circumference and percentage of body fat are used as additional ways to assess the distribution of body fat.

1.1.2.1 BMI

The Body Mass Index can be calculated when the weight in kilograms is divided by the square of height (kg)/height (m²). Based on this measure people are grouped as having a normal weight (20-24.9 kg/ m²), being overweight (25-29.9 kg/ m²), clinically obese (30-39.9 kg/ m²) and severely obese (≥ 40 kg/ m²) (Ogden 2003, Anderson and Wadden, 1999). Its' purpose is just to categorise and determine the relative health risks for the individual and to diagnose whether the individual is obese or overweight. In addition, since it fails to give details on fat distribution and its' accuracy is altered by factors such as gender, nationality, bone structure, eating habits and the patient's fitness and muscle mass, BMI is not the main measure of obesity and obesity related health risk (Susman, 2004). For instance, a muscular person may be wrongly categorised as overweight when in reality he is fit and healthy whereas an adult with a BMI of 25 may fall into the healthy category when in reality he endorses an unhealthy lifestyle.

1.1.2.2 Waist circumference

Since BMI fails to take into account body fat distribution waist circumference is utilised as another way to examine weight. This measure is commonly used to measure body fat distribution particularly around the waist as central adiposity is significantly related to health risks such as Type II diabetes and heart disease (Afridi & Khan, 2004). Waist circumference provides extra information particularly when people are categorised as normal weight or overweight based on the BMI table because BMI may overestimate or
underestimate fat distribution. For example, body-builders are overweight based on the BMI formula however they have little abdominal fat and thus lower health risk compared to a lean, healthy weight individual based on BMI with a high waist circumference. Thus, when waist circumference is featured along with BMI it provides a more accurate picture of individual's health risk. The WHO (1997) cut-off points for the waist circumference indicate that men with a waist >102 cm and women with >88 cm are in a risk of heart disease and diabetes and GPs should recommend weight reduction methods.

1.1.2.3 Measuring the percentage of body fat

Except weight and fat distribution, clinicians need to assess the body fat as this variable is significantly correlated with health. It is argued that if women have, in total, more than 30% body fat and men have more than 25% body fat then they are categorised as obese (Afridi & Khan, 2004). Even if it is difficult to have a reliable body fat percentage two methods are developed to measure this. The first method is the skinfold test in which the thickness of the fat layer is measured in various part of the body (Ogden, 2003). For the second method the person is weighted underwater and then the ratio between water and fat is estimated. However, this method is expensive and is restricted only in laboratories which are equipped with the specific materials (Afridi & Khan, 2004).

Despite the availability of these measures, to assess obesity and the risk of developing obesity-related problems other factors need to be considered too before weight management suggestions are offered. Based on the biopsychosocial model, which supports the interplay between biological, social and psychological factors, other
elements such as individuals’ gender, cultural characteristics, heredity and behaviours, for instance exercise and diet need to be taken into consideration before providing the patient with any weight loss recommendation (Anderson & Wadden 1999; Tod & Lacey, 2004). For instance, a person with a BMI of 26 kg/m² despite that he is overweight, based on the national tables, he may not be at a risk for any health problem as he endorses a regular exercise routine and therefore muscle mass, and not fat, causes his increased weight. In addition, health care professionals, apart from the measures indicated above, they need to obtain information on the individual’s family history of heart or weight problem and assess whether they suffer from any psychological problems. Furthermore, culture characteristics need to be considered too as in some cultures (e.g. African American, Mexican American) having few extra kilos signifies health, power and fertility and thus people would be probably less likely to attempt and lose weight (Alla, 1998; Blixen, et al., 2006; Chadwick & Cardew, 1996).

Therefore, despite the variety of measures to evaluate increased weight these methods need to be taken in conjunction with individuals’ personal details such as their lifestyle and demographic characteristics so that more valid recommendations are provided to manage weight.

1.1.3 Obesity prevalence

Based on the figures from the World Health Organisation (WHO) obesity is a ‘global epidemic’ which is significantly high particularly in societies which are characterised by the increased availability of palatable, unhealthy food and the lack of time for leisure
activities. In addition, in these cultures energy expenditure is impeded due to the new transportation options or the transition from a less strenuous, demanding to a more sedentary and mechanised jobs (Afridi & Khan, 2004; Prentice & Jebb, 1995). The prevalence of obesity varies with nationality, country, gender and sociocultural factors (Ogden et al., 2007).

1.1.3.1 UK

The Health Survey for England indicated that the proportion of obesity in men has been increased from 13.2% in 1993 to 23.1% in 2005 and from 16.4% to 24.8% for women during the same period (Health Survey for England, 2006; Costain & Croker, 2005). Despite that women are slightly more obese than men, in the last 12 years the increase in male obesity was higher. The Department of Health predicted that if this trend continues then by 2010 6.6 million men will be obese compared to 6 million women. This can be observed in the graph below which indicates that the number of obese men will increase by 6.5% in 2010. The figure also indicates that despite the increase of obesity in women this increase is lower than the men's probably because social prejudice towards obesity targets women more than men and thus women are more likely to control their weight and minimize discrimination.
1.1.3.2 USA

Surveys indicate that the US has the highest percentage of obesity with more than half of the population being overweight. In the US national representative surveys with children and adults concluded that from 1980 obesity in adults has increased from 15% to 33% with more obese women than men (Ogden et al., 2007). In addition, due to the increased consumption of unhealthy food and computerised games the percentage of childhood obesity has been doubled in the last two decades. Ogden et al., (2007) indicated that, concerning obesity in adults, women’s obesity seems to differ among countries and states whereas obesity in men was similar across countries, cities and states. This is probably because women, contrary to men, are more likely to internalize the social messages they receive about their weight. Therefore, while in Western societies increased weight is related to a lack of control and will-power and thus women are more likely to control it in
other cultures, like Black-African, having some extra weight signifies power and health and thus women are more likely to have few extra weights (Alla, 1998; Blixen, Singh, Thacker, 2006).

**1.1.3.3 Worldwide obesity**

According to the World Health Organisation (WHO) obesity has significantly risen with approximately 1.5 billion adults in the world being overweight and 400 million being obese (WHO, 2006). If the trend continues and nothing reduces these levels the organisation estimates that by 2015 2.3 billion adults will be overweight and 700 million adults will be obese. The WHO reports that high BMI levels are found in North America, Europe and in some Latin American, North African and Pacific Island countries while low levels appear in China and Japan (WHO, 2007). However, even if the obesity levels are low in China and Japan they have been increased with the percentage of childhood obesity in Japan being tripled while in China 1 in 10 children is now obese (Ogden et al., 2007; WHO, 2007).

**1.1.4 Causes of obesity**

The biological and behavioural theories provide various explanations for the possible causes of obesity. However, we need to recognise that obesity is not the outcome of just one factor but results from the interplay of various factors which work concurrently. A brief description of the various theories will now be provided.
1.1.4.1 Biological theories

These theories argue particularly for the role of genetics, refer to the set point theory, the influence of metabolic rate, the development of fat cells and leptin.

**Genetics**

Similarly to other medical conditions research suggests that obese and overweight people are genetically predisposed to increased weight and that genes account for the one third of our body weight (Anderson & Wadden, 1999). Twin and adoptee studies which were conducted to examine the influence of genes on body weight concluded that genetic factors influence 70 percent of weight variance and thus environment plays a minor role to weight (Stunkard et al., 1990). Similarly, studies with adoptee children replicated the above outcomes as they indicated that the weight of children reared apart is strongly related to the weight of their biological parents but not to the weight of their adoptive parents (Stunkard et al., 1986.) Thus, genes seem to play a significant role to our body weight.

Although, these studies enhance knowledge for the causes of obesity some considerations need to be indicated too. Firstly, the outcomes emerge mainly from associations or predictions therefore other variables, such as environment, may mediate or moderate the association between genes and weight. Secondly, usually weight occurs from the interaction of various factors. Thus, is not enough to say that genetic factors cause obesity when in most studies the factor 'environment' remains constant and unexplained. It is possible that children have the 'susceptible gene' of obesity which gives a predisposition
to obesity. But this genetic material will only develop through the interaction of genes and other environmental factors such as sedentary lifestyle or consumption of palatable food (Chadwick & Cardew, 1996).

**Set point**

Set point is a theory which was originally developed in 1982 to explain why some people are unsuccessful in maintaining their weight loss in the long term. According to this theory, the body is biologically and genetically predetermined to maintain a constant weight and the organism is prepared to defend any attempt to go below or above this determined weight (Weinseir, 2000). Thus, any effort to lose weight will be unsuccessful because the programmed body will make the relevant physiological alterations to return body weight to the set weight.

Authors supported that for some individuals, and particularly obese and overweight people, their set point is above their ideal or the culture's ideal weight (Stroebe, 2000). If they attempt to reduce their weight the organism will defend by reducing the metabolic rate and burn fewer calories to work effectively and thus regain weight. This would explain why it is so difficult for many overweight people to lose and maintain their weight loss in the long term.

Support for the argument that the organism defends weight loss and thus individuals who attempt to lose weight regain their weight loss after they return to their regular eating habits comes from various studies (Astrup et al., 2000; Leibel et al., 1995). For example,
Leibel et al. (1995) indicated that weight loss resulted in changes in Resting Metabolic Rate (RMR) and thus participants’ (obese and never obese individuals) RMR was significantly reduced after they lost weight. The authors concluded that results could represent the body's effort to return to previous predetermined weight and avoid further weight loss. In addition, Astrup et al. (2000) in their meta-analytic review indicated that weight-reduced participants have relatively low RMR than control subjects.

By contrast, other studies failed to support the argument that RMR is reduced after weight loss efforts and that weight-reduced obese individuals are more prone to weight regains (Weinsier et al., 2000). For example, Wyatt, et al., (1999) indicated that there is not any reduction in RMR beyond the expected one.

If we admit that some individuals have excess weight due to a biologically high predetermined weight then we simultaneously underestimate other factors which might influence weight as well, such as physical activity and dietary habits. In addition, how the set theory explains the fact that some obese and overweight individuals manage to lose weight and maintain their weight loss in the long term. How, in this case, the body defends this change and tries to re-establish its status-quo?

**Metabolic rate**

Metabolic rate is the rate at which an individual burns energy (calories) for all their biological processes and physical actions. Some authors argued that obese individuals are more likely to have lower RMR (resting metabolic rate) than normal weight people and
this might contribute to their increased weight gain (Astrup et al., 1999). However, a study with children at high risk of obesity indicated that pre-adolescent girls with a risk of obesity did not endorse any deficiency in resting metabolic rate. But, since no information was provided about the girls' eating habits and physical activity is difficult to explain what might caused the increased weight gain in this group (Wurmser, et al., 1998). In addition, a longitudinal study with African-American and white participants indicated that African-American women have a significantly lower RMR than white women and this might support the argument that a lower RMR could be related to increased weight. However, this trend was not supported in regards to the RMR difference between African-American and white men. That is, despite that the former group had lower RMR both groups had similar obesity prevalence (Sharp et al., 2002). Therefore, even if there are theories to support that obese people have low metabolic rate due to heredity reasons and that is what causes their increased weight it is possible that other factors such as gender, ethnic background, age and lifestyle may also contribute to increased weight as well.

**Fat cells**

When people consume more calories than their body burns then the extra energy converts into fat and is stored in the fat cells to be utilized in periods of starvation (Ogden, 2003). Some theories support that obese people are born with more fat cells than normal weight people and therefore they put on weight easily. However, considering that fat cells can be increased in number because the existing ones are filled up people may be born with few fat cells and then increase them during their life due to their unhealthy lifestyle. Authors
support that childhood and teens are the ‘dangerous’ periods as the individual’s diet at that time is important for their future weight (Chadwick & Cardew, 1996). Therefore, obesity can be prevented if families encourage children to eat a balance diet and exercise. When at this critical age the number of fat cells is controlled and children learn to consume low number of calories which metabolic rate can easily use for energy then weight gain is avoided and the chance for a person to be overweight in the future is decreased. But, we can’t forget the probability that as adults, people can change their behaviour and become overweight later in life.

**Leptin**

Leptin is a protein product which manages satiety and controls energy expenditure (Anderson & Wadden, 1999). There are two speculations in regards to the levels of leptin in obese individuals i.e. the leptin deficiency and leptin resistance. Concerning the leptin deficiency, it is argued that obese people do not secrete enough levels of leptin thus they don’t feel full easily and spend less energy than the average weight individual. On the contrary, leptin resistance refers to the body’s resistance to the leptin which is secreted to control intake and energy expenditure (Anderson & Wadden, 1999; Ogden, 2002). The argument is similar to the insulin deficiency and insulin resistance in people with diabetes where the body either fails to secrete enough insulin or the body resists using the insulin to control sugar levels.

### 1.1.4.2 Behavioral theories

Apart from the biological reasons which lie beneath increased weight unhealthy lifestyle also contributes to this epidemic. The obesogenic environment which is characterised a)
by the overconsumption of palatable, unhealthy food available in supermarkets, venting machines and fast food restaurants and b) the life’s easiness due to the increased transportation options increases the imbalance between the energy intake and energy expenditure in favour of the intake (Ogden et al., 2007; Afridi & Khan, 2004).

**Eating behaviour**

Initially, researchers in their attempt to provide etiological reasons for obesity, they contacted various studies in which they concluded that obese people ate equal or even less quantities and similar qualities of food with normal weight individuals. They argued that the weight differences between the two groups and the weight gain in overweight individuals were due to the inherent low metabolic rate and not to overfeeding (Prentice & Jebb, 1995). The above theory is verified by many cross sectional studies which they find no significant differences in energy intake between obese and lean individuals (Arshad et al., 1996; Cinsiripini, 1984; Miller et al., 1990). Spitzer and Rodin (1981) in their review which examined the impact of food quantity and body weight they found that in most laboratory studies obese people did not seem to eat more than normal weight individuals. But, they also indicated that results from field studies provide the opposite conclusions i.e. that obese individuals seem to eat more than their lean peers.

The differences in results between laboratory and field studies are understandable if we consider that people in laboratory environments change their behaviour as they feel observed and also eat differently due to the type of food offered in laboratories. In addition, as some authors suggested, obesity has two phases; the dynamic and the static
phase (Lissner & Heitmann, 1995). During the dynamic phase, obese people overeat and therefore rapidly gain weight, whereas in the static phase, they need fewer intakes to maintain their increased weight (Lissner & Heitmann, 1995). Thus, differences were not found in the quantity of food consumed between obese and non-obese participants because obese individuals were in their static period. In addition, these outcomes were biased considering the low accuracy of obese individuals' reports in regards to their food intake (Prentice & Jebb, 1995; Seidell, 1998). Seidell, (1998) in his article argued that obese individuals tend to underreport their energy and fat intake and overestimate their energy expenditure. The author also indicated that; since obesity is related to weight loss efforts, insignificant differences might have occurred because obese people were trying to lose weight at that time and consequently reduced their intake (Spitzer & Rodin, 1981). Finally, considering that sometimes not only the quantity but also the quality of food affects weight and metabolism, these studies did not examine possible differences between the obese participants and lean counterparts in regards to the type of food eaten. Therefore, it is inconsistent whether obese individuals consume more calories than their normal weight counterparts.

In the last two decades there is a shift of interest in regards to obese patients' eating behaviour; from a focus on the quantity and calories of food consumed towards the type of food they eat with a particular focus on the fat/carbohydrate ratio (Blundell et al., 1993; Chadwick & Cardew, 1996). In their study Prentice and Jebb, (1995) argued that, although, from 1970s, the daily energy consumption is decreased, the levels of obesity are increased because people now tend to eat more fat than they used to. Thus, they
concluded that obesity in developed countries is significantly associated with the increase in fat consumption which is available in abundance in palatable foods.

Evidence that excess fat intake promotes weight gain and obesity comes from various epidemiological studies (Afridi & Khan, 2004; Lissner & Heitman, 1995; Seidell, 1998). For instance, Lissner et al., (1987) concluded that the weight variations between groups were consistent with fat intake. That is, participants in the low-fat diet gained significantly less weight than participants in the high-fat diet group. This is replicated by another study in which authors concluded that BMI was systematically increased as the percent of fat intake was increased (Pudel & Westrnhoefe (1992) (cited in Lissner & Heitmann, 1995). Blundell and Macdiarmid, (1997) in their study with low-fat and high-fat individuals, concluded that there were 19 times more obese people in the high-fat group than in the low-fat group (Blundell and Macdiarmid, 1997). Furthermore, Miller et al., in 1990, in their cross-sectional study with lean and obese individuals, indicated that increased fat intake is associated with weight gain and increased body fat and that obese people tended to consume more fat than lean participants. Therefore, based on the studies above, it can be argued that the weight differences between obese and non-obese individuals might not be due to the quantity but to the quality of food consume with the former group consuming more calories from fat than carbohydrates.

To justify the increase of fat intake in obese individuals, researchers tried to explain the role of fat and carbohydrates in appetite regulation (Blundell et al., 1993; Chadwick & Cardew, 1996; Lissner et al., 1987). They concluded that; while carbohydrates inhibit hunger and make people want to eat less due to the amount of fibre they have, fat
enhances overeating due to its’ palatability and low satiety effect (Afridi & Khan, 2004; Blundell et al., 1993).

In addition, Chadwick & Cardew, (1996) argued that obese individuals tend not only to eat more fat but to overeat due to external cues such as taste, smell and appearance. They argued that, while lean individuals listen to their biological rings and stop eating when they are full, obese individuals disregard them and continue to eat due to appearance qualities without thinking or controlling their intake. The authors called this ‘passive overconsumption’ which occurs when environmental cues exert the biological cues.

Contrary to the above conclusion there are studies which argued for the opposite and supported that obese people do not consume more fat than their lean counterparts (Arshad et al., 1996). Lissner and Heitmann, (1995), in their review of various epidemiological studies concluded that the evidence for the relation of fat consumption and obesity is not conclusive due to the studies’ variability, differences in populations, cultures and ways of measurements.

In line with this, Seidell, (1998), claimed that we need to treat the results with caution. Firstly, results were mainly correlational and therefore confounding variables such as age or smoking might enhance the associations or create false ones. Secondly, some studies did not take into account genetic predisposition or other variables, such as sex or culture when measuring fat consumption and weight. They only considered national population data which might not reflect all groups in the population (Lissner & Heitmann, 1995).
Thirdly, obese people's reports are not accurate and they also tend to change their behaviour when feeling observed. Thus, even if discovering the cause of obesity would provide the chance to create interventions and reduce the levels of obesity, fat consumption seems not to be the main reason of obesity since the results from the studies are inconsistent.

**Sedentary lifestyle**

In today's mechanised world the enhanced transportation, the increased technology and the transition from a less strenuous, demanding to more mechanised jobs significantly reduce energy expenditure (Prentice & Jebb, 1995). Physical activity is an important aspect in our lives and particularly for obese people because physical activity reduces the risks of various health problems such blood pressure, cholesterol and Type II diabetes (Afridi & Khan, 2004).

Many studies indicated a significant association between physical activity and obesity and concluded that there is a negative association between energy expenditure and obesity levels, i.e. as the levels of sedentary lifestyle are reduced weight gain and body weight are increased. Martinez-Gonzalez et al., (1999) examined the relation between sedentary lifestyle, physical activity and obesity in 15 countries in European Union. The results obtained indicated a significant negative association between sedentary lifestyle, leisure activities and obesity. Despite that their results have external validity they need to be explained with caution due to the study's cross-sectional character. Other variables such as age, health status etc can also explain the significant associations (Martinez-
Gonzalez et al., 1999). In addition, Jebb & Moore (1999), in their review on sedentary lifestyle, dietary habits and physical activity concluded that most studies find an inverse association between physical activity and obesity i.e. that more sedentary people are more likely to be obese than those who exercise.

Physical inactivity is linked to increased television viewing in adults, video and computer games in children (Afridi & Khan, 2004; Hernandez et al., 1999). Hernandez et al., (1999) found that for every extra hour of TV viewing there is a 12% risk for the development of obesity in children. This is because TV viewing may be indirectly linked to obesity through an increase in energy intake due to advertisement cues (Gore et al., 2003; Hernandez et al., 1999). People in general tend to be affected by the advertisements, snack while watching TV and gradually lose the control of eating leading to increased consumption of convenient, unhealthy snacks and meals (Gore et al., 2003). TV watching or video games enhance caloric consumption which has shown to be linked to weight gains if this behaviour appears regularly.

However, few things need to be indicated in regards to these studies. Firstly the results were mainly associations and therefore confounding variables such as sex, age, social class and level of education could alter the relationships. In addition, due to the associations we don’t know whether TV increases the risk of obesity or if obese people tend to watch TV more as they avoid socializing and TV is among their main entertaining sources (Hernandez et al., 1999). Secondly, as Jebb & Moore (1999) indicated, studies apply different definitions of physical activity. Do they measure exercise which is
regular, intensive and frequent (e.g. aerobics, walking, weight lifting) or do they measure activities such as gardening and bowling? These activities require different efforts and therefore their impact on weight and energy expenditure varies. Finally, researchers argued that reduced physical activity is not a direct cause of obesity and concluded that low physical activity levels enhance weight gain because people store instead of spending the extra energy intakes. If people exercise then they spend extra energy which could otherwise be stored in fat cells and consequently avoid weight gain (Afridi & Khan, 2004).

1.1.5 Consequences of obesity

This part of the chapter will attempt to explain the various physical (e.g. diabetes, heart disease), psychological (e.g. depression, low self-esteem) and social (e.g. discrimination, prejudice) consequences of obesity.

1.1.5.1 Physical

Obesity is related with an increased prevalence of cardiovascular diseases (hypertension, CHD), increased cholesterol levels, sleep apnea, joint problems, impaired fertility and premature death (Bray, 2004 for a review). Sjöström and colleagues (1992) in an ongoing trail with obese participants which aimed to assess the prevalence of morbidity in obese people they concluded that these people were 5 times more likely to indicate shortness of breath while obese men were 10 times more likely to experience a myocardial infraction. In addition to this, the pre-treatment results showed that 60% of obese men and 46% of obese women had hypertension while 80% of the sample experienced different types of joint problems.
In addition, other authors concluded that excess abdominal fat is associated with greater health risks than fat which is normally distributed around the body. In particular, visceral fat is associated with increased insulin resistance and Type II diabetes (Finer, 2006).

Finally, increased BMI significantly predicts enhanced mortality levels. In a 10-year follow-up study with a large population sample authors concluded that obesity was strongly associated with increased mortality levels in all ages and racial groups even when the history of a chronic condition and smoking was controlled (Adams et al., 2006).

1.1.5.2 Psychological

The Western society equates attractiveness with thinness and links increased weight with laziness, lack of will power and loss of control. Research in obesity indicates that there is a general negative attitude towards obese individuals, who are considered undisciplined, sleazy, lazy and dishonest. The consequences of such stereotypes apply to various areas such as employment, education, social interactions and physical treatment. In regards to employment and education, a review of the literature concluded that there is reliable evidence about prejudice in these two areas even when obese candidates share the same skills with their non-obese counterparts (Puhl & Brownell; 2001).

Concerning social interactions a qualitative study, which examined individuals’ perceptions about social stigma and discrimination through focus groups, concluded that obese participants had a diversity of biased experiences. For example, participants reported being teased by their colleagues or being treated differently by family members.
(Cossrow et al., 2001). Studies also indicate that even health professionals hold negative beliefs about obese people and express a 'victim blame' model towards obesity based on which obese individuals are blamed for their weight; through their uncontrolled, unhealthy behaviours (Ogden et al., 2001). These negative attitudes make obese people reluctant to socialize, seek medical care and bring weight issues to their clinicians wishing to avoid being embarrassed (Ahmed et al., 2002).

Our society’s obsession and pressure for thinness and the various commercials on miracle weight loss methods have significant effects, particularly on individuals' emotional world. It is argued that this negativity towards obese people emerges from the indirect messages people receive from TV programs. For example, a study by Greenberg and colleagues (2003) examined how obese television characters are presented in 10 top-rated fictional programs. Researchers concluded that these characters are significantly neglected on television as programs give emphasis on thin individuals. In addition, large characters were less likely to have social interactions or romantic relationships and were more likely to be seen eating and appearing in comedies than in dramas. Therefore, TV programs can be a significant source of anti-fat bias.

Studies indicate that obese women express more depression, negative body images and lower self-esteesms than obese men (Kushner, Gary & Foster, 2000). This body dissatisfaction along with their desire to improve their body appearance, and be socially accepted, as individuals who can control their intakes, reinforces them to attempt to lose weight. As only few manage to maintain their weight loss in the longer term this, will
gradually place them in a vicious circles of weight loss and regain, food preoccupation, frustration, binge eating and self blame for losing control (Polivy & Herman, 2000; Polivy & Herman, 2002).

1.1.5.3 Social

The society and health services need to confront the considerable direct and indirect costs which are related to obesity (Wellman & Friedberg, 2002). Direct costs refer to the actual prevention and treatment of obesity and the indirect costs refer to the obesity health comorbidities such as diabetes and cardiovascular problems and the income lost due to reduce productivity and absenteeism.

US estimates indicated that approximately $61 billion were the direct costs and $56 billion were the indirect costs of obesity and overweight. In June 2007 the Daily Mail indicated that the NHS costs for obesity have risen from £690,000 per year to £38.16 million and that the costs for anti-obesity drugs reached the £38 millions per year.

1.1.6 Management of obesity

Considering the significant consequences of obesity many interventions have been developed to help individuals lose weight. Because the current epidemic is considered to be related to the sedentary lifestyle and increased consumption of “empty calories” these interventions promote lifestyle changes which reinforce reduced energy intake through diet and increased energy consumption through physical activity. In addition, a more medical management of obesity which is characterized by drug prescription or obesity surgery is also considered as significant weight loss approaches.
1.1.6.1 Lifestyle modification

Understanding that obesity is related to increased energy intake and reduced energy expenditure many interventions taught participants how to change their dietary and exercise habits to produce a negative energy balance hence, to enhance weight loss. Results from interventions which utilized diet or physical activity alone or in combination indicated significant, moderate weight losses of 5%-10% of initial weight (Anderson et al., 1999; Janssen, et al., 2002; Riebe et al., 2005; Wadden, 1993; Wadden et al., 1997; Wing et al., 1984). However, despite the treatments' effectiveness, results, which contradict Stunkard's (1959) argument about unsuccessful weight loss among obese individuals who attempt to lose weight, these interventions failed to indicate any sustained weight losses. In particular studies indicated weight regain within 1 or 5 years after treatment (NHS Centre of Reviews and Dissemination, 1997; Wadden, 1993; Weinstock et al., 1998). Some authors argued that the structured treatment environment, the short duration of interventions and the fact that participants rely on experts and structured dietary programs to lose weight impede them from applying those skills in the more diverse, obesogenic environment and acquire responsibility of their condition (Head & Brookhart, 1997; Gormally & Rardin, 1981).

Since the more traditional methods of weight loss proved ineffective for sustained weight loss a more multidimensional perspective was applied which combined conventional methods along with other strategies to modify behaviour. These multicomponent programs aimed to help individuals maintain their behaviour change through techniques such as self-monitoring, relapse prevention, stimulus control, stress management,
cognitive restructuring and problem solving tactics (Lang & Froelicher, 2006). Furthermore, a more individualistic approach was reinforced which argued that treatments are developed based on the individual’s characteristics such as their routine, mood, readiness of change, past and current experiences (Anderson & Wadden 1999; Tod & Lacey, 2004).

Despite that studies which applied multicomponent interventions indicated significant weight loss effects at the end of the treatment (Anderson et al., 1999; Ashby & Wilson, 1977) reviews of the literature concluded that individuals still regain some or all of their weight 5 years posttreatment. In particular, Jeffery and colleagues (2000) and Wadden, et al., (2004) concluded that although, short term weight losses have been dramatically improved in the last 20 years due to the increased duration of treatment, the treatments’ long-term efficacy still remains low.

Considering the ineffective sustained weight loss outcomes from the behavioural and multicomponent interventions researchers recognised that obesity needs to be considered a chronic condition similar to, hypertension and diabetes (Perri, 1998). Therefore, extended, posttreatment interventions were developed which aimed to enhance maintenance of weight loss. Some long-term approaches were simple and thus provided posttreatment information to participants about exercise and diet (Riebe et al., 2005) or offered weekly or biweekly sessions with their therapists (Ashby & Wilson, 1977; Björvell & Rössner, 1985; Grave et al., 2005) whereas others were more
multidimensional as they incorporated more than one component in their extended program (Perri et al., 1988; Perri et al., 1993 for a review).

Studies revealed benefits, for weight loss maintenance, when individuals continued to attend maintenance programs posttreatment. For example, Perri and colleagues concluded that individuals who received maintenance program maintained 82.7% of their initial weight loss whereas the control group, which did not attend any maintenance sessions, sustained only 33.3% of their weight loss. In addition, Björvell & Rössner (1992) in a 10-12 years follow-up study showed that participants maintained 10.6kg after a 4 year maintenance program which integrated various components of the behavioural modification treatment such as relapse prevention and counselling.

Nevertheless, reviews of the literature indicate that these favourable results from the extended treatments last for a short period of time as these programs tend to delay and not impede weight regain (Perri & Corsica, 2002; Wadden et al., 2004). The poor maintenance of weight loss might be due to various psychological and social reasons related to weight loss. For instance, participants initiate a weight loss attempt with the aim to lose weight and reach their desirable weight which is often unrealistic. As Polivy and Herman (2000; 2002) argued, individuals who have unrealistic weight goals are more likely to withdraw from any weight loss effort since their expectations are not met. In addition, at the beginning weight loss is increased whereas as the treatment continues weight seems to plateau and this discourages individuals from continuing their efforts (Wadden et al., 2004).
Through the years different behaviour therapies have been developed with the intention to help individuals lose weight and sustain initial weight loss in the long term. Despite the improved short term weight loss, which is actually related to increased duration of treatment and initial BMI, weight regain was unavoidable. Researchers moved towards the extended treatments which offered individuals the chance to continue being in a maintenance program and thus learn new skills, avoid relapses, look for support and monitor their behaviour. These approaches proved more successful but still, regain was inevitable. It can be argued that since participants follow a structured dietary programs during treatment and find solutions in their problems with the help of a clinician these impede them from obtaining the responsibility of their condition and thus be autonomous experts who internalize motivation and become independent (Gormally & Rardin, 1981). In addition, weight loss programs might have failed to promote sustained weight loss since they teach participants skills and provide them with information and solutions which are more general rather than specific to their condition and lifestyle. Thus, even if they are motivated to change, it is difficult for them to apply the treatment’s suggestions into real life situations.

1.1.6.2 Pharmacotherapy

While the behavioural treatment aims to influence individuals' behaviour and cognitions to control external cues pharmacotherapy aims to help individuals control internal cues such as satiety. Since maintenance of weight loss is the goal for every weight loss treatment pharmacotherapy also aims to achieve successful weight loss maintenance. The two most famous drugs are Orlistat (Xenical) Sibutramine.
Orlistat

Orlistat, which has been licensed in the UK since September 1998, acts on the gastrointestinal system and aims to reduce the absorption of fat (NICE, 2001). Most of the trials indicated higher weight loss and improved maintenance in the Orlistat than in the placebo/control group (Wilson, et al., 2002). For example, in a randomized control trial with a placebo and Orlistat group who received medication along with a low calorie diet, Muls et al., (2001) concluded that participants in the orlistat group lost significantly more weight (6%-10%) than the placebo group. In addition, in a 2-year European double-blind randomised trial the orlistat group lost, on average, more weight than the placebo group during the 1 year treatment. Those patients who had switched to orlistat lost 0.9 kg compared with the 2.5 kg regain for those patients who continued taking placebo (Sjöström et al., 1998). Furthermore, receiving Orlistat is not only related to significant weight loss but to weight loss maintenance particularly when individuals visualize the side effects of medication and understand that their increased weight is due to their unhealthy behavior and specifically to the enhanced fat consumption. Changing their beliefs about the causes of their obesity increases the chances for a healthy behavior change (Ogden & Sidhu, 2006).

Weight reduction with the use of Orlistat is also related to various favorable cardiovascular risk outcomes. For example, in a 2-year randomized trial the systolic and diastolic blood pressures along with fasting insulin levels were significantly reduced more in the Orlistat than placebo group (Davidson et al., 1999). Receiving Orlistat is also related with reduced total cholesterol and low-density lipoprotein cholesterol (Sjöström et
al., 1998). For example, in a double-blind intervention, with obese individuals receiving Orlistat or placebo three times daily in combination with a hypocaloric diet, results indicated that despite the significant reduction of total cholesterol and low-density lipoprotein cholesterol and the increase of HDL in both groups these effects were significantly greater in the orlistat than the placebo group (Finer et al., 2000). In addition, substantial effects were also illustrated in patients with Type 2 diabetes as researchers concluded that patients with diabetes who receive orlistat were significantly more likely to experience reductions in their hemoglobin and glucose levels than the placebo group (Lindgärde, 2000).

Despite the remarkable effects of orlistat to weight loss and health the use of this medication is related to various side-effects which are mainly gastrointestinal effects (Finer et al., 2000; Sjöström et al., 1998). A review of the literature about the effects of orlistat indicated that unpleasant effects such as abdominal pain, vomiting, liquid stools and urgency to go to the toilet were experienced more by individuals who received orlistat than those who received placebo particularly when they received large doses of orlistat (NICE, 2001).

In conclusion, it seems that treatment of obesity with orlistat in conjunction with hypocaloric diet can promote significant weight and health outcomes. Thus, orlistat can be used as an adjunctive treatment for the management of obesity. However, more studies are required to examine the effects of orlistat to specific populations based on age, gender and ethnic minorities.
Sibutramine

Sibutramine reduces appetite and increases satiety by inhibiting the reabsorbing of serotonin, nonadrenaline and in a lesser extent dopamine from the nerve cells (NICE, 2001). Thus, increased levels of serotonin and nonadrenaline in the brain make individuals to feel more satisfied with less food.

A review of the literature about sibutramine’s effectiveness indicated that Sibutramine has similar, to Orlistat, effects on weight and health (Leung et al., 2003). In a 12-week, doubled-blind, placebo-controlled intervention with 235 obese patients who received 5mg, 10mg or 15 mg daily doses of sibutramine Hanotin and colleagues (1998) indicated a significant dose-related weight loss in the sibutramine group (2.4 ± 0.5 for 5mg; 5.1 ± 0.5 for the 10mg, and 4.9 ± 0.5 for the 15 mg). Other interventional studies which aim to assess the efficacy of sibutramine to weight loss indicated significant weight loss differences between the sibutramine and placebo groups with the weight loss in the former group being greater than the weight loss in the latter group (Kim et al., 2003; Sramek et al., 2002).

James and colleagues (2000) also evaluated the effect of sibutramine to weight loss maintenance after a 6 months sibutramine trial which was used in conjunction with a hypocaloric diet. 77% of those individuals who lost at least 5% of their initial body weight in the first six months of sibutramine were randomised to receive either 10mg of sibutramine or placebo for further 18 months. In the sibutramine group 43% of those
individuals who completed the trial maintained at least 80% of their initial weight loss whereas only 16% in the placebo group managed this. Thus, continuation of sibutramine can enhance successful weight loss maintenance in a group of obese individuals.

The positive effects of sibutramine were also evident in a group of diabetic patients who received 15 mg of the drug combined with a reduced calorie diet. Along with the significant differences in weight loss between the placebo and medication group authors indicated that more patients (19%) in the latter group had >5% of weight loss than patients in the latter group (0%) (Finer et al., 2000).

Sibutramine use has also been associated with improved health outcomes such as significant reductions in patients’ triglycerides, total cholesterol and low intensity lipoprotein cholesterol (Hanotin et al., 1998; James et al., 2000; Sramek et al., 2002). However, these differences were not significant between the medication and placebo group. Thus, adhering to a hypocaloric diet alone or a combination with sibutramine has significant effects to patients’ health but these differences are not statistically significant.

Finally, similar to the use of orlistat sibutramine has some side effects. The most important side-effect of this medication is the increased heart rate and more specifically the increase of hypertension (Leung et al., 2003). Kim and colleagues (2003) in their review concluded that systolic and diastolic blood pressure, with the use of sibutramine, is more likely to increase in heavier and younger individuals. Therefore, in some
populations, this medication needs to be used with caution particularly when individuals have a history of hypertension.

In addition, participants in various studies report some tolerable side effects such as vomiting, constipation, dry mouth, nausea, insomnia and headache. These effects might be related to the high withdrawal rate in some studies particularly in the sibutramine groups (Cuellar et al., 2000; James et al., 2000).

In conclusion, in the management of obesity pharmacotherapy can be used as an adjunct to hypocaloric diet. Both orlistat and sibutramine groups lost significantly more weight compared to the placebo groups. Both medications appear to be well tolerated despite their negative side effects. However, longitudinal studies are required to examine the drugs' effectiveness in the long term.

1.1.6.3 Surgery

Surgery is generally reserved for morbidly obese individuals who have a history of unsuccessful weight loss attempts which encompassed restrictive diet and pharmacotherapy. In terms of the surgery's effectiveness Anderson and colleagues (2006) reported that African American and white women lost on average 36% of their weight after gastric bypass surgery. Torgerson & Sjöström (2001) concluded that participants in the surgery group lost significantly more weight than the control group and, that 2 years post-surgery surgical patients maintained 16.5% of their weight loss whereas obese controls gained on average 0.7 kg. Authors concluded that this increased weight loss in
the surgical group is significantly associated with enhanced recovery from diabetes and hypertension which were more favorable in the surgical than in the control group. A substantial reduction in the incidence of cardiovascular factors 2-years post-surgery was also reported by the researchers (Sjöström et al., 2004; Torgerson & Sjöström, 2001).

Apart from the significant weight and physical effects of obesity surgery studies examined the consequences of surgery to individuals’ psychological status such as self-esteem, social interactions, depression, quality of life and eating behavior. In regards to quality of life, a multicentre, longitudinal study with match pairs of individuals who received either surgery or traditional treatment indicated that quality of life was significantly improved after gastric restriction surgery. In particular, the authors signified notable improvements in patients’ social interactions, perceived health, depression and anxiety (Karlsson, et al., 1998). These results replicated other studies which concluded that surgical patients tended to be more extraverts, autonomous and assertive after surgery as this treatment aid weight loss and thus improved their self-confidence in being more independent and supporting their self (Crisp, et al., 1977; Gemert, et al., 1998).

In addition, apart from the remarkable post-surgery psychological improvements participants report various changes in their eating habits (Bocchieri, et al., 2002). However, contrary to the similarity of results for the psychological effects of surgery the outcomes on the effects of surgery to individuals’ eating behavior appear less consistent. For example, some studies showed post-surgery improvements in eating behavior, in the surgical than in the control group, such as more restraint, less hunger and less
disinhibition (Karlsson, et al., 1998) and others indicated that surgical patients reported
less nibbling and night eating (Crisp et al., 1977) and less binge eating (Malone & Mayer,
2004; Powers et al., 1999). In contrast, other studies showed that some individuals
reported recurrent loss of eating control after surgery (Kalarchian et al., 2002) while
others reported higher intake of fat and unhealthy food (Klem et al., 2000; Ogden et al.,
2006). Thus, some individuals have healthier dietary habits post-surgery while others
endorse a less healthy lifestyle.

In addition to this, authors indicated that since, for some individuals, surgery is related to
short term improvements of eating behavior surgical patients tend to regain some of their
weight loss 2 years after surgery and this regain is estimated for the 20% of surgical
patients (Benotti & Force, 1995). For instance, in two retrospective studies with small
sample sizes researchers concluded that despite short term improvements in binge eating,
night eating etc in a group of surgical patients, individuals tended to regain some of their
weight loss after 2 years of treatment (Hsu et al., 1996; Hsu et al., 1997). What needs to
be indicated is that in these studies individuals who reported a pre-surgery eating
disturbance such as binge eating and night eating were more likely to continue this
behavior after surgery and thus regain some weight. Therefore, weight regain does not
appear in all individuals. On the contrary, those individuals who indicate eating problems
before surgery are more likely to regain weight after treatment since this behavior is
continued post-surgery.
This diversity of outcomes which is related to the short and long term improvements in eating behavior after surgery might be related to the different methods researchers used to examine eating behavior, the assessment time and also participants' characteristics. For example, in Malone and Mayer's (2004) study patients reported a reduction in binge eating one year post-surgery due to the reduced stomach size and the damping syndrome related to gastric surgery while in Kalarchian and colleagues' study (2002) binge eating and thus weight gain was increased because 7 years after surgery patients adjusted to their stomach size and thus might have increased their quantity of food.

Furthermore, despite the improvements in patients' physical and psychological health after surgery researchers also reveal some negative effects related to obesity surgery. For example, a review of the literature showed that some participants find it difficult to adjust to their reduced stomach size and until they make the necessary dietary changes in the amount and quality of food they consumed, most of them will vomit as a result of their failed attempts to eat what they used to eat (Hout, 2005). In a qualitative study by Ogden and colleagues (2006) surgical patients reported their experienced shock due to the negative consequences of surgery (e.g. vomit) which was followed by their adjustment to their reduced stomach size. Furthermore, Crisp et al (1977) indicated how the adjustment period was characterized by the realization that food could not be used to manage emotions due to the new stomach size. Therefore, obesity surgery brings some negative outcomes which are generally related to the time individuals need to adjust their behavior to their reduced stomach size.
Therefore, obesity surgery seems to be a very good weight loss method since is related to a substantial weight loss. Similarly to the traditional methods of weight loss it is related to various physical and psychological improvements although, a significant amount of weight loss is sustained for a longer period than the weight which is lost through behavioral and pharmacological methods. Longitudinal studies are required to examine the continuous effects of obesity surgery to individuals' weight, physical and psychological health.

1.1.7 Conclusion

All the above results enhance our knowledge around the causes and consequences of obesity. In regards to the causes of obesity, they argue that obesity is not the outcome of individual factors such as heredity and gene influences. On the contrary, obesity may be the result of the gene-environment and behaviour interaction (Ogden et al., 2007). It is possible that genetically susceptible individuals respond positively to the variety of palatable, caloric-tense food that the obesogenic environment generously offers. This, in combination with the reduced chance of physical activity contributes to the weight gain pattern (Anderson & Wadden, 1999). However, not only genetically predisposed individuals are currently obese possibly because the consumption of palatable products along with the reduced opportunities to exercise, impede the metabolic rate from burning the extra energy and consequently this extra energy is stored in the current or new fat cells. Thus, weight gain will be associated with overeating (Anderson & Wadden, 1999). All of the above which result from the interaction of obesogenic environment and individuals' response to that contribute to the high levels of obesity. As Lissner and

Finally, despite the variety of interventions to help individuals lose weight and gradually reduce the levels of obesity in the society, results indicate that the majority of interventions are successful in the short term and not in the long term as individuals regain some or all of their weight loss as soon as the treatment ends. Wishing to abolish their weight gains individuals initiate a new weight loss attempt which results in more regains. This constant struggle of weight control leads to a history of weight changes and cycling.
1.2 WEIGHT CYCLING

As is indicated and above, weight surplus has detrimental effects for the individual’s physical and psychological health (Anderson & Wadden, 1996; Lang & Froelicher, 2006; Ogden, 2004). Obese and overweight individuals are encouraged to lose weight through the combination of a healthier diet and increased physical activity to minimize the related physical and psychological consequences and improve their health (Wannamethee et al., 2002). Although the prevalence of obesity is high the desire to be thin is prevalent particularly among female adolescents (Casper & Offer, 1990) and female adults (Williamson et al., 1992). Despite their efforts to manage their weight, the majority eventually regain some or all their weight with few of them gaining more than their baseline weight within few years (Marchesini et al., 2004; Polivy & Herman, 2002). This difficulty to manage weight and sustain weight loss drives individuals to be in an endless battle to control their weight. These repeated efforts to manage weight leads to weight cycling.

Several studies indicate that a history of weight cycling or a history of weight change has negative physical and psychological consequences for the individual.

1.2.1 Weight change

1.2.1.1 Weight change and physical health

Weight cycling, weight fluctuation or yo-yo dieting is the repeated cycles of loss and regain and it has been linked with poor physical health. In particular, previous studies
relate weight fluctuation with an increased risk of all-cause-mortality (Rzehak, et al., 2007), reduced physical functioning (Stafford et al., 1998) and a high risk of morbidity and mortality related to cardiovascular diseases (National Task Force on the Prevention of Obesity, 1994; Van Wye et al., 2007).

However, other studies, oppose to the above arguments (Dyer et al., 2000; Field et al., 1999) as they conclude that there is not a significant association between weight cycling and cardiovascular risks of systolic and diastolic blood pressures (Jeffery et al., 1992) and that weight cycling fails to have a negative effect on cardiovascular risk factors (Wing et al., 1995).

Some authors argued that significant associations between weight cycling and health outcomes can not be found or are attenuated when results are adjusted for various confounding variables such as age, gender characteristics, BMI and previous disease. For example, while Stafford et al (1998) concluded that weight fluctuation reduced the perceived physical functioning in women they indicated that this significant association might be indirectly affected by women's mental health as this variable tends to be related with weight change and physical functioning. In addition, Wannamethee and colleagues (2002) indicated that the relation between weight fluctuation and cardiovascular risk was significantly attenuated when men with pre-existing disease were excluded from the analysis. In addition, Iribarren et al (1995) indicated that, in a group of adult men, the relation between weight loss and all cause mortality was modified by the presence of confounding variables such as pre-existing disease and smoking. Thus, for healthy men
who did not smoke there was not an association between weight change and mortality. Therefore, weight cycling and weight change can have an indirect relation to an individual's health through pre-existing disease and other personal and gender characteristics which seem to alleviate the relation between weight variability and health outcomes.

1.2.1.2 Weight change and psychological health

Additional research also concludes that weight fluctuations might be hazardous for an individual's psychological health (National Task Force on the Prevention of Obesity, 1994). In particular, authors argue that weight cycling is associated with depression, reduced self-esteem, food anxiety and loss of perceived control which is highly related with binge eating (Brownell & Rodin, 1994; Van Wey et al., 2007). For example, Marchesini et al., (2004) concluded that, in women, weight cycling was significantly associated with increased psychological distress and binge eating. However, as McGuire et al (1999) argued, it is not clear whether the negative psychological problems, such as depression and disinhibition, precede or are the consequences of regain because these results are based on associations.

Contrary to the above conclusions, other researchers failed to show any relation between weight cycling and psychological consequences (Clark & King, 2000; Silverman et al., 1998). Polivy and Herman (2000; 2002) argued that some studies might had failed to show significant relations between weight cycling and psychological health because at that time participants were prepared for another weight loss attempt and thus their
expectations on potential weight loss created a positive mood. Therefore, the period in participants' life within which the study takes place can sometimes affect the conclusions.

1.2.1.3 Weight change and future weight gains

Finally, research is concerned with the link between weight variability and subsequent weight losses with studies indicating different results. In particular, while some researchers argue that weight cycling and weight loses seem to impede future weight losses or make potential weight regains more rapid (Brownell & Rodin, 1994; Coakley et al. 1998; Korkeila et al., 1999; Marchesini et al., 2004) others argue for the opposite. For example, while Field et al (2004) supported that weight cycling was associated with grater weight gain and Stevens et al., (2001) indicated that annual weight gains where higher in dieters than non-dieters, Van Wye et al (2007) concluded that, in men, weight cycling was not detrimental to the maintenance of weight loss as weight cycling did not increase the likelihood of weight gains.

Field et al, (2004) argued that for some individuals weight loss is followed by regain probably because individuals tend to be less physically active or engaged in more binge eating than others. In addition to this, participants might gain weight because they change their dietary patterns when the weight loss treatment ends or they are just prone to weight gains after weight loss (Stevens et al., 2001). Consequently, third variables might alter the relation between weight variability and subsequent regain.
All these equivocal results, discussed above, may be due to a variety of confounding variables which can either attenuate or alleviate the relation between weight change and individuals' physical or psychological health. They can also be due to the different definitions of weight change as some studies define weight cycling in terms of time (e.g. years) while others define it in terms of the amount of weight loss in lbs or changes in BMI (Field et al, 1999). In addition, the difference in methodologies, designs and participants make the comparisons among the results more difficult and thus impedes us from having a more conclusive understanding on the associations of weight change and physical and psychological health (e.g. Van Wey et al., 2007). Finally, the direction of those relationships is not clear and thus it is difficult to know whether weight fluctuation precedes or follows health consequences (Stafford et al., 1998) or if it is just an association (Brownell & Rodin, 1994).

Therefore, the relation between weight cycling and individuals' physical and psychological health it is still not clear since many factors remain unidentified. More studies which control for confounding variables are required to provide more valid and reliable results.
1.3 SUCCESSFUL & UNSUCCESSFUL WEIGHT LOSS

1.3.1 Introduction

As it is indicated in the previous chapter many obese men and women attempt to lose weight and minimise the various health consequences related to increase weight. Unfortunately, the majority of them regain some or all of their weight loss and end up getting, for the most part of their life, in a vicious circle of loss and regain. Only the minority manage to successfully maintain their weight loss in the longer term. In particular, a systematic review for the treatment of obesity which examined the impact of behavioural, pharmacological, exercise, diet and surgical interventions to weight loss and weight loss maintenance concluded that for the majority of weight loss interventions individuals regain weight either during treatment or post treatment (Glenny et al., 1997). In addition to this, studies indicate that almost 90% and 95% of those who lose weight regain some or all their weight with few of them reaching a higher than their baseline weight within 3-5 years after the end of the treatment (Byrne et al., 2003; Klem et al., 1997).

Thus, despite the variety of interventions for the management of weight loss and the fact that many obese individuals are successful weight losers the majority of them fail to maintain their weight loss in the long-term. Therefore, research is required to identify the differences between the majority of individuals who regain their weight loss or weight cycle through their life and the minority who sustain their weight loss in the long-term. By identifying the qualities of the minority group, interventions can then be developed to
enhance those characteristics in the majority group and thus improve the long term outcomes of interventions.

In the literature, successful weight loss maintenance has been defined with various ways. Wing & Phelan (2001), for the National Weight Control Registry (NWCR), defined successful weight loss maintenance as the minimum 10% weight loss which is maintained for a minimum of 1 year while for Dohm et al., (2001) maintainers had to sustain their 10% weight loss for at least 3 years. For Lähteenkorva et al., (2000) maintainers lost at least 5% of their body weight which was sustained from 1975-1990. On the contrary, Ogden (2000) used participants' BMI to define successful weight loss maintenance. For her study maintainers were those individuals who were obese, lost weight to be considered non obese and maintained their weight loss for a minimum of 3 years. Thus, successful weight loss maintenance is defined differently from various researchers. However, there is a core similarity between those definitions: participants lose a minimum amount of weight which they need to maintain for a minimum time which is set by the authors.

Similarly to the above, there is also diversity in the definitions regarding regaining as authors use percentage of weight loss, BMI etc for their definition. But, there is a resemblance in that unsuccessful weight loss individuals are those individuals who either regain their weight loss or fail to lose any significant amount of weight.
To date many studies emphasize the role of some factors which might contribute to successful weight loss maintenance. These factors are a) participants’ profile characteristics (e.g. age, BMI etc) b) historical characteristics (previous weight loses, age of obesity onset etc), c) behaviors (dietary habits, physical activity) and d) psychological characteristics (e.g. causes of obesity, motivation, goal weights etc) (Ogden, 2000). Therefore, this chapter will attempt to describe which variables indicated above are the best predictors for successful and unsuccessful weight loss maintenance.

1.3.2 Profile characteristics

1.3.2.1 Age

In regards to age, some studies suggest that weight loss maintainers are more likely to be older than regainers (Anderson et al., 1999; McGuire et al., 1999; Ogden, 2000). For example, Anderson et al., (1999) in their prospective study with obese individuals who followed a Very Low Caloric Diet (VLCD) program concluded that there was a strong, positive association between long-term weight loss maintenance and age in a sense that older individuals were more likely to maintain their weight loss. In addition to this, Ogden (2000) in a cross sectional study with maintainers, regainers and stable obese individuals, she indicated that the former group was significantly older than the other groups. Authors argue that older individuals are more likely to maintain their lost weight since they have probably been struggling with their weight for more years than their younger counterparts and thus this continuous persistence in managing their weight might have helped them to acquire the necessary skills related to successful weight loss maintenance (Ogden, 2000).
However, other studies contradict the above conclusions as they indicate either that the two groups are comparable in terms of their age (Byrne et al., 2003; Kayman et al., 1990) or that the odds of being successful are higher for younger than older individuals (Kruger et al., 2006).

This diversity of results for participants’ age may reflect the variety of recruitment methods. For example, while McGuire et al., (1999) recruited participants through local television, newspaper advertisements and magazines Kayman and colleagues (1990) went to a large maintenance organisation and invited members to participate in their study. Furthermore, the differences in the studies’ results might be due to the diversity of definitions of successful and unsuccessful weight loss maintenance. For example, while Ogden (2000) categorised participants using the changes in BMI as the main criterion Byrne et al., (2003) grouped participants based on the percentage of weight loss and the years of maintenance.

1.3.2.2 BMI

For BMI, some studies suggest that, at entry into the study, unsuccessful weight loss individuals were more likely to have significantly higher initial weights than the successful group (Byrne et al., 2003; McGuire et al., 1999). On the contrary, other studies indicate the reverse effect i.e. that maintainers, at entry, are significantly heavier than the other group (Lähteenkorva et al., 2000; Wadden et al., 1992). For example Wadden et al., (1992) concluded that higher initial weight was a strong and significant predictor of weight loss maintenance at 1-year follow-up. However, since the outcome emerges from
a correlation we can not clearly argue that successful weight loss participants have significantly higher initial weights.

It is possible that, sometimes, successful or unsuccessful participants are more likely to participate in a weight loss treatment to reduce their increased weight. Also, we can argue that since in some studies successful participants were lighter possibly because they had already lost some weight before the study and thus they participated in the study to lose more or acquire new weight management skills. On the contrary, regainers were gaining some weight and thus, before treatment, they tended to be heavier.

Therefore, the direction that the effects of age and BMI have on successful and unsuccessful weight loss maintenance is not always consistent. The diversity of the results might be due to the different participant characteristics, their different weight histories or the discrete definitions of successful weight loss maintenance.

1.3.3 Historical characteristics

In addition to the above, research highlights the importance of historical factors such as individuals' initial weight loss, maximum lifetime weight and the time of duration the weight loss has been maintained.

1.3.3.1 Initial weight loss

Various studies indicate that there is a strong positive correlation between initial weight loss and weight maintenance and that this mirrors participants' adherence to treatment (Baak, et al., 2003; Anderson et al., 1999). The higher the loss the more likely individuals
are to maintain weight. Due to the increased initial weight loss people are reinforced to continue managing their weight and maintaining it in the long-term.

However, other studies have contradictory results as they indicate that regainers are more likely to have higher initial weight loses than maintainers (McGuire et al., 1999). In their review on the characteristics of successful weight loss individuals Elfhag and Rössner (2005) replicated this conclusion and indicated that the diversity of results might be due to the arbitrary way that initial weight loss is defined.

1.3.3.2 Maximum lifetime weight

Concerning participants' highest lifetime weight, the majority of the studies indicate that unsuccessful participants have significantly higher maximum weight than maintainers (Byrne et al., 2003; McGuire et al., 1999; Lähteenkorva et al., 2000). Authors argue that even if successful participants are obese they are generally less obese than regainers (Ogden, 2000).

1.3.3.3 Duration of maintenance

In their review Elfhag and Rössner (2005) indicated that 'the longer the weight loss has been maintained, the better the chances for further continuation of the lower body weight are' (p. 69) as people through time acquire the relevant skills to maintain the low weight. Anderson et al., (1999) in their 8 years study concluded that after 3 years the weight changes are stabilized and individuals are more likely to sustain that loss. In addition, Wing & Phelan (2005) indicated, that the longer one maintains their weight loss the more are the odds for the continuation of weight maintenance while McGuire et al, (1999)
argued that as the duration of maintenance is increased individuals' chances and opportunities to acquire more skills related to weight management and maintenance are enhanced and thus they are more flexible and more likely to sustain their weight loss in the long-term.

1.3.4 Behaviours

Other factors which are indicated to be potentially significant factors for weight loss maintenance are individuals' dietary habits, levels of exercise and regular self monitoring. Much information about successful weight loss maintenance comes from a famous registry in US, the National Weight Control Registry (NWCR) which was established in 1994 by Wing and O’Hill. The registry aimed to recruit individuals over the age of 18 who lost at least 30lbs and kept it off for a minimum of 1 year (Wing & O’Hill, 2001).

Today, the registry has more than 4000 members with an average weight loss of 33kg which had been maintained for an average of 5.7 years (Wing & Phelan, 2005). Based on the statistics emerging from the registry we can conclude that, although there is generally a pessimistic attitude towards weight loss maintenance, it appears that weight loss can be maintained from some individuals.

In addition, the results of the registry are based on self-reports whose validity and reliability are still unknown. Participants may underreport their dietary habits (Baak et al., 2003) and overestimate their physical activity levels (McGuire et al., 1999).
1.3.4.1 Dietary habits

Reviews from the literature, qualitative and quantitative studies reach similar conclusions about successful and unsuccessful participants’ dietary habits as they indicate an improvement in the successful group’s healthy behaviours. In particular, reviews and studies from the NWCR indicated that successful weight loss maintainers reduce their energy intake, consume fewer calories from fat and more calories from carbohydrates than regainers (Klem et al., 1997; Shick et al., 1998; Wing & Phelan, 2005; Wing & O’Hill, 2001). Other qualitative and quantitative studies with populations outside the NWCR replicate the above outcomes (Byrne et al., 2003; Kayman et al., 1990; Kruger et al., 2006).

In addition, authors also indicate that maintainers are more likely to eat breakfast on a daily basis whereas regainers are more likely to skip breakfast and have more snacks between meals (Kayman et al., 1990; Wing & Phelan, 2005). It is argued that eating breakfast reduces hunger which makes maintainers feel less hungry during the day and thus they are unwilling to have snacks between the meals.

Some evidence indicates that regainers are more likely to reduce their disinhibition and restrain and increase their binge eating since they are unable to control their intake (McGuire et al., 1999). However, it is supported that the extreme control over eating underlies these individuals’ unrestrained behavior. Regainers forbid themselves to consume food they really enjoy and thus they feel deprived. This food deprivation increases disinhibition, reduces restrain and leads to binge eating (Elfhag & Rössner,
2005). Thus, regainers in their attempt to either avoid subsequent regain or lose the weight they regained they adopt extreme control behaviors.

On the contrary, successful weight loss maintainers follow a more balance diet which allows them to enjoy the different types of food they want with no restriction (Kayman et al., 1990). The difference between the two groups is that while regainers apply a dichotomous thinking of 'all or nothing' where they either restrict from favourite foods or binge, maintainers are more flexible and balance their eating between desires, temptations and self-control (Byrne et al., 2003; Lähteenkorva, 2000). In other words, maintainers are more likely to have a sweet pastry because they like it but they will reduce the portion of another food such as bread or snack whereas a regainer while either restrict from having the pastry or he will have both the pastry and the snack. Thus, feeling deprived and applying rigid control over eating brings the opposite result than the one people wish to have i.e. to lose or maintain weight.

1.3.4.2 Self-monitoring

Furthermore, studies on weight loss maintenance also highlight the importance of self-monitoring strategies. Studies indicate that successful weight loss individuals are more likely to weight themselves regularly and thus detect small weight regains which can be more easily managed than huge gains (Kruger et al., 2006; Byrne et al., 2003). Furthermore, studies conclude that maintainers are more likely, than regainers, to plan their meals and be vigilant with their portion sizes and the calories and fat they consume (Kruger et al., 2006). Thus, maintainers acknowledge that weight management efforts
still continue after weight loss and that they need to be vigilant with their weight and behavior. In other words, as Lähteenkorva, (2000) indicates, the ‘battle is not over yet’ as individuals need to constantly be cautious about their eating and weight.

1.3.4.3 Physical activity

Physical activity was found to be significantly associated with weight loss maintenance as it is protective against subsequent weight gain when is accompanied by health dietary habits (Leser et al., 2002; Tate et al., 2007). For example, in the Sibutramine Trial on Obesity Reduction and Maintenance (STORM) leisure time activity was among the best predictors for successful weight loss maintenance. The leisure activity included behaviours such as walking and cycling (Baak et al., 2003). The above results are replicated by various qualitative and quantitative studies which indicate that maintainers are more likely to be physically active than regainers and thus able to maintain their weight loss since physical activity helps them to achieve proper energy balance (Byrne et al., 2003; McGuire et al., 1999; Rippe & Hess, 1998; Wing & Hill, 2001).

Results from the NWCR indicate that after weight loss both maintainers and regainers reduce their physical activity levels. However, regainers have significantly less exercise energy expenditure levels than maintainers as they report exercising less frequently and less vigorously than maintainers (Kayman et al., 1990; McGuire et al., 1999). As some authors indicate, 72% of the registry members meet or exceed the general recommendations for the weekly physical activity levels (Klem et al., 1997). However, we need to be cautious with these results since individuals are more likely to overestimate their exercise habits and provide more social desirable answers.
In addition, despite that the NWCR is a nationally recruited registry the results received from studies need to be taken with caution since the members of the registry are mainly Caucasian women, highly educated who volunteered to register as members (Klem et al., 1997). Thus, results can not be generalised to the general population who are successful weight loss maintainers (McGuire et al., 1999).

In conclusion, successful weight loss maintainers endorse a healthier lifestyle which is characterised by reduced fat consumption, vigilance with portion sizes and calorie consumption, eating breakfast, regular weight monitoring and increased physical activity levels. Therefore, as various studies indicate, the combination of a healthier, balanced diet and physical activity levels enhances energy balance and thus individuals are more likely to minimize the probability of regain and thus maintain their weight loss (Wiltink et al., 2007).

1.3.5 Psychological characteristics

Apart from differences in profile characteristics and behavior successful and unsuccessful weight loss individuals differ significantly in regards to their psychological characteristics. Studies indicate that, individuals’ weight goals, ways of coping and beliefs about the causes of obesity have a significant contribution to the maintenance of weight loss. Thus, this part of the chapter will describe the differences between the two groups concerning the above variables.
1.3.5.1 Weight goals

Reviews of the literature (Byrne, 2002) and conclusions from various authors suggest that, individuals' weight goals may be an important determinant for the successful weight loss maintenance (Byrne et al., 2003; Polivy & Herman, 2000; Polivy & Herman, 2002). Byrne et al., (2003) interviewed a sample of 76 women, 28 maintainers, 28 regainers and 20 healthy weight individuals. Maintainers lost at least 10% of their weight which they maintained for a minimum of one year. The authors indicated that a greater proportion of maintainers than regainers reached their target weight and thus they reported feeling more satisfied with their current weight and thus more likely to maintain it.

Polivy and Herman (2000; 2002) argued that individuals who have unrealistic weight goals are more likely to withdraw from any weight loss effort since their expectations are not met. These individuals are more likely to unrealistically expect to achieve a significant amount of weight, with reduced effort and in a short period of time (Polivy & Herman, 2000). In addition to this, they tend to expect an unrealistically quick reimburse from weight loss such as self change and job improvement (Polivy & Herman, 2002). Based on these false expectations individuals will initiate a weight loss attempt. Initially, from weight loss, they will experience various benefits such as fitting into their clothes, control of eating, improved exercise, reduced stress and compliments from others. However, over time the process becomes less pleasant to them as they indicate more effort, less benefits and more difficulty reaching their goal weight (Jeffery et al., 2004). Thus, they quit and return to their old habits since the new diet is not working and they
are still dissatisfied with their weight and shape (Byrne et al., 2003; Polivy & Herman, 2002).

In other words, regainers seem to be trapped in a vicious circle of diets until they find the one which helps them reach their unrealistic goal weight whereas successful participants are more likely to have reached a realistic weight which they manage to maintain in the long term.

1.3.5.2 Coping skills

The ability to cope with stressful situations it is indicated to be another significant factor which contributes to sustain weight loss.

Research findings indicate that despite that both groups report a similar proportion of stressful events regainers are more likely than maintainers to report diet and exercise relapse. For example, Gormally & Rardin (1981) in their study with maintainers and regainers they concluded that, despite that both groups experienced similar amount of life events, regainers were more likely than maintainers to manage there emotions through eating whereas maintainers were more likely to manage the difficult situations through problem solving techniques. In addition, Kayman et al., (1990) in their qualitative study, they replicated the above results as they indicated that maintainers and regainers had significant differences in regards to they way they coped with difficult situations. In particular, the authors concluded that while maintainers were more positive concerning
their ability to handle difficult situations and applied problem-solving strategies to overcome them, regainers used more indirect ways to cope with the problem.

Compared to regainers, maintainers are more prone to sustain their dietary and exercise habits in the face of a difficulty (Byrne, 2002) and use direct coping in difficult situations such as treating relapse as a mistake, recover and lose weight again or increase exercise (Dohm et al., 2001). Thus, maintainers are more active in response to a difficult situation and instead of overeating to manage the situation they tend to regain control quickly and apply problem solving strategies to confront the situation (Elfhag & Rössner, 2005).

Therefore, the way of approaching and managing difficult situations is what differentiates successful and unsuccessful participants and not the number of stressful situations they experience. As Grilo et al., (1989) indicated, the actual coping response, and not the situation itself, is what distinguishes lapses from temptations. Thus, when individuals applied a cognitive or behavioural strategy they were more likely to overcome temptations and lapses whereas the no coping resulted in a lapse.

1.3.5.3 Perceived causes of obesity

It is also suggested that maintainers and regainers have significant differences in the attributions they make about increased weight and the successful and unsuccessful weight loss maintenance. It is argued that successful weight loss maintainers are significantly more likely to endorse a psychological/behavioural model of obesity (Ogden, 2000). According to this perception individuals' beliefs about the causes of obesity are
consistent with the behavioral solutions they endorse. Qualitative studies indicate that successful individuals tend to attribute their excess weight to internal controllable factors such as unhealthy diet and exercise and therefore they change those behaviors to manage their weight loss (Ogden & Hills, 2008). On the contrary, relapses endorse a medical model of obesity as they concentrate on external uncontrollable factors such as heredity, depression and genetics due to which they perceive that they are unable to manage their weight (Ogden & Sidhu, 2006).

For example, Ogden & Hills (2008) in their qualitative study concluded that individuals maintained their weight loss in the long term because they believed that their weight problem was caused by their behavior and thus they changed their behavior to avoid all the negative consequences they experienced due to their excess weight. In addition, Ogden & Sidhu (2006) designated that visualising the consequences of their behavior enabled participants to make the link between their behavior and weight and thus changed their behavior, and lose weight. Thus, changing the beliefs about the cause of obesity resulted in subsequent changes in behavior and thus individuals are more likely to lose and maintain their weight loss in the long-term (Ogden & Jubb, in press).

Therefore, researchers instead of just encouraging obese individuals to adopt behaviors such as diet and exercise they initially need to explore their perceived causal attributions regarding their weight and then developed an individualistic programme based on these and other factors. For participants who have misconceptions about their increased weight
or endorse a more passive model regarding their weight researchers might need to challenge those perceptions developing any weight loss program.

However, Dohm et al., (2001) contradict these results as they indicated that the two groups have no significant differences concerning their attribution to traits, to biology, to negative affect and exercise. These contradictory results might be due to two reasons. Firstly, Dohm et al., asked participants to indicate the reasons they gained weight in the past whereas the other studies asked them to indicate their attributions to obesity. Secondly, there are studies which illustrate that unmatched beliefs about the causes and solutions can sometimes be effective (Ogden & Jubb, in press). For example, Taylor et al., (1984) in their qualitative study with cancer patients they concluded that patients adjusted to cancer despite that their attributions to cancer were not associated with adjustment and psychological functioning. This inconsistency in beliefs about causes and solutions is also evident in lay people (Ogden & Flanagan, 2008). Thus, inconsistent individual theories between causes and solutions can still enhance adjustment. Therefore, in this study the maintainers group might not endorsed a behavioral model of obesity, which supports a match between causes of obesity and solutions, but they still maintained their weight loss probably due to their coping style.

1.3.6 Why do they continue to maintain weight loss?

A fourth and final psychological factor which is showed to be significant for the successful weight loss maintenance is individuals' self-empowerment and sense of control. As studies indicate, individuals with an autonomous orientation who tend to feel
control over their lives and themselves, they are more likely to maintain their weight loss in the long term since the reasons behind weight maintenance appear within the individuals and not outside, in this case in the society’s pressures to stay slim (Ogden, 2003; Lähteenkorva, 2000).

Society used to perceive them as lazy, irresponsible, self-indulgent individuals whose lack of control caused their excess weight (Brownell, 1991). However, through their success in sustaining their weight loss the negative attitudes towards them have changed. They are now socially accepted and achieved various professional gains (Lähteenkorva, 2000). Thus, the social benefits they experience due to successful weight loss maintenance along with the health related benefits impede them from gaining their weight back as they want to avoid being perceived as individuals who lack eating control.

This large interest concerning the various differences between successful and unsuccessful weight loss maintainers enhance our knowledge about the characteristics of each group and provide ideas for interventions. Based on the results from the successful groups these interventions will aim to teach unsuccessful individuals strategies and encourage the acquisition of skills to maintain their weight loss in the long term.

The widespread attention about the differences between the two groups concentrates on the predictors of successful weight loss maintenance or is interested to find the characteristics which these individuals endorse. However, apart from these features such as types of behavior, historical profiles, internal locus of control etc these studies do not
explain what motivates individuals to continue maintaining their weight. What are the mechanisms which underlie their motivation to be physically active, overcome lapses and eat healthily? What keeps them away from their previous unhealthy behavior and what motivates them to continue the effort and maintain their weight?

Some studies with individuals who sustain their healthy behavior in the long term provide further insights for the reasons behind sustained behavior change. For instance Finfgeld, in (1998) & (1999) indicated that individuals maintain their behavior change due to feelings of control, self-confidence and self-efficacy regarding their ability to successfully perform their goals. In addition to this, Ogden & Hills, (2008) indicated that individuals sustain their behavior change since their new healthy behavior is more rewarding and the choice over the old behavior is reduced either due to environmental constraints or personal choices. In addition, studies with maintainers conclude that people sustain their weight loss since they wish to abolish the fear of obese as it is linked with negative experiences such as social discrimination (Lähteenkorva, 2000). In other words, the minority of individuals might maintain their behavior change due to the different way they perceive and explain the experiences they had before losing weight and while sustaining their behavior. The distinct beliefs they endorse while maintaining their healthy behavior.

Since only few studies examined the underlying beliefs and cognitions which make successful and unsuccessful weight loss individuals different the present study attempts
to increase the knowledge about the mechanisms which reinforce successful weight loss maintenance.

1.3.7 Conclusions

From the above discussion we can now argue that successful weight loss maintainers are more likely to have achieved their weight loss goal and now endorsing a new and healthier lifestyle. This lifestyle includes behaviors such as regular self-monitoring, eating breakfast regularly, reducing calories from fat, reducing consumption of snacks, increasing exercise and improving physical activity. In addition, they are more likely to apply problem solving strategies in difficult situations and have a positive attitude towards their ability to manage temptations and lapses. Finally, as research shows, these people endorse a behavioral model of obesity as they believe that their excess weight is due to factors within themselves and not outside their control. Thus, contrary to regainers, they have a more self-blame model of obesity.

However, the psychological mechanisms which seem to motivate and reinforce individuals to maintain their weight loss remain unexplored. Which cognitive factors tend to strengthen individuals' effort to maintain their weight? Do successful and unsuccessful weight loss individuals have dissimilar experiences while attempting to maintain their weight or do they tend to perceive them differently? These perceptions and attitudes will be further explored in this thesis.
1.4 HEALTH CARE PROFESSIONALS & OBESE PEOPLE

1.4.1 Introduction

Health care professionals (HCPs) have regular contacts with obese and overweight individuals. Studies indicate that almost two thirds of the obese and overweight population visit the primary care (Aita et al., 2005; Robinson, Gjerdingen & Houge, 1995). Therefore, practitioners can use these contacts to prevent obesity and encourage obese individuals to change their dietary habits and manage their weight.

However, health care practitioners, despite that they acknowledge the health threatening consequences of obesity and agree that they have a crucial role in managing obesity, (Bocquier et al., 2005; Kristeller & Hoerr, 1997) the majority are reluctant to satisfy this role. Studies indicate that only a small percentage of obese and overweight individuals are advised to change their behavior and thus lose weight (Galuska et al., 1999; Tan et al., 2006).

This reluctance, from HCPs, to offer nutritional and activity advice is due to various barriers which impede the effective management of obesity in primary care. For example, physicians indicate that insufficient training and education on weight management and obesity practices during medical school impedes them from intervening and helping patients manage their weight (Hoffman, et al., 2006). In addition, insufficient education reduces their confidence in managing obese people and thus makes them more reluctant to offer advice (Kristeller & Hoerr, 1997).
However, even if training is offered to equip physicians with the relevant weight management skills still, for some professionals applying the new skills will be difficult due to reasons such as lack of time to prepare the individual treatment plans, working alone and receiving insufficient support from other colleagues (Melin et al., 2005). In other words, even if professionals are trained to provide patients with more time, satisfy their needs, share responsibility and provide information, various organisational constraints impede them from applying these principles (Rogers et al., 2005). Therefore, not only inadequate weight management education but, lack of support inside the institution, such as shared care, and other environmental constraints impede professionals from offering sufficient services to patients.

Furthermore, HCPs do not manage obesity and overweight satisfactorily as they are not immune to the stigma of obesity (Hebl & Hu, 2001). Some physicians tend to retain negative attitudes towards obese and overweight people as they believe that they are lazy, unmotivated, less disciplined individuals who are less able to change their behavior and lose weight (Bocquier et al., 2005; Teachman & Brownell, 2001). Practitioners show a ‘victim blame’ model of obesity since they attribute increased weight and weight gain to internal controllable factors whereas patients hold an ‘ego protective’ model as they believe that weight is due to external uncontrollable factors such as heredity (Ogden et al., 2001). Thus, for some professionals obese and overweight people are responsible for their weight and they believe that there is nothing they can do about it (Epstein & Ogden, 2005).
However, even if the majority of professionals hold negative perceptions for obese people some practitioners endorse less negative attitudes towards this population as they tend to understand the various psychological problems which these individuals experience such as their difficulty in socializing, low self-esteem and reduced sexual attractiveness. These professionals also tend to have a more mixed model of obesity and attribute weight problems not only to reduced physical activity (internal control) but to factors such as depression (psychological) whereas they list motivation and will power as the least important factors (Harvey & Hill, 2001). These sympathetic attitudes might result from the experience practitioners have with obese and overweight individuals while caring for them which makes them less prejudiced towards their weight and their behavior (Teachman & Brownell, 2001).

Therefore, not only inadequate training and negative attitudes towards obese and overweight individuals but also organizational settings and professionals’ experiences with obese people can reinforce or impede practitioners to provide acceptable services to the this population.

1.4.2 What obese and overweight people want?

The anti-fat bias discussed above increases the stigma that patients feel about their weight (Brown et al., 2006). This prejudice makes obese and overweight people reluctant to seek medical advice or use preventive services due to various barriers such as being treated with disrespect by practitioners, receiving inadequate care and weight advice when not required and finally due to the medical equipment not adjustable to their size (Amy et al.,
2006). This may account for some of the increased health risks in obesity since patients, and specifically women, avoid or delay using some of the important preventive services particularly those involving disrobing or clinical examination such as the Papanicolaou test (Fontaine et al., 1998).

Obese and overweight patients, when asked to describe their physician’s role to weight management, they report that HCPs have a significant role in weight management (Tan et al., 2006). However, despite that patients are satisfied with their physicians they seem to be disappointed with the weight related services they receive from them (Brown et al., 2006). In addition, patients are dissatisfied as HCPs focus on the disease and its’ management and ignore their individuality, their social, psychological lives and expectations (Steward et al., 1999).

Patients expect to receive support from their physician (Brown et al., 2006). They wish their doctor to be understanding, non-judgmental and offer unconditional advice and unambiguous information about weight issues. In addition, patients need to have more time with their physician within which weight issues are raised and the professional offers help and provide advice in managing weight (Davis et al., 2006; Potter et al., 2001). Also, nutritional and exercise advice needs to be more than a diet sheet or exercise recommendations since patients, through previous weight loss attempts, already know what to eat or avoid and that exercise is beneficial (Murphree, 1994).
Some authors argue that for a successful management of any chronic disease (e.g. obesity) physicians need to avoid utilizing the traditional model of care where the doctor dominates the consultation and the patient is asked to follow directions. On the contrary, they argue that physicians, during the consultation, need to take patients' past experiences, expectations, values and beliefs into consideration and through support, education and shared responsibility they help them to acquire the necessary skills and knowledge to manage their condition (Sweet, 2004). Regular follow-ups to review progress and discuss problems are also important for the obese patients (Brown et al., 2006).

1.4.3 Communication and weight loss counselling

Researchers argue that to improve weight loss and in particular weight loss maintenance outcomes physicians are required to adopt a different approach in motivating obese patients to lose weight. In particular, authors indicate that HCPs need to be supportive and understanding towards obese patients and offer weight management suggestions in a non-judgmental atmosphere (Lau, 2007). Patients need to feel that they are listened to and their individual preferences, values and wishes are known and valued (Kushner, 2003; Koster et al., 2005).

In addition, HCPs are advised to replace the traditional model during the consultation by a more collaborative model within which both the patient and doctor exchange information and decide the treatment plan. The patient receives adequate information and education and acquires the necessary skills to manage their own condition. This
partnership helps the individual to take decisions, make choices and thus improve their perception concerning their ability to manage their weight with no external control (Ash et al., 2006; Mustajoki & Pekkarinen, 1999). For example, a randomized control trial with obese and overweight individuals indicated that participants in the intervention group, which aimed to help them manage their situation and become experts of their chronic disease, lost significantly more weight which they maintained longer than their group counterparts who received a diet recommendation leaflet only (Ash et al., 2006). Thus, unfriendly diet advice is not enough to motivate individuals to lose weight and maintain it in the long term. Support is needed from professionals who through patient-centred principles motivate individuals to maintain their effort.

However, despite that the majority of patients wish to receive a patient-centred consultation within which they share responsibility with the physician and are involved in decision making some of them are not ready to participate in decision making as they wish to have a more controlling, dominant and less empathetic physician (Guadagnoli & Ward, 1998; Dowsett et al., 2000; Little et al., 2001). This reaction might be due to different patient characteristics such as prognosis and age (Dowsett et al., 2000) or the patient's belief that the physician needs to take the final decision as he is equipped with the relevant knowledge, experience and training (Charles et al., 1998). Therefore, for improved patient satisfaction and health outcomes, professionals, during the consultation, need to recognize the patient's different needs and thus modify their style to accommodate their preferences, i.e., whether they prefer shared decision making and acquiring responsibility or a more traditional doctor-patient relationship.
1.4.4 Conclusion

It seems that suggesting obese patients to lose weight by just giving them caloric restrictive diets and exercise recommendations in minimal time within which no further information and education is provided and where patients' views, expectations and goals are not discussed is not enough to encourage patients lose weight particularly since this population has a history of previous diet attempts. The results above indicate that a more collaborative approach during the consultation enhances weight loss and weight loss maintenance. However, it is difficult to obtain clear conclusions as these results come only from few studies which discuss the issue of doctor-patient relationship and its relation with weight loss and weight loss maintenance (Ash et al., 2006; Deforce et al., 2005). More evidence is required to examine the impact of a more collaborative consultation to weight loss and maintenance. Considering that only the minority of obese individuals manage to maintain their weight loss in the long term: (Byrne et al., 2003; Klem et al, 1997), is a more collaborative consultation within which patients are offered information and encouragement, they feel understood and supported and where their wishes, concerns and decisions are discussed more beneficial for successful weight loss and weight loss maintenance?

1.5 HEALTH BEHAVIOR CHANGE

1.5.1 Introduction

Obesity is associated with significant physical, social and psychological problems. There is therefore an increased need to enhance health behaviour change as a means to reduce
obesity. It is generally agreed that obesity emerges from the imbalance between energy intake and energy expenditure which is mainly due to the combination of food overconsumption and sedentary lifestyle. Thus, interventions and public campaigns should encourage people to adopt a lifestyle that includes a healthy, balanced diet and physical activity in any form with the aim to reduce their weight and manage all the consequences which are related to it (Rothman, 2000).

Various cognition models have been applied in order to understand behavior, and then develop interventions for the adoption of new, healthier behavioral patterns (Conner and Norman, 2005; Rothman, 2000). These models help to understand behavior better by recognizing the psychological factors and, in particular, cognitions which underlie behavior and behavior change and then aid the development of interventions which target those cognitions.

Based on the models, people are cognitive decision makers whose behavior depends on individual characteristics, beliefs and available information (Conner and Norman, 2005). They aid the understanding of why, for example, some people continue to smoke even if they acknowledge the health risks related to smoking, why some people adhere to their treatment while others don't or what cognitive processes predict people's intention to eat healthily and exercise regularly. Based on their outcomes interventions are developed which target those determinants with the aim to improve behavior and health outcomes (Conner and Norman, 2005; Rothman, 2000).
1.5.2 Cognition models

Some studies utilize the two expectancy-value models i.e. the Health Belief Model (HBM, Becker & Rosenstock, 1987) and the Theory of Planned and Behavior (TPB, Ajzen 1985). Based on these models individuals' attitudes and behavior are based on their expectations and the perceived positive and negative evaluations regarding those expectations. Other researchers follow the Transtheoretical Model of Behaviour (TTM) (Prochaska & DiClemente, 1982) and argue that people, from the initiation towards the maintenance of behaviour, they gradually move through five qualitatively different stages; from the precontemplation towards the maintenance stage.

A brief description of the models and their evaluation is provided below.

1.5.2.1 Health belief model (HBM)

The HBM indicates that behavior and behavior change occurs after individuals evaluate the severity of the situation, their susceptibility towards the health problem, the costs and benefits of adopting the new behavior and abandoning the old one, the internal and external information they receive from their body and the environment respectively and finally their perception about their ability to successfully perform a behavior (Conner and Norman, 2005; Ogden, 2007). For example, an individual will attempt to lose weight when they believe that they are susceptible to heart disease and this illness is a severe health problem, it can cause significant social and health problems (cost), their appearance will improve due to weight loss (benefit), relatives and doctors believe that they need to lose weight (cue to action) and finally they are confident that they will successfully lose weight and manage all temptations.
For many years the Health Belief Model was one of the major organised structures used to explain and predict human behavior. It has been applied to a variety of behaviors with the aim to understand the underlying psychological causes of behavior and then attempt to change them. Behavioral examples are diet and exercise for the prevention of obesity, condom use for the prevention of HIV, adherence to treatment, breast examination, visit to the physicians etc (See Conner and Norman, 2005, for a review).

1.5.2.2 Theory of planned behavior (TPB)

Based on the TPB, behavior and behavior change is the outcome of behavioral intentions and perceived behavioral control (PBC). Behavioral intentions are the individual's motivation to change their behavior and PBC is the belief about their ability to perform that behavior and control the perceived internal (skills, abilities) and external factors (time, opportunities) which are related to the performance of the behavior. PBC has a direct influence on behavior and an indirect effect through behavioral intentions.

The rationale behind the inclusion of PBC into the Theory of Reasoned Action (TRA) was to explain behaviors which were not under volitional control (Armitage & Conner, 2000). Therefore, PBC facilitates the performance of an intention into action when volitional control is low. That is, when the implementation of an intention depends on the individual's perception on his ability to control internal and external variables then PBC explains higher variance of intentions for behavior (Armitage & Conner, 2001).
The model also illustrates that behavioral intentions are formed by the people's attitudes towards the behavior and the subjective norm. Attitudes refer to the individual's positive and negative expectations of that behavior and the perceived consequences for the individual. The more positive the attitudes are the more likely is that the individual will engage in that behavior (Armitage & Conner, 2001). Subjective norm refers to the perception whether significant others believe that the individual needs to perform the behavior or not along with their motivation to follow the significant others' directions (Conner & Norman, 2005).

Similar to other models the TPB had been applied to various behaviors such as physical activity, dietary habits, smoking, cancer screening, drug use, sexual behaviors etc. (Conner & Norman, 2005 for a review).

1.5.2.3 Stage of change model (SOC)

Finally, the TTM supports the view that, in regards to a behavior, people move through five qualitatively different stages i.e. the precontemplation stage where the individual is not admitting that there is a problem and thus is not thinking of losing weight, the contemplation in which they intend to lose weight in the next 6 months, the preparation in which they are thinking of losing weight in the next three months, the action stage where they attempt to lose weight and maintenance in which they lost weight and continue to follow a healthy diet for a minimum of six months (Conner & Norman, 2005).
The model also proposes that there are different underlying cognitions for each stage and that people regress to previous stages or relapse in action or maintenance stage before achieving sustained behavior change (West, 2005). The stage specific cognitions are mainly 1) the perceived benefits and costs on changing behavior and 2) self-efficacy, which is similar to Bandura’s concept, and refers to the individual’s confidence in their ability to adopt the new behavior and maintain it through various temptations. The model suggests that, for successful behavior change, interventions need to adjust to the individuals’ current stage characteristics, which include the stage specific beliefs, and help them to move through the subsequent stages and reach the maintenance stage by changing those cognitions (West, 2005).

The Stage of Change Model has been mainly applied to behaviors such as smoking, and in particular smoking cessation, physical activity, exercise and diet.

1.5.3 Criticisms shared by all models

Despite the models’ diversity on the factors which underlie behavior and behavior change, they are based on a similar framework as they attempt to explain and predict the proximal and distal factors which regulate human behavior (Rothman, 2000). In addition, they are utilized to aid the development of interventions and the formation of specific valid and reliable measures to examine cognitions and behavior (Conner & Norman, 2005). However, despite their widespread application to various behaviors these models share some common weaknesses.
First, models support their ability to predict and explain a significant proportion of human intention and behavior. However, some authors argue that in studies the prediction of human behavior is determined by constructs which are predefined by existing theoretical models and on concepts which are considered from the researchers to be significant for the behavior under investigation (Conner and Norman, 2005). Therefore, other variables which are not included in the models or are not considered important from the researchers are neglected and thus remain unidentified (Jeffery, 2004; Ogden & Hills, 2008). With this argument we can possibly explain the reason behind the small but significant effect sizes that theories have over the prediction of behavior and intention i.e. they explain a small variance of intention and behavior because other factors which determine them remain unstudied or unknown. For example, the models seem to underestimate the contribution of people’s abilities and opportunities to change, their personality characteristics, the environmental factors, unconscious behaviors and participants’ sociodemographic qualities (Conner & Norman, 2005; Jeffery, 2004; West, 2005).

In addition to this, Resnicow & Vaughan, (2006) argued that the models fail to predict a higher variance of both intention and behavior because in reality they are both complicated components which are difficult to predict. In particular, they indicated that human behaviour and behavior change are chaotic, complex units from which is difficult to take accurate measurements and predict them because various factors like attitudes, beliefs and knowledge, every time, they interact in a different way and produce a new, different outcome which is always difficult to predict. These authors also indicated that
sometimes even a small change within those factors i.e. a new bit of information can change the whole outcome.

To explain the complexity of human behavior the authors utilized the example of the weather where they indicated that to make accurate and reliable weather (behavior change) predictions scientists need to take many measurements. However, even with different instruments, every time they make a measurement those tiny bits which appear within the weather and the atmosphere (past behavior, motivation, mood, beliefs, and environmental characteristics) will affect the calculations because every time they interact in a different way. Therefore, for the models it is difficult to explain a higher proportion of human behavior and behavior change as they are complex, chaotic systems which are difficult to reliably explain and predict.

Secondly, as studies indicate, the models can successfully explain a significant variance of behavioral initiation by signifying that the decision to initiate a new, healthier behavior depends on the balance between the perceived benefits and perceived costs for the individual. In particular, the models support that the individual will change their behavior when they perceive more benefits and fewer costs for the adoption of the new behavior (Jeffery, 2004; Rothman, 2000). Thus, interventions which are based on these outcomes try to target those perceptions with the aim to enhance health behavior change.

However, considering the fact that the outcomes focus only on the cognitions which aid the initiation of behavior these interventions fail to enhance behavior maintenance.
Some authors argue that interventions fail to enhance sustained behavior change because different cognitions are required for the initiation and maintenance of behavior. For example, Rothman (2000) argues that while people initiate a behavior when they have favourable expectations over the outcomes of the behavior change they maintain the new behavior when their expectations are met and they are satisfied with the outcomes received from the behavior change. Thus, the initiation and maintenance of behavior depend on different factors.

However, there are studies which indicate that the same cognitive factors can be important for the initiation and maintenance of behavior change. For example, Conner and Norman (2005) in their book indicated that self-efficacy is a significant factor of the initiation and maintenance of behavior. More specifically, they indicate that self-efficacy can significantly enhance initiation of behavior by increasing individuals’ perception on their ability to successfully perform a behavior and sustained behavior change occurs when individuals believe they can manage to control environment and temptations. Therefore, a more conclusive theory which connects all these important for initiation and maintenance of behavior factors might enhance sustained behavior change too.

Finally, based on the models discussed above behavior change in the outcome of a linear process where individuals make behaviour choices based on the value/expectancy calculations where they weight the costs over the benefits of the required behaviour. If, from the calculations, emerges that the required behaviour is more beneficial for the individual then motivation is enhanced and individuals start planning their behaviour.
(Jeffery, 2004; Resnicow & Vaughan, 2006). Therefore, the more positive individuals are towards behavior the more likely they are to change. In other words, motivation is planned and gradually develops as individuals move through these cognitive shifts (Resnicow & Vaughan, 2006).

However, contrary to the above arguments, some authors indicate that behavior change is not always the end outcome of planned actions because for some individuals motivation suddenly arrives and reinforces behavior change unexpectedly (e.g. Gorin et al, 2004; Larabie, 2005; Matzger et al., 2004; Miller, 2004; Ogden & Hills, 2008; Ogden & Sidhu, 2006).

The fact that for some individuals sudden triggers enhance behavior change and sustained behavior change will be discussed below.
1.5.4 Life events

As it is discussed above central to many theories of health behaviour is the conceptualisation of changes in behaviour as linear, gradual cognitive shifts from the development of behavioral intention and action plans towards the actual behavior (Ogden & Hills, 2008; Resnicow & Vaughan, 2006). However, there is much research which indicates that for some individuals at some time in their life behaviour change may occur in a less gradual way particularly following a specific trigger or event (Kearney & O’Sullivan, 2003; Resnicow & Vaughan, 2006). In particular, researchers have argued that behaviour change is not always due to planned decisions that are under conscious control but involve a more sudden change following a dramatic experience (e.g. Gorin et al, 2004; Larabie, 2005; Matzger et al., 2004; Miller, 2004; Ogden & Hills, 2008; Ogden & Sidhu, 2006). More specifically, recent qualitative and quantitative studies indicate that distinct moments in people’s lives such as a heart attack, death of a relative, family problems, relationship problems, anticipation of children, not fitting in their clothes, changing job etc. can enhance change in diet, physical activity, smoking and alcohol habits with some behaviour changes being sustained in the long term.

For example, Ogden & Hills (2008) carried out a series of qualitative interviews with individuals who showed sustained behaviour change and described how quitting smoking and maintaining weight loss in the long term were triggered by significant life crisis related to health, relationship problems and salient milestones. In accordance with the above study, Ogden and Sidhu (2006) conducted a qualitative study with obese
individuals who had taken obesity medication (Orlistat) for 2 years. Their results indicated that those individuals who were motivated to change by a life crisis were more likely to adhere to the medication and tolerate its side effects and thus lose weight whereas those individuals who were motivated by less salient triggers (e.g. unattractiveness) were less likely to adhere to the drug and therefore lose weight. Furthermore, the authors argued that the life crisis experienced by successful people gave them the opportunity to adhere to the drug, visualize its' side effects, recognize that their weight was due to their behaviour and not to any other uncontrollable factors and thus maintain their behaviour change. Therefore, adherence to Orlistat and subsequent weight loss were the consequences of visualizing the side effects and associating weight with their behaviour.

In parallel, Gorin et al (2004) and Wing & Phelan (2005), concluded that medical triggers were associated with more weight loss and better sustained weight loss in a group of successful weight loss maintainers. In particular, Gorin and colleagues with his study of successful weight loss maintainers from the National Weight Control Registry (NWCR), concluded that within this group those who experienced medical triggers such heart attack and doctor’s recommendations lost significantly more weight which they sustained significantly longer than those who did not indicate any trigger prior to weight loss. Finally, in line with the above, Tinker & Tucker (1997) denoted that participants, who maintained their weight loss for an average of 4.5 years, reported more negative events prior to weight loss and more positive events during and after their weight loss than participants who did not sustain their weight.
Likewise, in the field of smoking and alcohol consumption, West & Sohal (2006) and Larabie (2005) indicated that for many smokers quitting smoking was unplanned; they quitted 'cold turkey' and as the authors suggested these participants were more likely to abstain from smoking in the long term. Brown (1996) reported that, old adults who quitted smoking and maintained it for a maximum of 5 years, reported reasons of health and reaching a particular age in which they were more vulnerable to illness, as the most important motivators for quitting smoking. Finally, Matzger et al (2004) reported that those individuals who hit rock bottom or experienced a traumatic event were twice more likely to sustain from problem drinking in the long term than those who had not reported any previous negative event.

However, there are times when sudden triggers in people's lives can direct them towards the opposite direction and thus return to the old behaviour and either regain weight, start smoking or consume alcohol. For example, Ogden and Stavrinaki (2009) highlighted the role of events such as pregnancy, illness and death of a relative and concluded that life events result not only in weight loss but also in weight regain. In addition, Gormally & Rardin, (1981) concluded that, although after their treatment, both successful weight loss maintainers and regainers experienced similar unpredicted events the majority of regainers, during the stressful incidence, reported relapse in diet as they ate to manage their stress and emotions. Some researchers have argued that this might be endorsed by some individuals who apply avoidance behaviours and use food to manage their mood and stress whereas others, apply more problem solving strategies to manage their life stressors (Byrne et al., 2003; Elfhag & Rössner, 2005; Kayman et al., 1990).
In terms of smoking behaviour Falba et al (2005) concluded from their longitudinal survey with a representative sample of workers in US that, participants who unintentionally lost their jobs were twice more likely to report smoking relapse and were also more likely to increase, by five, the number of cigarettes consumed per day.

However, the same authors discussed in their article the fact that while, for some individuals, salient life events enhanced their risk for smoking relapse, for others, losing their job was linked with smoking cessation because people are financially restricted to buy cigarettes. Therefore, salient events may not always enhance positive behaviour change. It would seem therefore that it is not the event per se which enhances behaviour change but the way individuals interpret the event; either as negative or positive (Ogden et al., in press) along with the circumstances which surround this salient event.

So, what factors determine whether or not a life event is translated into behaviour change? Some research has assessed the salience of the event itself and researchers have argued that if the sudden event is not of central importance for the individual then, even if the individual decides to change, this new behaviour will not be sustained in the long term (Brink & Ferguson, 1998; Kearney & O'Sullivan, 2003). For example, some individuals want to lose weight due to an upcoming wedding. After the wedding they are unsuccessful in sustaining their interest in losing weight and thus abandon any weight loss effort. This will gradually lead in regaining the lost weight.

In addition, Kearney & O'Sullivan argued that external temptations and pressure from others to return to the old behaviour and the decrease in the perceived benefits of the new
behaviour impede individuals from sustaining their behaviour. Consequently, life events motivate individuals to change but to sustain their behaviour the trigger needs to be of central importance for the individual along with the fact that they need to constantly control their environment.

Apart from the event’s centrality and the ability to control the environment to avoid the undesired behavior research also indicates three other sustaining mechanisms which seem to underlie sustained behaviour change. A theoretical model by Ogden & Hills (2008) indicates that a life event is translated into longer changes when a number of sustaining mechanisms including the disruption of function, reduced choice over the behaviour, beliefs about causes and solutions and a process of reinvention appear concurrently with the event.

These factors will now be further explored.

1.5.5 Sustaining mechanisms

1.5.5.1 Disruption of function

Other research has addressed the impact of the life event itself upon aspects of the individual’s behaviour. For example, research indicates that initial behavior change is converted into sustained behavior change if people are reinforced from the consequences of the new behaviour and the function over the old behaviour is disrupted (Brown, 1996; Kearney & O’Sullivan, 2003; Ogden & Hills, 2008; Young et al., 2001). For example, Ogden & Hills, (2008) in their qualitative study described how smoking and eating
provided an important function in participants' lives and how this function was disrupted when they changed their behaviour i.e. quit smoking or change diet and exercise habits. In particular, ex-smokers reported how they used to manage their stress and socialize through smoking and successful weight loss maintainers reported how they utilized food to manage their mood. However, the function of these behaviours was disrupted with the life event which reinforced people to change their lives and experience the benefits from the current, healthy behavior.

In parallel, Young et al (2003) reported that participants who sustained their weight loss or their physical activity levels were more likely to be reinforced from the benefits of these behaviours than the unsuccessful weight loss maintainers and sedentary participants. In particular, participants reported reasons of good health, feeling energized, managing stress and maintaining weight as the main reasons for sustained exercise while fitting into their clothes, feeling good, and having energy were the motivating factors for sustaining their weight loss.

Furthermore, in the area of smoking Brown (1996) reported how behaviour change, i.e. quitting smoking, disrupted the consequences which reinforced the old behaviour. For the old adult population quitting emerged from the change in perception that smoking was 'enjoyable', 'glamorous' and 'relaxing' to the view that smoking was 'unwise' and 'disgusting'.
1.5.5.2 Reduction of choice

In their theoretical model of behavior change Ogden and Hills also reported that, along with the disruption of function of the previous behaviour, the behaviour change can be sustained when the choice over the previous unhealthy behaviour is reduced due to cost, availability and ability reasons. For instance, individuals who had bariatric surgery indicated that, following the operation, they regained their control over the quantity and quality of food they consumed due to the reduced stomach size after surgery. Consequently, the reduced stomach size, removed individuals' ability to overconsume food and improved their control over eating; therefore they managed to lose and sustain their weight (Ogden et al, 2006; Ogden & Hills, 2008).

In addition, concerning the cessation from smoking, ex-smokers indicated that the choice over smoking was reduced due to the increased cost of cigarettes, the public policy to restrict smoking and the social perception that smoking was no longer an approved behaviour since in their social gatherings being a non-smoker was the rule rather than the exception (Brown, 1996). For these individuals the increased cost of cigarettes and reduced availability of smoking in public places reduced their choice over smoking and sustained quitting.

1.5.5.3 Causes and behavioral solutions

Some studies have also focused on the role of beliefs about causes and behavioral solutions. Researchers report that behavior change can be sustained when individuals acknowledge that their unhealthy behaviour causes their health problems i.e. that their
increased weight is due to their lifestyle and not any other external uncontrollable factor (Ogden, 2000; Ogden & Hills, 2008; Ogden & Sidhu, 2006). For instance, Ogden & Sidhu (2006) concluded that individuals who admitted that their weight was due to their behaviour were more likely to maintain their weight loss whereas those participants who indicated that their weight was due to factors outside their control seemed to regained weight. Similarly, Ogden and Hills (2008) in their qualitative study concluded that their successful participants retained a behavioral model of their obesity and smoking and thus sustained their behavior change as they believed that their lifestyle caused their weight and smoking related symptoms. Consequently, those who hold a more psychological model of their condition are more likely to maintain their behavior change (Ogden, 2000).

To conclude, behaviour change is not always the end outcome of the linear, gradual change in cognitions which enhance motivation, intention and then planning of behaviour. Motivation to change and thus behaviour change can at times be suddenly triggered by a life event. However, behaviour change will be maintained in the long term if the sustained mechanisms of disruption of function, reduction of choice and psychological model of behavior appear in the scene. Hence, sustained behaviour change will occur if the consequences of the old behaviour are disrupted, the individual perceives benefits from the new behaviour, the choice over the old behaviour has been reduced and the individual holds a psychological model of causes and solutions.
1.5.5.4 Process of reinvention

Finally, all these studies emphasize the process of reinvention and a change in identity towards a healthier self which emerges from the relation of life events and sustained mechanisms (Brown, 1996; Kearney & O'Sullivan, 2003; Ogden et al., in press; Ogden & Hills, 2008). Initially, a distressing event threatens the individual's equilibrium as it conflicts with their current core values and beliefs. Some people will attempt to re-establish their status-quo by changing their behaviour as they realize that their current lifestyle is not beneficial for their health (Brown, 1996; Kearney & O'Sullivan, 2003). When altering their behaviour people start to experience benefits from it and therefore encourage the new identity by endorsing new healthy behaviours. Consequently, people gradually modify, in a positive way, their perceptions about themselves and the new behaviour as the function of the previous behaviour is disrupted (Brown, 1996; Kearney & O'Sullivan, 2003; Ogden & Hills, 2008). For example, ex-smokers felt more accepted from their families and friends after quitting smoking (Brown, 1996) while former drug users reported how they liked the way the society treats them now (Kearney & O'Sullivan, 2003).

The identity revision is also fuelled by the fact that the choice over the old behaviour is reduced due to cost, availability and ability reasons. For instance, smokers reported increase in the cost of cigarettes and barriers in public smoking (Brown, 1996) while successful weight loss maintainers reported that their ability to eat was reduced due to their reduced stomach size after surgery (Ogden & Hills, 2008). Therefore, the salient event enhances behaviour change and provides the opportunity for reinvention which is
facilitated by the disruption and the reduction of choice over the old behaviour. In addition, the new healthier self constantly undertakes alternative behaviours to manage the environment and control behaviour by avoiding smoking situations, changing family dietary habits, or keeping hands busy (Brown, 1996; Kearney & O'Sullivan, 2003). Miller (2004) supported that an epiphany experience or a sudden insight motivates people to change not only their behaviour but also their core values and beliefs and eventually change identity. Through this experience they change their self-identity, become more mature with an increased sense of respect for themselves and others without having the need to be approved by others.

The model's graphical presentation is illustrated below.
Graph 1-1: Life events and sustaining mechanisms

LIFE EVENTS

→

BEHAVIOUR CHANGE

↓

DISRUPTION OF FUNCTION  REDUCTION OF CHOICE  PSYCHOLOGICAL MODEL

↓

IDENTITY SHIFT

MAINTENANCE OF BEHAVIOUR CHANGE
1.5.6 Discussion

The cognition models, significantly contribute to the enhancement and understanding of the proximal and distal determinants of human behavior and aid the development of valid and reliable measures with which cognitions are measured (Conner & Norman, 2005). In addition, with the explanation and prediction of human behavior they enhance the development of successful, for healthy behavior change, interventions (Jeffery, 2004; Ogden, 2003; Resnicow & Vaughan, 2006).

These theories emphasise the drip to drip effect and accumulation of evidence as they indicate that individuals' planning based on evaluation and synthesis of information underlie decision making. Thus, for some individuals behavior change is the end outcome of gradual decision making and specific planning.

Contrary to the above we can also argue that, for some individuals, healthy behavior change unexpectedly occurs after a sudden even or trigger. In this case, individuals change towards a healthier behavior without previous planning and accumulation of evidence. However, it is quite possible that life events triggered internal motivation to change which emerged from previous planning. In other words, some people plan their future behavior change and this internal motivation is translated into behavior change after the sudden trigger.

A theoretical model by Ogden & Hills (2008) argues that individuals suddenly change their behavior due to life events but maintain their behavior due to the disruption of
function and reduction of choice over the unhealthy behavior and the understanding that the problem was due to internal controllable factors. The model also indicates that while the sustaining mechanisms reinforce maintenance of the new behavior individuals experience a shift in perception about their self and tend to reinvent themselves as healthy individuals.

In line with this, the present study aimed to further explore the role of specific triggers in behaviour change and to operationalize these sustaining conditions using a quantitative approach. In particular, the study aimed to examine differences between successful dieters and unsuccessful dieters in terms of triggers, choice and function of eating and exercise and beliefs about the causes and solutions to their weight problem. It is possible, however, that differences not only exist between different groups of people but also within people at different times of their lives. Therefore, a within subject analysis was also carried out to explore differences within the successful group between a time when they had been at their heaviest and over the past month whilst they were in the maintenance phase of weight loss management. It was hypothesized that successful weight loss maintenance would be associated with more life events, a perception of reduced choice over their previous eating and exercise behaviour, more perceived benefits from their new healthier behaviour and a focus on behavioural causes and solutions to their weight problem.
1.6 OVERVIEW OF THE THESIS

Many individuals attempt to lose weight with the aim to improve their health and well being. However, research indicates that many interventions designed to promote weight loss are unsuccessful with many people showing repeated patterns of weight loss and weight regain, known as recycling which itself may be damaging to health. Despite the extensive evidence for the relation of weight change and health outcomes, there is very little evidence for the ways in which weight varies over a person’s life history and whether patterns of weight change relate to demographic or weight related variables. In line with this the aims of the first study in this thesis were as follows:

a) To describe patterns of weight change over the life history of a large population of people trying to lose weight

b) To assess whether these patterns can be explained by participants' demographic and weight characteristics.

The literature also indicates that while the majority of individuals struggle to manage their weight only the minority of individuals are successful in maintaining their weight loss in the long term. Recent work indicates that behaviour change and subsequent weight loss may be the result of sudden life events and that initial changes are sustained in the longer term by a number of sustaining mechanisms (Ogden & Hills, 2008). These mechanisms reinforce the maintenance of behavior which prompts an identity shift towards a healthier individual. In line with this approach the aims of studies 2, 3 and 4 of this thesis were as follows:
a) To explore differences between individuals who successfully maintain their weight loss and those who did not in terms of life events and the three sustaining mechanisms.

b) Examine differences within the successful group concerning the sustaining conditions between their heaviest and current weight.

c) Focus upon the role of a shift in identity in maintaining weight loss in the longer term.
CHAPTER 2  STUDY 1 - WEIGHT CYCLING

2.1 INTRODUCTION

As is indicated in the literature above, weight surplus has detrimental effects for the individual's health (Anderson & Wadden, 1996; Lang & Froelicher, 2006; Ogden, 2004). Obese and overweight individuals are encouraged to lose weight by following a healthier lifestyle (Wanlknamethee et al., 2002). Although most obese people attempt to lose weight the majority eventually regain some or all their weight (Marchesini et al., 2004; Polivy & Herman, 2002). This difficulty to manage weight and sustain weight loss drives individuals to be in an endless battle to control their weight. These repeated efforts to manage weight leads to weight cycling.

Weight cycling or yo-yo dieting which is defined as the repeated cycles of loss and regain has been linked with poor physical (Rzehak, et al., 2007; Stafford et al., 1998) and psychological health (Marchesini et al., 2004; National Task Force on the Prevention of Obesity, 1994). However, other studies oppose to these arguments as they concluded that weight cycling showed no relation with physical and psychological outcomes (Clark & King, 2000; Dyer et al., 2000; Silverman et al., 1998; Wing et al., 1995). Some authors argue that the period in participants' life within which the study takes place can sometimes affect the conclusions (Polivy and Herman 2000; 2002)
In addition to the above, some authors also argue that weight cycling impedes future weight losses or makes potential weight regains more rapid (Coakley et al. 1998; Marchesini et al., 2004). However, some results contradict with these arguments. For example, while Field et al. (2004) supported that weight cycling was associated with greater weight gain; Van Wye et al. (2007) concluded that, in men, weight cycling was not detrimental to the maintenance of weight loss as weight cycling did not increase the likelihood of future weight gains. This diversity of results might occur because individuals tend to be less physically active or engaged in more binge eating than others or they might gain weight because they change their dietary patterns when the weight loss treatment ends (Stevens et al., 2001). Consequently, third variables might alter the relation between weight variability and subsequent regain.

Despite the plethora of studies about the relation of weight cycling and individuals' physical and psychological health conclusions need to be taken with caution since confounding variables may mediate the relationship between weight change and individuals' physical or psychological health. In addition, the diversity in the methods applied, the designs and participants' characteristics makes the comparisons more difficult and this inhibits a more comprehensive understanding concerning the relation between weight cycling and health outcomes (e.g. Van Wey et al., 2007). Finally, the direction in the relationships is not clear and thus it is difficult to know whether weight fluctuation precedes or follows health consequences (Stafford et al., 1998) or if it is just an association (Brownell & Rodin, 1994).
The results’ diversity indicated above which seem to impede a comprehensive understanding of weight cycling and its relation to physical, psychological health and future regains might be explained by the fact that other weight patterns, which are not encapsulated by the existing studies, remain unidentified. In other words, a less simplistic definition of weight cycling might explain the conflicting results. Furthermore, apart from the wide range of weight history patterns a broad mixture of demographic and weight characteristics, which had minimal importance in previous studies, might also produce the ambiguous results. Finally, previous studies utilized weight history and participants’ weight change as a predictor, rather than as the outcome variable, and examined its relation with various physical and psychological outcomes. Therefore, the aim of the present study was to map a wider range of weight history patterns than those already defined in the literature and explore whether these weight patterns are explained by participants’ weight and socio-demographic factors.
2.2 AIMS
Therefore, this study aimed:

1. Firstly to describe different patterns of weight change over the life course.
2. Secondly to indicate whether these patterns are explained by participants' demographic factors (age, education, occupation and marital status)
3. Thirdly to examine whether the different weight histories are explained by participants' weight characteristics (BMI, present weight, maximum weight and age of onset of obesity and diet attempts).
4. To explore whether obese and overweight participants indicate differences in their weight histories.

2.3 METHOD

2.3.1 Pilot study
Before conducting the main study a small pilot study was carried out with a group of university students. Students were invited through email to participate in a pilot study, which was a part of a PhD thesis, to explore people's weight loss experiences. Those students who struggled with their weight for some time were initially invited to take part and complete the questionnaire.

Those who expressed interest were given the questionnaire. When sending the questionnaire the researcher informed participants about anonymity and confidentiality
and asked them to provide feedback on the questionnaire such as suggestions for improvement or indicate any linguistic problems.

The aims of the pilot study were:

1. To test the questionnaires and examine any linguistic problems such as ambiguous statements
2. To take feedback from participants on any 'missing items' e.g. missed marital status categories
3. To examine if the procedure ran efficiently

After the pilot study few changes were made to the questionnaire. Participants indicated that 'living with a partner' can also be a part of the 'marital status' item. They also indicated that 'being a student' can be another category in the 'employment item.'

2.3.2 Design

This was an empirical study aimed to explore deeper participants' weight histories.

2.3.3 Participants

All participants were members of a slimming club and were initially recruited via an online questionnaire. One thousand and ninety four members completed the screening questionnaire. One hundred thirty three (133) participants between the ages of 18 and 24 were excluded from the analysis because their reports did not provide enough details on their previous weight changes. In addition, ninety eight (98) of them were also excluded
because it was difficult to categorise them since they did not provide a clear details of their weight history. Therefore, 863 weight histories remained for the final analysis. The final sample consisted of 863 participants with their age ranging from 17 to 72 years (M = 38, SD = 10.4) and their BMI from 16 to 102.5 kg/m² (M = 31.5, SD = 6.9). Participants were mainly Caucasian (96%) women (98%).

2.3.3.1 Recruitment

Initially it was agreed that the researcher would visit the various commercial groups, introduce the study to members and invite them to participate in the study. However, considering the members’ confidentiality it was decided that the researcher would not recruit members by attending their meetings. Therefore, participants were invited to participate in the study through an advertisement which was on the slimming club’s protected member web-site. Thus, only registered members of the slimming club could see the advertisement and complete the screening questionnaire.

This advertisement invited members to take part in a study in which researchers from Surrey University were interested in weight loss histories and weight loss maintenance. The invitation described how participants would, first, complete a quick questionnaire and then a slightly longer survey. At the end, the invitation letter confirmed that all personal information would remain completely confidential (Appendix II). In addition, a link with a more detailed letter was included in the advertisement for those members who wished to have more information about the study before completing the questionnaire (Appendix III).
2.3.4 Materials

The questionnaire which was utilised included questions of weight histories, demographic details, previous and current weight characteristics.

2.3.4.1 Questionnaire

The questionnaire included questions a) on participants’ weight history b) demographics details and c) contact details. This questionnaire was designed to enable the categorisation of participants based on their weight histories.

Weight History

Initially, participants reported their current weight and height to calculate their BMI. In addition, they were asked to record their present weight, highest weight excluding pregnancy, lowest weight since 18 years, most weight ever lost, age when they first became overweight, age when they first tried to lose weight and whether they were currently trying to lose weight.

Participants were also asked to indicate their weights from the age of 18 up to their current age in two years interval in an age/weight table. This aimed to categorize them into different weight history groups. They were asked to complete it as accurately as possible (Appendix IV).
Demographic details

After their weight history members were asked to provide some demographic details such as their age, gender, ethnicity, employment, marital status and level of education.

Contact details

At the end of the questionnaire members indicated their contact details such as their name, address, telephone number and email. When providing their contact details participants were simultaneously giving their consent for their participation in future studies. Those participants provided their full contact details were also contacted for the follow up studies (Appendix IV).

2.3.5 Approval

2.3.5.1 Slimming club

Before running the study we initially contacted the director of the slimming club and provided him with all the relevant information about the study. The director was informed about the aims of the study, the procedure and the expected outcomes. A draft from the questionnaire and the information letter was also provided to the director.

The director suggested some changes on the information letter and the questionnaire. The director also proposed that we change the procedure. More specifically, he suggested that, instead of visiting the different groups, we could put the questionnaire online on the slimming club's website. He argued that this would cost less, help us gain more time and have access to more slimming club members.
After completing the suggested changes the director gave his approval. We then contacted the club’s IT department to agree on the study’s advertisement and invitation letter.

2.3.5.2 University’s ethics committee

Ethical approval was also provided by the University Ethics’ committee after providing all the relevant details such as participants’ information sheet, protection of personal information and risk assessment.

2.3.6 Categorisation

Initially, all participants’ weight histories from the age of 18 up to their current age were presented into graphs. Then all individual figures were printed so that the researcher could examine them, look for similarities or differences and categorise them into groups.

From a first glance figures were organised into 2 groups: a) those histories which showed cycles of weight loss and weight gains and b) those histories which indicated a trend towards continuous weight gain.

After a closer look to the first group, which was mainly characterised by histories of weight cycling, various within differences in the group emerged. Among the graphs the researcher noticed that while for some participants weight cycling emerged during the first years of their weight loss efforts for others their weight was initially stable and then fluctuated. Finally, in the same group some participants seemed to indicate a history of weight cycling within which they gained more weight in each cycle, and thus through the
cycles their weight was gradually increased, whereas for others, despite their weight fluctuation they seemed to have returned to their baseline weight (weight at the age of 18). Therefore, from this group three sub-groups emerged: weight cycling with gradual gains, weight cycling with initial weight stability and weight cycling with return to baseline. Weight cycling, weight fluctuation and weight change were used as similar concepts.

Concerning the second group, which was characterised by gradual weight gains, the researcher noticed that while some participants had a history of gradual gains with no previous weight cycling or current weight loss others indicated a weight history of gradual gains which was currently characterised by a sudden weight loss. When these groups were identified criteria were developed so that the two groups were mutually exclusive.

For participants, who were currently losing weight, after a history of gradual gain, the percentage of their weight loss was initially calculated. Those who indicated a weight loss of ≥10% were categorised as weight loss participants. The 10% weight loss was chosen based on the literature which indicates that this percentage of weight loss enhances the individual’s physical health (Goldstein, 1992; Vidal, 2002). The remaining participants who lost less than 10% were grouped as gradual gainers. Therefore, from these calculations two more groups emerged i.e. “weight loss group” and “gradual gain group”.

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Consequently, based on the individual weight history 5 different groups emerged:

Participants with histories of weight cycling:

a) Weight cycling with overall increase  
b) Weight cycling with initial weight stability  
c) Weight cycling with return to baseline

Participants with gradual gain histories:

d) Weight loss  
e) Gradual gain
2.4 RESULTS

The results were analyzed in the following way:

I. Initially each group’s classification along with a graph as an example is provided.

II. A descriptive analysis of the groups’ demographic and weight characteristics.

III. Differences in the groups’ demographic factors such as age, occupation, marital status and education

IV. Differences between the groups concerning their weight characteristics such as BMI, maximum and present weight, age when first became obese or started dieting etc.

Obese and overweight participants and a description of the two groups’ weight patterns:

I. Descriptives of the groups’ weight history

II. The differences between the two groups concerning their weight history with the aim to indicate whether they have different weight history patterns were also examined.
2.4.1 Groups’ classification

2.4.1.1 Weight cycling with overall increase

Participants in this group had a minimum of one weight cycle which was characterised by a gain followed by weight loss or weight loss followed by a weight gain. Within those cycles their current weight was higher than their baseline weight (Graph 2.1).

Graph 2-1: Weight cycling with overall increase

2.4.1.2 Weight cycling with initial weight stability

The criterion for being classified as weight stable with subsequent weight cycling was a stable weight from the age of 18 for a minimum of 7 years with $\leq 5\%$ as the
maximum weight fluctuation within those years. (Graph 2.2)

2.4.1.3 Weight cycling with a return to the baseline weight or lower

Participants in this group had a history of weight cycling i.e. they showed at least one cycle of weight loss followed by regain or gain followed by a weight loss and they were currently at their baseline weight or lower than that. Baseline weight was set their weight at the age of 18. (Graph 2.3)
2.4.1.4 Weight loss group

Weight loss was defined as a history of gradual gain, with no evidence of previous weight cycling. This continuous weight gain is currently followed by a weight loss of $\geq 10\%$. The minimum 10% weight loss was chosen based on the literature which indicates that this loss is significant for the individual's physical and psychological health. (Graph 2.4)

Graph 2-4: Weight loss group

2.4.1.5 Gradual gain group

The criterion for the classification of gradual weight gain was a steady increase in weight with no evidence of weight loss or weight cycling through the previous years. (Graph 2.5)

Graph 2-5: Gradual gain group
### 2.4.2 Descriptives for each group

Table 2.1: Group’s demographics and weight characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>WC: Overall increase (N = 495)</th>
<th>WC: Initial weight stability (N = 75)</th>
<th>WC: Return to baseline (N = 89)</th>
<th>Weight Loss (N = 83)</th>
<th>Gradual Gain (N = 121)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>M = 40.75, SD = 9.23</td>
<td>M = 44.7, SD = 9.1</td>
<td>M = 36.3, SD = 8.8</td>
<td>M = 34.6, SD = 8.7</td>
<td>M = 36.9, SD = 8.6</td>
</tr>
<tr>
<td>Women</td>
<td>98.2%</td>
<td>100%</td>
<td>98.9%</td>
<td>100%</td>
<td>97.5%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>97.6%</td>
<td>97.3%</td>
<td>97.7%</td>
<td>92.8%</td>
<td>96.7%</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>58.5%</td>
<td>48%</td>
<td>63%</td>
<td>64%</td>
<td>60.8%</td>
</tr>
<tr>
<td>Part time</td>
<td>23.8%</td>
<td>32%</td>
<td>23.6%</td>
<td>18.1%</td>
<td>19.2%</td>
</tr>
<tr>
<td>Student</td>
<td>9.8%</td>
<td>10.7%</td>
<td>8%</td>
<td>6%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>7.5%</td>
<td>5.8%</td>
<td>10.3%</td>
<td>11.3%</td>
<td>6.8%</td>
</tr>
<tr>
<td>In relationship</td>
<td>12.9%</td>
<td>14.5%</td>
<td>20.7%</td>
<td>27.5%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Married</td>
<td>65%</td>
<td>69.6%</td>
<td>56.3%</td>
<td>46.3%</td>
<td>59%</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;GCSE/O Level</td>
<td>42%</td>
<td>44.6%</td>
<td>36%</td>
<td>38.6%</td>
<td>38.8%</td>
</tr>
<tr>
<td>A level</td>
<td>25%</td>
<td>20.3%</td>
<td>19%</td>
<td>26.5%</td>
<td>25.6%</td>
</tr>
<tr>
<td>Degree</td>
<td>33%</td>
<td>35.1%</td>
<td>45%</td>
<td>35%</td>
<td>35.25%</td>
</tr>
<tr>
<td>BMI</td>
<td>M = 32.8, SD = 6.7</td>
<td>M = 29.5, SD = 5.1</td>
<td>M = 27.6, SD = 5.7</td>
<td>M = 29.02, SD = 5.2</td>
<td>M = 33.8, SD = 7.4</td>
</tr>
<tr>
<td>Present Weight</td>
<td>M = 197, SD = 44.05</td>
<td>M = 173.6, SD = 30.5</td>
<td>M = 165.2, SD = 38.4</td>
<td>M = 175.2, SD = 33.6</td>
<td>M = 199.7, SD = 43.5</td>
</tr>
<tr>
<td>Highest Weight</td>
<td>M = 226.2, SD = 45.8</td>
<td>M = 189.7, SD = 31.6</td>
<td>M = 205.3, SD = 43.9</td>
<td>M = 215.8, SD = 48.9</td>
<td>M = 208.4, SD = 44.4</td>
</tr>
<tr>
<td>Lowest Weight</td>
<td>M = 140.6, SD = 27.6</td>
<td>M = 131.4, SD = 17.1</td>
<td>M = 147.06, SD = 29.05</td>
<td>M = 140.5, SD = 23</td>
<td>M = 139.6, SD = 26.3</td>
</tr>
<tr>
<td>Most Weight Lost</td>
<td>M = 42.2, SD = 27.1</td>
<td>M = 30.4, SD = 21.6</td>
<td>M = 45.4, SD = 26.6</td>
<td>M = 37.3, SD = 28</td>
<td>M = 31.6, SD = 35.7</td>
</tr>
</tbody>
</table>
### Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>WC: Overall increase (N = 495)</th>
<th>WC: Initial weight stability (N = 75)</th>
<th>WC: Return to baseline (N = 89)</th>
<th>Weight Loss (N = 83)</th>
<th>Gradual Gain (N = 121)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Overweight</td>
<td>M = 18.6 y, SD = 11.6</td>
<td>M = 28.1 y, SD = 10.5</td>
<td>M = 15.3 y, SD = 10.14</td>
<td>M = 19.9 y, SD = 8</td>
<td>M = 22.5 y, SD = 9.6</td>
</tr>
<tr>
<td>Age Diet started</td>
<td>M = 21.9 y, SD = 11.6</td>
<td>M = 30.1 y, SD = 10.5</td>
<td>M = 19.8 y, SD = 10.14</td>
<td>M = 25 y, SD = 8</td>
<td>M = 24.7 y, SD = 9.6</td>
</tr>
<tr>
<td>Years in Weight Management</td>
<td>M = 16.3, SD = 11.6</td>
<td>M = 12, SD = 10.5</td>
<td>M = 14.5, SD = 10.14</td>
<td>M = 9, SD = 8</td>
<td>M = 11.4, SD = 9.6</td>
</tr>
</tbody>
</table>

#### 2.4.2.1 Weight cyclers with overall increase group

As Table 2.1 indicates, the majority of participants (57.4%) were weight cyclers with overall weight increase. Participants in this group were mainly Caucasian women with an average age of 40.7 years. The majority of them worked full time, were married and had an education equal to a GCSE/O Level. Based on their average BMI this group was categorised in the obese class I category (30-34.9 kg/m²). Individuals in this group weighted on average 197 pounds, had a maximum weight of 226 pounds and lowest weight of 140.6 pounds. In addition, on average, they were trying to manage their weight for 16.3 years within which their most weight ever lost was 42.2 pounds. Finally, weight cyclers with overall increase were in their late teens and early twenties when first became overweight and first attempted to lose weight respectively.

#### 2.4.2.2 Weight cycling with initial weight stability group

Individuals in this group (N = 75) had a mean age of 44.7 years. The majority were Caucasian women, who worked full time, were married and had an education equal to a GCSE/O Level. Based on their average BMI they were overweight (25-29.9 kg/m²) with an average current weight of 173.6 pounds. Participants’ highest weight excluding pregnancy was 189.7 lbs and lowest weight 131.4 lbs. These individuals were trying to
manage their weight for 12 years within which 30.4 pounds was the most weight they ever lost. Finally, these participants first became overweight and first attempted to lose weight when they were adults. (Table 2.1)

2.4.2.3 Weight cycling with return to baseline group

Similarly to the group above, participants who returned to their baseline weight or weighted less than their baseline weight (N = 89) were mainly Caucasian women with an average age of 36.3 years, who worked full time and were married. The majority of them had a degree. In addition, their average BMI classifies them as overweight (25-29.9 kg/m²) with a current weight equal to 165.2 pounds. Their highest weight reached the 205.3 and lowest weight the 147.06 pounds. Within 14.5 years of weight management 45.4 pounds was the highest weight ever lost. Participants in this group were in their teens when they first became overweight and first attempted to lose weight. (Table 2.1)

2.4.2.4 Weight loss group

Only 9.6% of the participants were currently losing weight with a weight loss of ≥ 10%. Weight loss individuals, with an average age of 34.6 years, were mainly Caucasian women, who worked full time and were married when they completed the questionnaire. Like the other groups, weight losers had an education equal to GCSE/O Level. In addition, based on their average BMI they were overweight (25-29.9 kg/m²). Their average present weight was 175.2; their highest weight was 215.8; and their lowest weight was 140.5 pounds. Individuals in this group struggled to manage their weight for a minimum of 9 years within which 37.3 pounds was the most weight ever lost. Lastly,
participants in this group were in their early twenties when first became overweight and mid twenties when they attempted to lose weight. (Table 2.1)

**2.4.2.5 Gradual gain group**

Thirteen percent (14%) of the sample was gradually gaining weight from the age of 18 up to their current age. The majority were Caucasian women with an average age of 36.9, who worked full time and were married. Gradual gainers had an education equal to GCSE/O level. Furthermore, based on their average BMI these participants are in the obesity class I category (30-34.9 kg/m²) with an average present weight of 199.7 pounds. Participants' highest weight and lowest weight was 208.4 and 139.6 pounds respectively. These participants managed their weight for 11.4 years and 31.6 pounds was their maximum weight loss. Finally, they were in their mid twenties when first became overweight and first attempted to lose weight. (Table, 2.1)

Further to the descriptive analysis of the different patterns of weight history it was also examined which of these characteristics explained the different weight patterns. Below the different factors which might help to explain the different weight history patterns are examined.
2.4.3 Differences between the five groups

2.4.3.1 Differences between the groups in marital status, occupation & education.

The analysis showed that the five groups had significant differences in regards to their marital status ($\chi^2 = 18.367$, df= 8, $p=.019$). No significant differences emerged for their occupation and level of education ($p >0.05$).

A detailed analysis on the differences for marital status indicated that individuals who were currently losing weight had significant differences with weight cyclers with overall increase ($\chi^2 = 14.940$, df= 2, $p=.001$) and weight cyclers with initial weight stability ($\chi^2 = 7.586$, df= 2, $p=.023$). Table 2.2 shows the frequencies of marital status for each group.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Overall increase (N = 495)</th>
<th>Initial weight stability (N = 75)</th>
<th>Return to baseline (N = 89)</th>
<th>Weight Loss (N = 83)</th>
<th>Gradual Gain (N = 121)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>Single</td>
<td>In relationship</td>
<td>Married</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>62%</td>
<td>313</td>
<td>62%</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>8.8%</td>
<td>15.1%</td>
<td>76.2%</td>
<td>15.1%</td>
<td>15.1%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>10</td>
<td>48</td>
<td>8.8%</td>
<td>10.6%</td>
</tr>
<tr>
<td></td>
<td>6.5%</td>
<td>16.1%</td>
<td>77.4%</td>
<td>16.1%</td>
<td>16.1%</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>18</td>
<td>49</td>
<td>11.8%</td>
<td>11.8%</td>
</tr>
<tr>
<td></td>
<td>11.8%</td>
<td>23.7%</td>
<td>64.5%</td>
<td>13.2%</td>
<td>13.2%</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>22</td>
<td>37</td>
<td>86.4%</td>
<td>86.4%</td>
</tr>
<tr>
<td></td>
<td>13.2%</td>
<td>32.4%</td>
<td>69</td>
<td>9.6%</td>
<td>9.6%</td>
</tr>
</tbody>
</table>
2.4.3.2 Differences in age, weight characteristics and weight history

Table 2.3, demonstrates all the significant differences found between the five groups.

Table 2.3: Differences between the five groups in regards to demographic and weight characteristics.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Weight Cycling: Overall increase</th>
<th>Weight Cycling: Initial weight stability</th>
<th>Weight Cycling: Return to baseline</th>
<th>Weight Loss</th>
<th>Gradual Gain</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 495)</td>
<td>(N = 75)</td>
<td>(N = 89)</td>
<td>(N = 83)</td>
<td>(N = 121)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>M = 40.6</td>
<td>M = 44.6</td>
<td>M = 35.7</td>
<td>M = 34.</td>
<td>M = 37.1</td>
<td>17.887</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 8.9</td>
<td>SD = 9.4</td>
<td>SD = 8.1</td>
<td>SD = 8.5</td>
<td>SD = 8.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>M = 32.9</td>
<td>M = 29.7</td>
<td>M = 27.9</td>
<td>M = 28.6</td>
<td>M = 34.2</td>
<td>18.450</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 6.8</td>
<td>SD = 5.2</td>
<td>SD = 6.9</td>
<td>SD = 4.8</td>
<td>SD = 7.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present weight</td>
<td>M= 197.1</td>
<td>M= 175.8</td>
<td>M= 167.3</td>
<td>M= 170.8</td>
<td>M= 202.3</td>
<td>16.535</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD=42.1</td>
<td>SD=30.9</td>
<td>SD=39.8</td>
<td>SD=29.5</td>
<td>SD=44.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum weight</td>
<td>M=217.7</td>
<td>M=191.7</td>
<td>M=208</td>
<td>M=210.6</td>
<td>M=211.5</td>
<td>5.301</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD=44.9</td>
<td>SD=31.9</td>
<td>SD=45</td>
<td>SD=41</td>
<td>SD=45.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest Weight</td>
<td>M=141.3</td>
<td>M=133.6</td>
<td>M=147</td>
<td>M=140.5</td>
<td>M=141.2</td>
<td>2.234</td>
<td>.064</td>
</tr>
<tr>
<td></td>
<td>SD=27.9</td>
<td>SD=17.2</td>
<td>SD=29</td>
<td>SD=24.4</td>
<td>SD=26.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most Weight Lost</td>
<td>M = 42.8</td>
<td>M = 30.6</td>
<td>M = 47.3</td>
<td>M = 35.9</td>
<td>M = 31.6</td>
<td>6.997</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 25.6</td>
<td>SD = 22.2</td>
<td>SD = 26.3</td>
<td>SD = 24.5</td>
<td>SD = 37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age first became overweight</td>
<td>M = 18.5</td>
<td>M = 27.8</td>
<td>M = 13.9</td>
<td>M = 20.2</td>
<td>M = 22.5</td>
<td>26.374</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 8.6</td>
<td>SD = 11</td>
<td>SD = 6.6</td>
<td>SD = 8.2</td>
<td>SD = 8.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age first attempted to lose weight</td>
<td>M = 21.8</td>
<td>M = 30.1</td>
<td>M = 18.6</td>
<td>M = 23.6</td>
<td>M = 24.4</td>
<td>20.888</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 7.9</td>
<td>SD = 9.5</td>
<td>SD = 6.6</td>
<td>SD = 6.9</td>
<td>SD = 8.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years in Weight Management</td>
<td>M = 16.6</td>
<td>M = 12.2</td>
<td>M = 14.6</td>
<td>M = 9.1</td>
<td>M = 11.7</td>
<td>9.132</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 11.7</td>
<td>SD = 10.5</td>
<td>SD = 10.3</td>
<td>SD = 8</td>
<td>SD = 9.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = p ≤ .05
The multivariate analysis of difference showed that the five groups had significant differences concerning their weight and demographic qualities ($p < 0.05$).

In regards to age, a more detailed analysis using MANOVA post hoc tests indicated that weight cyclers with an overall weight increase and weight cyclers with initial weight stability were significantly older than weight cyclers with a weight returned to their baseline weight, weight losers and gradual gainers. Also, individuals with initial weight stability were significantly older than weight cyclers with overall increase.

In addition, concerning their BMI and present weight, weight cyclers with overall weight increase and gradual gainers were significantly heavier than weight cyclers with initial weight stability, weight cyclers with return to baseline and individuals who were currently losing weight.

In regards to the maximum weight excluding pregnancy weight cyclers with initial weight stability had a lower maximum weight than weight cyclers with overall increase. Also, for weight cyclers with initial weight stability their lowest weight was significantly higher than those individuals who returned to their baseline weight.

For weight cyclers with overall weight increase and weight cyclers who returned to their baseline weight their most weight ever lost was significantly higher than gradual gainers and weight cyclers with initial weight stability.
As far as participants' age of overweight onset concerns, weight cyclers who returned to their baseline weight, contrary to the other groups, were significantly younger when they first became overweight. Also, weight cyclers with initial weight stability were significantly older than weight losers, weight cyclers with overall increase and gradual gainers when they first became overweight.

Also, weight cyclers with initial weight stability were significantly older than all the other groups when first attempted to diet. Contrary to this group, weight cyclers with a return to baseline were significantly younger when first attempted to lose weight. Finally, gradual weight gainers were also significantly older than weight cyclers who return to their baseline weight when first attempted to diet.

Finally, in regards to the years of weight management weight cyclers with overall increase and individuals with a return to baseline struggled to manage their weight for significantly more years than weight losers. Also, gradual gainers managed their weight for significantly fewer years than weight cyclers with overall increase.

2.4.4 Overweight and obese participants

Participants' BMI (Body Mass Index) was calculated by dividing individuals' body weight in kilograms (kg) with their squared height (m²) \( (BMI = \frac{kg}{m^2}) \).
2.4.4.1 Descriptives on the groups' weight history

Table 2.4, indicates that the majority of participants in both groups had a history of weight cycling with overall weight increase. It is also evident that more obese individuals depicted a history of gradual gain.

Table 2.4: Descriptives for the overweight and obese individuals' weight history. Frequencies appear in normal fond.

<table>
<thead>
<tr>
<th>Group</th>
<th>Overweight (N=142)</th>
<th>%</th>
<th>Obese (N=235)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Cycling Overall increase</td>
<td>153</td>
<td>31.2%</td>
<td>312</td>
<td>63%</td>
</tr>
<tr>
<td>Weight Cycling return to baseline</td>
<td>43</td>
<td>48.9%</td>
<td>20</td>
<td>22.5%</td>
</tr>
<tr>
<td>Weight Cycling initial weight stability</td>
<td>35</td>
<td>46.4%</td>
<td>32</td>
<td>42.7%</td>
</tr>
<tr>
<td>Weight loss</td>
<td>41</td>
<td>49.4%</td>
<td>31</td>
<td>37.3%</td>
</tr>
<tr>
<td>Gradual gain</td>
<td>30</td>
<td>25.2%</td>
<td>83</td>
<td>69.7%</td>
</tr>
</tbody>
</table>

2.4.4.2 Differences between the groups in regards to their weight history

Results showed that the two groups had significant differences in their weight history ($\chi^2 = 102.191$, df= 8, p=.0001). The more detailed analysis indicated that obese individuals were more likely to have a history of weight cycling with overall weight increase ($\chi^2 = 35.464$, df= 2, p=.0001) and a history of gradual gain ($\chi^2 = 10.931$, df= 2, p=.004). On the contrary, overweight participants were more likely to indicate a history of weight cycling with a return to their baseline weight ($\chi^2 = 67.533$, df= 2, p=.0001), a history of weight cycling with initial weight stability ($\chi^2 = 5.910$, df= 2, p=.05) and a history of current weight loss after years of gradual weight gain ($\chi^2 = 12.923$, df= 2, p=.002).
2.5 RESULT'S OVERVIEW

The aims of this empirical study were to explore the different weight histories, indicate their characteristics and describe whether these groups have any weight and demographic differences. An additional aim was to explore whether obese and overweight people share other differences in their weight histories apart from their BMI and examine whether different weight history groups appear apart from the ones already indicated in the literature.

Results indicated:

a) That the five groups had significant differences in their age and marital status
b) They had differences in their current and previous weight characteristics
c) That obese and overweight people share some differences concerning their weight histories.
d) That apart from the histories indicated in the literature different weight patterns appear

2.6 DISCUSSION

The majority of our sample was Caucasian, married women with an average age of 40 years and an education equal to an A level or a degree. Most of them were obese (BMI ≥30 kg/m²) with the majority being in the obesity class I category (30-34.9 kg/m²). Furthermore, among the participants 57.4% were weight cyclers with overall weight increase while 10.3%, 8.7%, 9.6% and 14% had a history of weight cycling who a return
to baseline weight, a history of weight cycling with initial stable weight, weight loss and gradual gain, respectively.

**Demographic differences between the five groups**

Results showed that the five groups had significant age and marital status differences. In particular, weight cyclers with overall increase and weight cyclers with initial weight stability were significantly older than the other groups. These results contradict previous studies which indicated a negative association between age and weight cycling (Marchesini et al., 2004). That is, older participants were less likely to be weight cyclers than younger individuals as they were exhausted from their previous failures and thus they were less motivated to start a new weight cycle. However, it can be argued that, in these studies, some participants were unwilling to continue a new weight loss attempt possibly because it was not a long time ago when they terminated another unsuccessful weight loss effort.

In addition, our results oppose to studies which fail to show significant age differences between the different weight history groups (Van Wye et al., 2007; Wing et al., 1995). These contradictory results might be due to the diversity of criteria used to define weight cycling along with the different methodologies and participant characteristics.

Furthermore, results indicated that the five groups had significant differences in regards to their marital status. In particular, results showed that while weight cyclers with initial weight stability and overall increase were more likely to be married most weight losers
were more likely to be either married or in a relationship. Thus, the former group was mainly married whereas the latter group was in a relationship or married. Our results contradict with studies which indicated that groups did not have differences in their marital status (Van Wye et al., 2007). It can be argued that these differences in results are due to the different definitions the two studies had for marital status. That is, while in the current study participants were asked to indicate whether they were ‘single’, ‘in a relationship’ or ‘married’, Van Wey and colleagues asked their participants to report whether they were married or not. Thus, this diversity might be due to the more descriptive marital status concept applied in this study.

Therefore, it can be concluded that age and marital status are significant factors in individuals’ weight history. Thus, as individuals become older they are more likely to attempt to lose weight with the aim to reduce the health outcomes they experience not only due to their weight but also due to their age. This is evident from this study which indicates that, in general, weight cyclers who had more than one cycle were significantly older than the other groups. However, from the results it can also be concluded that for some individuals the struggle with their weight initiates later in life since their weight remained stable for many years.
Weight differences between the five groups

The results also showed that the five groups had significant differences in their weight characteristics. In particular, weight cyclers with overall weight increase and gradual gainers were significantly heavier than all the other groups. Thus, as it was expected, weight losers and individuals who returned to their baseline weight were significantly lighter. Also, in regards to most weight ever lost, results indicated that weight cyclers with overall increase and participants who returned to baseline weight lost significantly more weight than gradual gainers and participants with initial weight stability.

While previous studies indicated that their groups had significant differences in weight characteristics (Field et al., 2004; Marchesini et al., 2004; Rzehak et al., 2007) others contradict these results as they failed to reach these conclusions (Van Wye et al., 2007; Wing et al., 1995). However, considering the diversity in the conceptualization of weight cycling, along with the researcher’s subjective categorisation, the different adjustments for confounding variables and the studies’ methodologies and design it is difficult to further compare the results from these studies and the current study (Field et al., 1999; National Task Force on the Prevention of Obesity, 1994).

Further to their differences in weight characteristics results showed that individuals with a history of weight cycling and a return to their baseline weight were significantly younger when they first became overweight and first attempted to lose weight than the other groups. On the contrary, individuals with initial weight stability followed by weight
cycling were significantly older than all the other groups when first became overweight and first attempted to lose weight.

Therefore, from these results it can be suggested that having a stable weight from a young age delays the onset for any diet attempt. However, it can also be argued that, for weight cyclers with overall weight increase, weight cyclers with return to baseline and weight losers, weight started to have physical and psychological implications earlier in their life whereas these implications came later in life for individuals with initial weight stability. There is also the possibility that, based on some models of behavior change, these individuals did not admit they had a problem or they did not perceive the consequences of their condition and its' symptoms as severe (health belief model and model of illness representations).

Differences in weight history between obese and overweight individuals

The final analysis focused on obese and overweight individuals’ weight history. Results showed that overweight participants were significantly more likely to indicate a history of weight cycling with return to baseline, a weight cycling with initial weight stability and a history of weight loss. Results also showed that obese individuals were more likely to endorse a history of weight cycling with overall increase and gradual gaining.

To the best of our knowledge this is the first study which attempted to examine differences in weight history patterns between overweight and obese individuals. Other
studies with overweight and obese participants examine the differences between the different groups based on their weight history (Field et al., 1999; Rzehak et al., 2007) but did not assess whether weight history differences appear between the overweight and obese individuals.

2.6.1 Limitations

This study has a retrospective character as it required from participants to report their previous weight fluctuations. Thus, results need to be taken with caution due to participants' memory constraints. Also, obese and overweight individuals tend to underestimate their weight contrary to their normal weight counterparts who tend to overestimate it (Yatsuya, et al, 2003). Therefore, it is possible that reported weights might not be the real ones.

Because there is not any standardized definition for weight cycling this decision is left to the investigator. However, this flexibility enhances the chance of classification bias. Thus a more objective measure is required to improve the validity of definitions on weight cycling.

2.6.2 Future recommendations

This is the first study which attempted to examine the relation between various patterns of weight history and participants' demographic and weight characteristics. Future studies are required to replicate or question these results based on which interventions can be developed to manage the levels of obesity.
In our study the majority were women. However, if the different weight history patterns of men and women are examined and then relate them with their demographic and weight characteristics, more successful interventions can be developed for each gender based on those characteristics and weight cycling patterns.

Also, of significant importance would be to examine whether weight cycling emerges not only in overweight and obese individuals but also in normal weight individuals. Did overweight individuals had normal weight which was then increased due to the various weight fluctuations? In other words, does weight cycling affects normal weight too?

2.7 CONCLUSION

To the best of our knowledge this is the first study which attempted to examine whether demographic and weight factors explain different weight history patterns. Thus, it is the first study which tried to use weight history as a dependent and not independent variable. Results showed that the five groups had significant differences in demographic and weight characteristics. It also indicated that obese and overweight individuals have significant differences in their weight history suggesting that weight history seems to be an important variable which professionals need to consider when they offer weight loss advice to patients who wish to manage their weight.
CHAPTER 3 STUDY 2 - SUCCESSFUL & UNSUCCESSFUL WEIGHT LOSS

3.1 INTRODUCTION

From the results of the previous chapter we can indicate that many obese and overweight individuals attempt to manage their weight and lose some with the aim to improve their appearance and health. For some this struggle begins in their early teenage or adult life because at that age they seemed to be or perceived to be overweight or obese while for others the battle with the weight initiates later in life either because they had a stable weight in the previous years or because they have just reached a weight with which they felt uncomfortable. Thus, based on their weight from the age of 18 participants seem to have different weight histories.

However, using participants’ weight history patterns, their percentage of weight loss and months of maintenance we can also categorize these individuals into the successful and the unsuccessful weight loss dieters. As the literature indicates successful weight loss individuals are those who manage to maintain at least 5-10% of their weight loss for a minimum of 1 year while unsuccessful people are those who fail to maintain this percentage of weight loss (Wing & Phelan, 2005; Wing & Hill, 2001). This study will now concentrate on the successful and unsuccessful weight loss individuals and examine their differences.
Reviews of the literature indicate that, even if the majority of individuals manage to lose weight only the minority sustain their weight loss in the long term. Almost 90% and 95% of those who lose weight regain some or all their weight with few of them reaching a higher than their baseline weight within 3-5 years after the end of the treatment (Byrne et al., 2003; Klem et al, 1997; Perri, 1998). This might be because individuals, during treatment, they are trained to cope in structured environments and thus they are not prepared to apply those strategies they learned in the more complex home environments (Head & Brookhart, 1997). Maintenance of weight loss after treatment is also reduced because the duration of interventions is too short and thus they don’t provide participants with enough time to obtain the necessary skills for the management of the obesogenic environment (Wadden et al, 2004; Head & Brookhart, 1997). Researchers also argue that because participants rely on experts and structured dietary programs during treatments they don’t actually take responsibility of their condition and thus be autonomous experts during their weight management experience (Gormally & Rardin, 1981). Finally, behavioral interventions fail to enhance weight loss maintenance probably because individuals’ false expectations regarding weight loss along with the difficulties in controlling their weight might discourage them to continue managing their weight (Perri et al., 1993).

An alternative approach to weight loss concentrates on the application of the cognition models. These models help to recognize the cognitions which underlie behaviour and behaviour change and consequently understand behaviour better (Conner cognitions and improve behavior (Conner and Norman, 2005).
Research utilises the Health Belief Model (HBM, Becker & Rosenstock, 1987) and the Theory of Planned Behavior (TPB, Ajzen 1985) while others utilise the Stages of Change model (Conner and Norman, 2005). All these models argue that health behaviour is the outcome of gradual cognitive shifts from behavioral intentions and action plans towards the performance of behavior (Ogden & Hills, 2008; Resnicow & Vaughan, 2006).

However, there is much research which indicates that behaviour change is not always the outcome of planned decisions but may suddenly occur after a dramatic experience which provides people with the opportunity to redefine themselves and their situation (e.g. Gorin et al, 2004; Larabie, 2005; Matzger et al., 2004; Miller, 2004; Ogden & Hills, 2008; Ogden & Sidhu, 2006). In particular, a variety of qualitative and quantitative studies conclude that distinct moments in individuals' lives have a significant impact on their behavior (e.g. Gorin et al, 2004; Wing & Phelan, 2005; West & Sohal, 2006)

Consequently, life triggers can be one of the possible reasons behind sustained behavior change and weight loss attempts. However, research indicates that while for some individuals these salient events enhance behavior and sustained behavior change for others this behavior change appears only in the short term (Brink & Ferguson, 1998). Therefore, the question is: what are those conditions or factors which when they appear simultaneously with the life trigger seem to enhance sustained behavior change and more specifically sustained weight loss maintenance?
Ogden and Hills (2008) carried out and series of qualitative interviews with individuals who endorsed sustained behavior change with the aim to explore those mechanisms which predicted long term behavior maintenance. The authors concluded that, after a salient event which reinforces behavior change, behavior is maintained if the choice over the old behavior is reduced, the benefits from the previous behavior are disrupted and individuals endorse a psychological model of the relevant behavior.

In particular, they argued that sudden triggers reinforce initial behavior change. This behavior change is then maintained when the opportunities over the old behavior are reduced, when the previous behavior is disrupted as people perceive fewer benefits from that behavior and when they acknowledge that their behavior was the cause of their increased weight.

In addition to the above, another factor which motivates people to lose weight and maintain this loss in the long term is a non-judgmental, understanding and empathetic consultant (Koster et al., 2005; Mustajoki & Pekkarinen, 1999). Ash et al (2006) investigated the effect of an 8-week lifestyle intervention with monthly follow-up to overweight and obese individuals' weight. They concluded that the group, in which shared decision making was offered and patients' beliefs, experiences and opinions were considered, lost significantly more weight which they maintained longer than the control group. Thus, apart from the above sustaining mechanisms obese and overweight individuals who wish to lose weight need also support from their consultant who takes their ideas and experiences into consideration. However, since this area is understudied
more evidence is required to examine the relation between HCPs counselling skills and weight loss maintenance in obese individuals.

3.2 AIMS

Therefore, considering that 1) weight loss maintenance is rare and that the majority of individuals who lose weight regain some or all of their lost weight and 2) behavior change, which is triggered by a life event, is translated into sustained behavior change due to sustaining mechanisms; this quantitative study aimed to examine the differences between those individuals who maintain their weight loss in the long term (successful weight loss individuals) and those who did not (unsuccessful weight loss participants) in regards to:

1. Their health status
2. The experienced life events
3. Sustaining mechanisms (disruption of function, reduction of choice)
4. Behavioral model and (causes and behavioral solutions)
5. Experience with their consultants

It was hypothesized that successful participants will report significantly more life events than unsuccessful participants. The former group will also report significantly reduced choice over the previous behavior, more benefits from the new behavior and a more psychological model of increased weight and thus apply more behavioral solutions concerning their problem.
3.3 METHOD

When completing the first questionnaire about their demographics and weight history participants were also asked to indicate their contact details. By providing their details individuals simultaneously consented to participate to future studies. Those who consented to participate were sent the questionnaire for the current study through email.

3.3.1 Design

The study applied a between subjects design in which the differences between successful and unsuccessful participants in regards to their weight experiences during the past month were examined.

3.3.2 Questionnaires

There were two questionnaires one designed for the successful participants and the other the unsuccessful dieters. For unsuccessful participants the questionnaire asked them to concentrate on their weight loss experiences “During the Past Month” (Appendix VI) while successful participants were asked to report their weight experiences when they were “At their Heaviest” and “During the Past Month” (Appendix V). Both questionnaires measured 6 variables: 1) health status, 2) behavioural model of obesity (causes and solutions), 3) disruption of function, 4) reduction of choice 5) life events and 6) experience with consultants.
Health status

The health status variable concentrated on health symptoms (e.g. pain, headaches etc), on participants' perceived level of health (e.g. poor, good etc) and on how limited some activities might have been due to their weight (e.g. bending, walking etc.).

In regards to the health symptoms (Cronbach α = .75) participants were asked to indicate, by circling Yes or No, whether they experienced symptoms of pain, sore throat, nausea, breathlessness fatigue, stiff joints, sore eyes, wheeziness, headaches, upset stomach, sleep difficulties, dizziness and loss of strength.

Then they were asked to evaluate their health based on the items: poor, fair, good, very good and excellent.

Finally, members reported whether some of their daily activities (Cronbach α = .90) were limited based on a scale from 1 (yes, limited a lot) to 3 (no, not limited at all). Daily activities were: vigorous activities (e.g. running), moderate activities (e.g. bowling), lifting or carrying groceries, climbing several or one flight of stairs, bending, kneeling or stooping, walking more than a mile, half a mile or 100 yards and bathing and dressing by themselves.

The items on symptoms experienced by participants were derived from the Illness Perception Questionnaire (IPQ) while the items regarding limited activities were
influenced by a previous qualitative study which examined people's experiences before and after bariatric surgery (Ogden et al., 2006).

Behavioral model of obesity

The behavioral model of obesity focused on participants' perceived causes of obesity (e.g. diet, depression etc) and the related behavioural solutions such as boiling food or walking. Participants reported what they perceived to be the cause of obesity and how they behave based on that perception.

Causes: Participants, on a scale from 1 (strongly disagree) to 5 (strongly agree), were asked to indicate the extent to which they agreed that their weight was due to low exercise (items lack of exercise, not being physically active, inactive lifestyle) (Cronbach a = .89), diet reasons (items: eating sweet foods, eating high calorie foods, eating when not hungry) (Cronbach a = .77), medical reasons (items: genetics, hormone imbalance, slow metabolism) (Cronbach a = .76) and psychological reasons (items: depression, lack of will power and laziness were) (Cronbach a = .60).

Behaviour: for measuring behaviour participants were asked to indicate, on a scale from 1 (not at all) to 5 (to a great extent), whether they engaged in some behaviours. These behaviours referred to exercise (items: walk, use the stairs, spend hours watching TV) (Cronbach a = .60) and diet (items: eat fruit and vegetables, boil or bake food, eat sweet
foods, eat fried food, cook their own food, eat between meals, overeat during family gatherings) (Cronbach a=.60).

The items for the causes of obesity were derived from previous qualitative and quantitative studies with obese individuals who were asked to indicate what they believed to be the cause of their weight (Ogden et al., 2001; Ogden & Sidhu, 2006). In addition, one qualitative study (Ogden & Hills, 2008) with 34 people who either sustained their weight loss or lost weight and one quantitative with 89 GPs and 599 obese patients (Ogden et al., 2001) aided the formulation of the behaviour change items.

**Disruption of function**

Disruption of function refers to the perceived benefits or costs which individuals experience from their behaviour; for instance comfort eating, exercising to improve body figure etc. For this variable participants reported on a scale from 1 (not at all) to 5 (to a great extent) whether they ate to reduce sadness, ate for comfort, to reduce stress, ate to distract themselves from negative thoughts (Diet: Cronbach a=.70). On the same scale they indicated if they exercised to reduce boredom, exercised to feel better or to keep themselves occupied (exercise: Cronbach a=.75).

All the items were obtained from previous qualitative studies in which some people indicated the pleasant consequences they experienced through their unhealthy behaviours for instance, when they smoked to reduce stress or ate to improve their mood and through
the new healthy behaviour which enhanced maintenance (Ogden et al, 2001; Ogden & Sidhu, 2006; Young et al., 2001).

**Reduction of choice**

The reduction of choice variable relates to the perception of how easy or difficult it is to do various healthy or unhealthy behaviours. On a likert scale from 1 (very easy) to 5 (very difficult) participants reported how easy or difficult was it for them to walk, use the stairs, spent hours watching TV (exercise: Cronbach a=.60) eat fruit and vegetables, boil or bake food, eat sweet foods, eat fried food, cook food, eat between meals and overeat during family gatherings (Diet: Cronbach a=.67). This “easy-difficult” belief is underlined by the cost, availability and ability variables.

Previous qualitative studies (e.g. Ogden and Hills, 2008; Ogden et al, 2006) with people who lost weight through surgery, or lost weight with other methods (Young et al., 2001) aid the formulation of the above items.

**Sudden life events**

Participants were asked to indicate whether they experienced any sudden life events such as heart attack, sleep apnea, relationship break-up, new relationship, difficulty to walk a mile, breathing problems, deciding to have children, reached their heaviest weight, clothes did not fit, doctor recommendations, started a new job, family member with s
serious illness and being teased by husband or co-workers. The life events scale had a Cronbach α = .70 for successful and α = .66 for unsuccessful.

This variable was derived from previous qualitative and quantitative studies in which participants who sustained their behaviour change indicated that sudden life events or milestones precipitated their behaviour change. Participants in these studies were either sustained their weight loss in the longer term (Ogden and Hills, 2008; Brink & Ferguson, 1998; Klem et al, 1997 etc) or stopped smoking (Ogden & Hills, 2008; Kearney & O'Sullivan, 2003) or recovered from alcohol and drug abuse (Kearney & O'Sullivan, 2003).

Experience with their consultants

The final part asked participants to evaluate the quality of care and support they received from their consultants. In the first question they were asked to report the degree to which their consultant was encouraging, respectful, understanding, supportive, informative and non-judgmental. In the second question, they indicated the degree to which their consultant's gave information in simple words, was active listener, showed understanding, had something positive to say, helped them found solutions in various problems, showed respect towards their wishes and concerns and left them decide what was the best for them. Both questions were on a likert scale from 1 (never) to 5 (always). The variable for consultants had a test-retest reliability of Cronbach α = .97.
The items for this variable were found in various articles in which consultants' and HCPs' patient centeredness along with the patient outcomes was the main issue. More specifically, the items were either derived from articles which discussed the issue of obesity and the importance of working in a client-centred way with the patient (Koster et al., 2005; Costain & Croker, 2005; Mustajoki & Pekkarinen, 1999; Hills & Wyatt, 2002) or from measures used in studies with other health conditions which aimed to assess the person-centeredness of GPs or other general practices (Ogden et al., 2002; Witte et al., 2006; Little et al., 2001).

3.3.3 Approval

3.3.3.1 University's ethics committee

Ethical approval was provided from the University of Surrey Ethics Committee. Since some changes occurred in the procedure we contacted the Ethics Committee again and resubmitted the study along with the amendments in the method. The Committee gave again the ethical approval (Appendix I).

3.3.4 Procedure

The weight history used in the first study enabled the researcher to decide whether participants were successful or unsuccessful.

All the data from the initial questionnaire were transferred to SPSS where the researcher coded the answers and calculated participants' BMI, percentage of weight loss and months of maintenance. A 10% weight loss which was maintained for at least 1 year was
set as the minimum weight that participants needed to lose to be identified as successful. This is because losing at least 10% of the initial weight can be beneficial for the individual's physical and psychological health (Wing & Phelan, 2005). Thus unsuccessful participants were those who lost less than 10% of their weight and which they maintained less than 1 year.

After calculating participants' percentage of weight loss the second questionnaire was sent to those individuals who consented to take part in the second study by either providing their email or postal address. All members who consented provided their email address. Consequently, the link for this questionnaire was sent to members through email.

In the email the researcher informed participants that this was the second questionnaire and then thanked members for taking part in the study. Then, the researcher indicated that the aim of the questionnaire was to learn more about their weight loss experiences and their effort to maintain their weight loss. Finally, the researcher indicated the link for the questionnaire to participants. To protect their anonymity and confidentiality all emails were individually sent to each participant.

After three months, a reminder e-mail was sent to participants with the aim to encourage those who did not complete the questionnaire to do it and therefore increase the study's response rate. To protect participants' anonymity and confidentiality the above email was sent individually to each individual.
Before the analysis of the results a software was prepared which aimed to locate those participants who completed the questionnaire twice (before and after the reminder email) and leave out their second reports. The second reports were excluded as we wanted to keep only the initial reports from all participants. Duplicated reports were traced through the participants’ emails which they were asked to indicate in the second questionnaire.

3.3.4.1 Response rate

From the 1093 participants who provided details on the first questionnaire 170 (15.6%) could not received the second questionnaire because they either did not complete their full weight history or did not consent for the main questionnaire. Thus, the questionnaire was sent to 923 participants (392 successful, 531 unsuccessful).

The response rate for the current questionnaire was 60% (237) and 61% (328) for the successful and unsuccessful participants respectively. The rate was increased after the reminder email was sent to participants.

3.3.5 Analyses

Before moving to the main analyses we screened for missing values, normality, univariate and multivariate outliers.

The missing values among the items for each construct were less than 5%. When testing the patterns of data we concluded that there were not significant differences between the missing values and thus data were not deleted (Tabachnick & Fidell, 2007).
Apart from the 'daily activities' and 'causes of diet' all other variables were normally distributed with skewness and kurtosis less than 1.96 (Tabachnick & Fidell, 2007). To reduce the extreme skewness and kurtosis and enhance normality and linearity we checked for univariate outliers. Nine cases from daily activities and 6 cases of perceived causes of diet had extremely low scores and they had to be deleted. After this, normality of all variables was evident.

Finally, Mahalanobis distance was applied to examine for multivariate outliers. The analysis identified that, 7 cases had a Mahal. distance greater than $x^2 (14) = 36.123$, on a $p<0.001$ (Tabachnick & Fidell, 2007). All 7 variables were deleted leaving 538 cases for the between subjects analysis. Then we continued with the main statistical analyses.

Chi-square analysis was applied for the nominal data and MANOVA was applied for the remaining analyses.
3.4 RESULTS

3.4.1 Data analysis

The results were analyzed in the following way:

6.4.2: To examine the differences between responders and non-responders in terms of their demographic and weight characteristics. For the analyses MANOVA and Chi-square tests will be used to examine these differences.

6.4.3: General Sample:

I. To describe participants' demographics in terms of their age, occupation, marital status and education using descriptive statistics.

II. To describe their weight characteristics such as BMI, highest weight excluding pregnancy, lowest weight since 18 years, age when they first became overweight, age when they first tried to lose weight, if they are currently trying to lose weight, percentage of weight loss and months of maintenance. Descriptive statistics will be used for this analysis.

6.4.4: Then participants' were divided into the successful and unsuccessful participants.

I. To describe the demographic characteristics for the successful and unsuccessful participants.

II. To describe the weight characteristics between the two groups.

6.4.5: Differences between successful and non-successful individuals.
I. In regards to their demographic and weight characteristics. For the analyses MANOVA and Chi-square tests will be used to examine these differences.

II. Differences between successful (at their heaviest) and non-successful participants (in the past month) concerning their health status, causes of obesity, and life events.

III. To explore the differences, during the past month, between successful and unsuccessful participants in regards to their health status, behavioral solutions, reduction of choice, disruption of function, perceptions about their weight and experience with their consultants. Between subjects MANOVA with Bonferroni adjusted alpha was used for the analyses.
3.4.2 Comparisons between responders and non-responders

From the general sample (1093) 113 (10%) participants did not provide their contact details thus they did not consent to participate in the main study. Also, 71 participants (6.5%) did not complete their full weight history. In both cases the main questionnaire could not be sent to those participants. Thus, to examine the generalizability of the sample the differences in profile and weight characteristics between responders and non-responders were assessed.

The chi-square analysis showed no significant differences between the two groups in regards to their occupation ($\chi^2 = 2.925$, df= 3, $p= .403$) and marital status ($\chi^2 = 6.151$, df= 5, $p= .292$). However, significant differences appeared between the two groups in regards to their level of education ($\chi^2 = 12.834$, df= 2, $p= .002$).

For the remaining variables results indicated that responders were significantly older, weighted more and had higher maximum weight than non-responders. No significant differences emerged between the two groups in regards to the age of the obesity and diet onset. (Table 3.1)
Table 3.1: Differences between responders and non responders.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Responders (N = 980)</th>
<th>Non responders (N = 113)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>M = 38.6</td>
<td>M = 36.5</td>
<td>5.327</td>
<td>.021*</td>
</tr>
<tr>
<td></td>
<td>SD = 10.4</td>
<td>SD = 11.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>M = 31.7</td>
<td>M = 30.8</td>
<td>2.113</td>
<td>.146</td>
</tr>
<tr>
<td></td>
<td>SD = 6.6</td>
<td>SD = 8.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present weight</td>
<td>M = 189.4</td>
<td>M = 178.1</td>
<td>9.648</td>
<td>.002*</td>
</tr>
<tr>
<td></td>
<td>SD = 42.1</td>
<td>SD = 31.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest weight excluding pregnancy</td>
<td>M = 212</td>
<td>M = 197.8</td>
<td>13.366</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 45</td>
<td>SD = 38.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age first became overweight</td>
<td>M = 19.4</td>
<td>M = 20.4</td>
<td>1.347</td>
<td>.246</td>
</tr>
<tr>
<td></td>
<td>SD = 9.6</td>
<td>SD = 10.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age first attempted to lose weight</td>
<td>M = 22.8</td>
<td>M = 23.2</td>
<td>.260</td>
<td>.610</td>
</tr>
<tr>
<td></td>
<td>SD = 9.2</td>
<td>SD = 8.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = p ≤ 0.05

3.4.3 General sample

3.4.3.1 I. Demographic characteristics

Participants' demographic characteristics are shown in Table 3.2

One thousand ninety three (1093) participants completed the weight history questionnaire. Participants described themselves as mainly white with the majority being women (98%) with a mean age of 38 years (SD = 10.6). As Table 3.2 indicates, the
majority of participants worked full time, were married with some of them living with a partner and had been educated up to school level.

Table 3.2: Participants' demographic characteristics. Frequencies appear in normal fond.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total (N = 1093)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M = 38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD = 10.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Work</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>624</td>
<td>57%</td>
</tr>
<tr>
<td>Part time</td>
<td>243</td>
<td>22%</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living with a partner</td>
<td>227</td>
<td>21%</td>
</tr>
<tr>
<td>Married</td>
<td>605</td>
<td>55%</td>
</tr>
<tr>
<td>Divorced</td>
<td>59</td>
<td>5.4%</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than or equal to GSCE/O Level</td>
<td>467</td>
<td>43%</td>
</tr>
<tr>
<td>A level</td>
<td>268</td>
<td>24.5%</td>
</tr>
<tr>
<td>Degree</td>
<td>350</td>
<td>32%</td>
</tr>
</tbody>
</table>

3.4.3.2 Weight characteristics

Participants' mean BMI was 31.5 kg/m² with the majority of participants being obese and having a BMI between 25 and 34.9 kg/m². Their highest weight excluding pregnancy was 211 pounds, their lowest weight since 18 years was 142 pounds. In addition, participants were in their teens when they first became overweight and in their early twenties when they first attempted to lose weight. The majority were currently trying to lose weight.
Overall, their mean percentage of weight loss was 9.4% with 33.5 months as the average time of maintenance (2.8 years). (Table 3.3)

Table 3.3: Descriptives of participants' weight history.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total (N =1093)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMI</strong></td>
<td></td>
</tr>
<tr>
<td>Normal weight (18.5-24.9 kg/m$^2$)</td>
<td>13%</td>
</tr>
<tr>
<td>Overweight (25-29.9 kg/m$^2$)</td>
<td>35.8%</td>
</tr>
<tr>
<td>Obese class I (30-34.9 kg/m$^2$)</td>
<td>25%</td>
</tr>
<tr>
<td>Obese class II (35-39.9 kg/m$^2$)</td>
<td>13.6%</td>
</tr>
<tr>
<td>Obese class III ($\geq 40$ kg/m$^2$)</td>
<td>11%</td>
</tr>
<tr>
<td><strong>Highest weight excluding pregnancy</strong></td>
<td>M= 210 lbs. SD = 45.5</td>
</tr>
<tr>
<td><strong>Age when first became overweight</strong></td>
<td>M= 19.4 SD = 9.7</td>
</tr>
<tr>
<td><strong>Age when first attempted to lose weight</strong></td>
<td>M= 22.8 SD = 9.13</td>
</tr>
<tr>
<td><strong>Currently trying to lose weight</strong></td>
<td>96.4%</td>
</tr>
<tr>
<td><strong>Percentage of weight loss</strong></td>
<td>M= 9.4%</td>
</tr>
<tr>
<td><strong>Months of maintenance</strong></td>
<td>M = 33.5m (2.8y)</td>
</tr>
</tbody>
</table>
3.4.4 Successful Vs unsuccessful participants

3.4.4.1 I. Demographic characteristics

As indicated and above 71 participants did not provide their full weight history, hence we could not calculate their percentage of weight loss and then grouped them into the successful or unsuccessful weight loss maintainers group. The final sample for these participants was 1022. (Table 3.4)

Table 3.4: Demographics of successful & unsuccessful people. Frequencies appear in normal font.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Successful (N = 431)</th>
<th>Unsuccessful (N = 591)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M =37.3</td>
<td>M= 37.8</td>
</tr>
<tr>
<td></td>
<td>SD = 10.6</td>
<td>SD =10.3</td>
</tr>
<tr>
<td><strong>Work</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>246</td>
<td>345</td>
</tr>
<tr>
<td></td>
<td>57%</td>
<td>58%</td>
</tr>
<tr>
<td>Part time</td>
<td>105</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>24.4%</td>
<td>20.6%</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living with a partner</td>
<td>96</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>22.3%</td>
<td>20%</td>
</tr>
<tr>
<td>Married</td>
<td>222</td>
<td>343</td>
</tr>
<tr>
<td></td>
<td>51.5%</td>
<td>58%</td>
</tr>
<tr>
<td>Divorced</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>6.2%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than or equal to</td>
<td>185</td>
<td>237</td>
</tr>
<tr>
<td></td>
<td>43%</td>
<td>40%</td>
</tr>
<tr>
<td>GSCE/O Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A level</td>
<td>107</td>
<td>155</td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>26%</td>
</tr>
<tr>
<td>Degree</td>
<td>138</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>32%</td>
<td>33%</td>
</tr>
</tbody>
</table>
Successful participants

It is well accepted that losing a minimum of 10% of the initial weight loss can be beneficial for the individual's physical and psychological health (Wing & Hill, 2001). Therefore, based on this criterion, 431 participants who lost \( \geq 10\% \) of their initial weight and which they maintained for a minimum of one year were grouped as successful.

Successful participants' age ranged from 17-71 years with a mean age of 37. Most successful participants worked full time and were married with the majority being educated up to the school level.

Unsuccessful participants

Contrary to the successful participants, unsuccessful members were those individuals who lost less than 10% of their weight which they maintained less than one year. Thus, based on the above criterion, 591 (58%) participants were grouped as unsuccessful.

Unsuccessful participants' age ranged from 17-72 years with a mean age of 37.8. Similarly with the successful participants, the majority worked full time, were married and had been educated up to the school level.
3.4.4.2 Weight characteristics

Participants’ weight characteristics are shown in Table 3.5.

Successful participants

The majority of successful participants were overweight with few of them being in obesity class I category. Their highest weight excluding pregnancy was 215.6 lbs. Successful participants were in their late teens and early twenties when they first became overweight and first attempted to lose weight, respectively. Finally, successful members lost on average 18% of their initial weight and kept this weight off for a minimum of 4.1 years.

Unsuccessful participants

Contrary to successful participants, the majority of unsuccessful individuals were overweight and obese in class I and II. In addition, there seems to be more unsuccessful participants than maintainers with a BMI $\geq 40$ kg/m$^2$. Their highest weight excluding pregnancy was 207.6 lbs. Unsuccessful participants were in their early twenties when they first became overweight and attempted to lose weight. Unsuccessful members’ mean percentage of weight loss was 3.2% which they kept off for at least 21.4 months (1.8 years).
Table 3.5: Descriptives for participants’ weight history. Percentages appear in italics and frequencies in normal font.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Successful (N = 431)</th>
<th>Unsuccessful (N = 591)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal weight (18.5-24.9 kg/m²)</td>
<td>21%</td>
<td>7%</td>
</tr>
<tr>
<td>Overweight (25-29.9 kg/m²)</td>
<td>41%</td>
<td>31%</td>
</tr>
<tr>
<td>Obese class I (30-34.9 kg/m²)</td>
<td>23%</td>
<td>27%</td>
</tr>
<tr>
<td>Obese class II (35-39.9 kg/m²)</td>
<td>10%</td>
<td>16.5%</td>
</tr>
<tr>
<td>Obese class III (≥ 40 kg/m²)</td>
<td>4.6%</td>
<td>16%</td>
</tr>
<tr>
<td>Highest weight excluding pregnancy</td>
<td>M = 215.6 SD = 43.8</td>
<td>M = 207.6 lbs SD = 46</td>
</tr>
<tr>
<td>Age when first became overweight</td>
<td>M = 18. SD = 9</td>
<td>M = 20. SD = 9.9</td>
</tr>
<tr>
<td>Age when first tried to lose weight</td>
<td>M = 22. SD = 22</td>
<td>M = 23. SD = 9.3</td>
</tr>
<tr>
<td>Percentage of weight loss</td>
<td>18%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Months of maintenance</td>
<td>M = 49.6 m; (4.1y)</td>
<td>M = 21.4 m; (1.8y)</td>
</tr>
</tbody>
</table>

3.4.5 Differences between successful & unsuccessful participants.

3.4.5.1 Differences in demographic and weight characteristics between successful and unsuccessful participants.

Multivariate analysis was used to examine the differences between groups. ANOVA and t-test analysis was rejected to avoid Type 1 error. Finally, for the combined dependent variable the Hotelling’s Trace significant test was used because our independent variable was divided into two groups (Brace et al, 2003). Chi-square was applied for nominal variables such as occupation, marital status and education.
The Chi square test showed that the two groups did not have significant differences in regards to their occupation ($x^2 = 2.673$, df= 3, p= .445), marital status ($x^2 = 8.012$, df= 5, p= .156) and level of education ($x^2 = .861$, df= 2, p = .650).

The between analysis showed that there was a significant group effect on the combined variable ($F (8, 889) = 206.712, p < 0.05$; Hotelling’s Trace =1.860, partial eta square = .650). The individual variables analysis, with the Bonferroni adjusted alpha (p= 0.05), showed no significant differences between the two groups in regards to their age (p > 0.05). However, maintainers seem to weight significantly less and to have higher maximum weight than unsuccessful participants. In addition, successful weight loss maintainers, contrary to the unsuccessful participants, they were significantly younger when they first became overweight. No differences emerged on the age of diet onset. Finally, the formers lost significantly more weight which they sustained longer than their counterparts. (Table 3.6)
Table 3.6: Differences in demographic and weight characteristics between successful and unsuccessful participants.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Successful (N = 431)</th>
<th>Unsuccessful (N = 591)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>M = 38.76</td>
<td>M = 38.02</td>
<td>1.131</td>
<td>.288</td>
</tr>
<tr>
<td></td>
<td>SD = 10.4</td>
<td>SD = 10.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>M = 29.3</td>
<td>M = 33</td>
<td>85.29</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 5.36</td>
<td>.2 SD = 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present weight</td>
<td>M = 175.9</td>
<td>M = 197.9</td>
<td>66.91</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 34.9</td>
<td>SD = 43.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest weight excluding pregnancy</td>
<td>M = 216.1</td>
<td>M = 207.9</td>
<td>7.384</td>
<td>.007*</td>
</tr>
<tr>
<td></td>
<td>SD = 43.9</td>
<td>SD = 44.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age first became overweight</td>
<td>M = 18</td>
<td>M = 20</td>
<td>8.498</td>
<td>.004*</td>
</tr>
<tr>
<td></td>
<td>SD = 8.7</td>
<td>SD = 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age first attempted to lose weight</td>
<td>M = 21.9</td>
<td>M = 23.1</td>
<td>3.691</td>
<td>.055</td>
</tr>
<tr>
<td></td>
<td>SD = 8.5</td>
<td>SD = 9.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of weight loss</td>
<td>M = 18.2</td>
<td>M = 3.15</td>
<td>1625.971</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 7.5</td>
<td>SD = 3.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Months of maintenance</td>
<td>M = 49.7</td>
<td>M = 21.7</td>
<td>88.183</td>
<td>.0001*</td>
</tr>
<tr>
<td></td>
<td>SD = 49.9</td>
<td>SD = 39.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = p ≤ .05
3.4.5.2 II. Differences between successful participants (at their heaviest) and unsuccessful participants (during the past month).

The variables of perceived symptoms, vigorous activities, life events and perceived causes of obesity (diet, exercise, medical, psychological) were used for this analysis.

There was a significant group effect (successful/unsuccessful) on the combined dependent variable ($F (7,530) = 114.138, p < 0.0125$; Hotelling’s Trace = 1.507, partial eta square = .601). The results, using Bonferroni adjusted alpha level of 0.05, showed that successful participants, when they were at their heaviest, they experienced significantly more symptoms and lower levels of daily activities than what unsuccessful participants experienced during the past month. In addition, maintainers experienced significantly more life events compared to unsuccessful participants. Finally, as Table 3.7 indicates, maintainers reported significantly lower agreement for the exercise, medical and psychological causes of obesity whereas not significant differences emerged between the two groups for the diet cause. (Table 3.7)
Table 3.7: Differences in successful participants, as they were at their heaviest and unsuccessful participants, during the past month.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Successful (N = 222)</th>
<th>Unsuccessful (N = 316)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>M = 5.30 SD = 2.657</td>
<td>M = 3.70 SD = 2.823</td>
<td>44.009</td>
<td>.0001*</td>
</tr>
<tr>
<td>Activities</td>
<td>M = 22.70 SD = 4.75</td>
<td>M = 26.93 SD = 4.020</td>
<td>123.794</td>
<td>.0001*</td>
</tr>
<tr>
<td>Life Events</td>
<td>M = 4.45 SD = 1.644</td>
<td>M = 1.46 SD = 1.392</td>
<td>519.179</td>
<td>.0001*</td>
</tr>
<tr>
<td>Causes:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td>M = 11.88 SD = 2.8</td>
<td>M = 13.05 SD = 2.452</td>
<td>26.081</td>
<td>.0001*</td>
</tr>
<tr>
<td>Diet</td>
<td>M = 13.00 SD = 2.721</td>
<td>M = 13.09 SD = 2.412</td>
<td>.144</td>
<td>.705</td>
</tr>
<tr>
<td>Medical</td>
<td>M = 8.39 SD = 2.98</td>
<td>M = 10.73 SD = 2.693</td>
<td>90.509</td>
<td>.0001*</td>
</tr>
<tr>
<td>Psychological</td>
<td>M = 11.13 SD = 2.6</td>
<td>M = 11.79 SD = 2.721</td>
<td>7.861</td>
<td>.005</td>
</tr>
</tbody>
</table>

* = p ≤ .05

For a more detailed analysis on life events the items in the question were divided into three sub-items i.e. the serious events, the consequences and new experiences/future plans. In the Serious Events item items such as 'relationship break-up', 'heart attack' and 'family member had a serious illness' were included. For the 'Consequences' the events described the weight consequences that participants might had experienced and included items such as 'clothes did not fit', 'reached my heaviest weight', 'being teased by others' etc. For the final group, 'New Experiences/Plans', items such as 'new relationship', 'deciding to have children' and 'new job' were included in the group. In other words, this life event theme included items which described participants' new experiences or future plans.
The between groups multivariate analysis showed that the two groups had significant differences concerning those life event sub-groups (F (3,534) = 181.777, p = .000; Hotelling’s Trace = 1.021, partial eta square = .505). More specifically, the results, using Bonferroni adjusted alpha level of 0.05 indicated that successful weight loss participants experienced significantly more events relating to serious events, consequences and new experiences/plans. (Table 3.8)

**Table 3.8: Differences between successful and unsuccessful weight loss participants in the sub-themes of life events.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Successful (N = 222)</th>
<th>Unsuccessful (N = 316)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious Events</td>
<td>M = .44 SD = .619</td>
<td>M = .18 SD = .396</td>
<td>34.666</td>
<td>.0001*</td>
</tr>
<tr>
<td>Consequences</td>
<td>M = 3.5 SD = 1.32</td>
<td>M = 1.2 SD = 1.25</td>
<td>449.909</td>
<td>.0001*</td>
</tr>
<tr>
<td>New experiences/Plans</td>
<td>M = .47 SD = .657</td>
<td>M = .11 SD = .352</td>
<td>68.195</td>
<td>.0001*</td>
</tr>
</tbody>
</table>

* = p ≤ .05

3.4.5.3 III. Differences between successful and unsuccessful participants during the past month.

The analysis described below examines the differences between successful and unsuccessful participants’ experiences during the past month in regards to: 1) their health status which includes perceived symptoms and the quality of their daily activities, 2) behavioural solutions (diet, exercise), 3) reduction of choice (easy/difficult for healthy dietary habits and exercise), 4) disruption of function (benefits from healthy dietary habits and exercise) and 5) their experience with their consultants.
As Table 3.9 indicates, there was a significant group effect on the combined dependent variable (F (9, 528) = 11.851, p = .000 Hotelling’s Trace = .202, partial eta squared = .168). Analysis for each dependent variable using the Bonferroni adjusted alpha = 0.05 showed that, for the past month, there were no significant differences between the successful and unsuccessful participants in regards to perceived symptoms.

On the contrary, significant differences were observed between the two groups in regards to the remaining variables. More specifically, successful individuals reported that their daily activities were significantly less limited, compared to the unsuccessful people. Also, as Table 6.9 shows, compared to unsuccessful participants, maintainers found significantly more benefits from exercise and fewer benefits from eating (disruption of function) and they tended to have healthier dietary habits and exercise more (Behaviors). Finally, successful participants found it significantly easier to exercise and adopt healthier dietary habits (reduction of choice) and they were significantly more satisfied with the services provided to them from their consultant compared to unsuccessful individuals.
Table 3.9: Differences between successful and unsuccessful participants during the past month.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Successful (N = 222)</th>
<th>Unsuccessful (N = 316)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>M = 3.50, SD = 2.391</td>
<td>M = 3.70, SD = 2.822</td>
<td>.727</td>
<td>.394</td>
</tr>
<tr>
<td>Activities</td>
<td>M = 28.17 SD = 3.610</td>
<td>M = 26.91 SD = 4.028</td>
<td>13.851</td>
<td>.0001*</td>
</tr>
<tr>
<td>Disruption of function:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>M = 7.37 SD = 3.261</td>
<td>M = 8.98 SD = 4.248</td>
<td>22.556</td>
<td>.0001*</td>
</tr>
<tr>
<td>Exercise</td>
<td>M = 8.17 SD = 2.947</td>
<td>M = 6.91 SD = 2.747</td>
<td>25.770</td>
<td>.0001*</td>
</tr>
<tr>
<td>Behaviours:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>M = 29.50 SD = 3.123</td>
<td>M = 27.61 SD = 3.619</td>
<td>39.908</td>
<td>.0001*</td>
</tr>
<tr>
<td>Exercise</td>
<td>M = 11.48 SD = 1.658</td>
<td>M = 10.45 SD = 1.881</td>
<td>42.912</td>
<td>.0001*</td>
</tr>
<tr>
<td>Reduction of choice:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>M = 16.19 SD = 3.730</td>
<td>M = 17.80 SD = 4.091</td>
<td>21.744</td>
<td>.0001*</td>
</tr>
<tr>
<td>Exercise</td>
<td>M = 6.14 SD = 1.718</td>
<td>M = 7.42 SD = 2.020</td>
<td>59.940</td>
<td>.0001*</td>
</tr>
<tr>
<td>Consultants</td>
<td>M = 58.32 SD = 9.502</td>
<td>M = 55.76 SD = 11.331</td>
<td>7.559</td>
<td>.006*</td>
</tr>
</tbody>
</table>

* = p ≤ .05

3.5 RESULTS' OVERVIEW

The aims of this study were to examine the differences between the successful and unsuccessful weight loss participants. Results indicated that there were significant differences between the two groups in regards to their health status, the experienced life events, the behavioral model of obesity (causes and solutions), the sustaining mechanisms of disruption of function and reduction of choice and their experience with their consultant.
3.6 DISCUSSION

Considering that, among people who attempt to lose weight, only few manage to sustain their weight loss in the longer term this study aimed to examine those factors which seem to differentiate between the minority of individuals who maintain their weight loss in the long term and the majority of unsuccessful people who regain their weight loss. The results will be considered in line with these aims.

Demographics

The general sample (1093) was mainly Caucasian women (M =38 years) with the majority being married, working full time and being in the ages between 10-29 when they first became overweight or attempted to lose weight. At the time of the questionnaire completion the majority (96.4%) of participants were trying to lose weight. In addition, while the majority of successful weight loss maintainers (41%) were in the overweight range with some of them (23%) being classified as obese class I individuals, unsuccessful individuals' BMI was distributed between the overweight and obesity classes I, II and III with 16% of them being morbidly obese. Finally, successful weight loss maintainers lost on average 18% and unsuccessful individuals 3.2% of their initial weight which they maintained for a period of 4 years and 1.8 years respectively.
Responders vs. non responders

From the total sample 113 participants (10%) did not consent to participate in the main study while 71 participants (6.5%) did not complete their weight history and therefore we could not calculate their percentage of weight loss. In both cases the main questionnaire could not be sent to these participants. Therefore, the follow-up questionnaire was sent to 909 participants.

The analyses of differences indicated that the two groups had significant differences in regards to their level of education and age when first attempted to lose weight. In addition, responders were significantly older, weighted more and had higher maximum weight than non responders. This is probably because people with health problems, in this case higher BMI and present weight, are more likely to take part in the study and complete the follow-up questionnaires (Silman & Macfarlane, 2002).

Differences in weight and profile characteristics between successful and unsuccessful weight loss maintainers

In regards to their profile characteristics, the analysis indicated that the two groups were comparable in terms of age, their marital status, occupation and level of education. While the results, in regards to age, replicate previous studies (e.g. Kayman et al, 1990) other studies indicate that successful weight loss maintainers are significantly older than their unsuccessful counterparts (McGuire et al., 1999; Ogden, 2000). They argue that their success is due to many years of persistence within which they developed maintenance
techniques based on their past attempts (Ogden, 2000). Considering the results from the current study we can conclude that, although age is not a significant contributor for weight loss and maintenance, other factors, such as beliefs, behaviours and events, may moderate the influence that age may have on weight loss maintenance.

Considering their weight characteristics no significant differences emerged between the two groups in the age when first attempted to lose weight suggesting that this characteristic is unrelated to weight loss and maintenance. However, successful weight loss maintainers were significantly younger when they first became overweight. The analyses also showed that successful weight loss maintainers had significantly lower BMI and present weight but higher maximum weight than unsuccessful participants. Hence, as it was expected, unsuccessful weight loss maintainers were significantly heavier than maintainers. As Dohm et al, (2001) indicated ‘it is axiomatic that those who are not successful at maintaining a weight loss are, on average, going to weigh more than those who are successful’ (p,113).

However while previous studies indicated that regainers had significantly higher maximum weight than maintainers, (Ogden, 2000; McGuire et al, 1999), the results from this study have the opposite direction i.e. that successful participants had significantly higher maximum lifetime weight than unsuccessful individuals. That might was one of the reasons which motivated our successful weight loss maintainers to lose and maintain their weight.
Prior to weight loss i.e. at their heaviest, successful weight loss maintainers experienced significantly more symptoms and indicated that their daily activities were significantly more limited compared to the same experiences unsuccessful weight loss maintainers had during the past month. In particular, symptoms such as ‘breathlessness’, ‘fatigue’, ‘pain’ and ‘stiff joints’ along with the various limited activities might have enhanced individuals’ motivation to change and adopt a healthier behaviour. In this case, we can argue that these individuals adopted an approach copying behaviour, changed and maintained their behaviour to improve their well-being, to minimize the occurrence of symptoms and to avoid any future negative outcomes.

The results are similar with Lähteenkorva et al., (2000). In their study successful weight loss maintainers had poorer health status prior to weight loss, compared to their unsuccessful counterparts. The authors argue that people who don’t experience any weight related problems are less stimulated to lose weight and only ‘those who suffer from obesity are best motivated to lose weight’ (pp, 123).

Life events and sustaining conditions

In addition, successful weight loss maintainers reported more sudden life events, prior to weight loss, than unsuccessful individuals. Events such as ‘reached my heaviest weight’, ‘clothes did not fit me’ and ‘doctor’s recommendations’ were among the most frequent triggers which motivated individuals to change their behavior. A more descriptive
analysis on life events indicated that successful weight loss participants experienced significantly more ‘serious events’, ‘consequences from their weight’ and ‘new experiences of future plans’ than the unsuccessful participants. Usually when sudden events occur they tend to alter people’s equilibrium (Kearney & O’Sullivan, 2003). Some individuals will relate this sudden event to illness and issues of mortality, (Ogden & Sidhu), and thus try to reinstate their equilibrium by changing towards a healthier behaviour while others restore their stability by returning to the old unhealthy behaviour (recidivism) (Brink & Ferguson, 1998).

Hence, despite that many studies conceptualize behaviour change as the end outcome of a gradual shift in decision making, (Kearney & O’Sullivan, 2003; Resnicow & Vaughan, 2006) the results from the present study indicate that this linear change in cognitions which leads to behaviour change does not always apply to all individuals. Motivation can sometimes appear after a significant life crisis. These results find reflection in various quantitative and qualitative studies which conclude that sudden life triggers can enhance weight loss, smoking and alcohol cessation (Brown, 1996; Matzger et al., 2004; Ogden & Hills, 2008; Ogden & Sidhu, 2006; West & Sohal, 2006). For example, Larabie (2005) and West & Sohal (2006) argued that the majority of smoking quit attempts were unplanned and a sudden event precipitated change. In the area of weight loss Gorin et al (2004) and Wing & Phelan (2005) emphasized the importance of medical triggers to the sustained weight loss. Ogden & Sidhu (2006) highlighted the significance of life events to the adherence of medication which provided the opportunity to participants to visualize the side effects; relate the food they consumed with those effects and finally sustained...
their behaviour change. The results from the present study support this argument and indicate that life events can enhance behaviour change with no previous planning.

The first sustaining condition refers to the behavioral solutions for obesity which is related to individuals' perceived causes of obesity. In regards to the perceived causes of obesity the study indicated that unsuccessful individuals were significantly more likely to report that their obesity was due to medical and psychological reasons. These outcomes agree with previous studies which indicated that unsuccessful maintainers are more likely to endorse a more biological and psychological model of causality and thus, tend to believe that their excess weight is due to external uncontrollable factors such as genetics, heredity and depression (Ogden & Sidhu, 2006; Ogden, 2000). However, contrary to this study's results, previous research also shows that successful weight loss individuals endorse a behavioral model of obesity based on which they recognize that their behavior, i.e. unhealthy diet and reduced exercise, is what causes their obesity. Thus, they believe that obesity is due to factors within their control (Ogden & Hills, 2008). This diversity of results about successful weight loss individuals' model of obesity might be due to unsuccessful dieters' perception that diet is the only thing they believe they can control to manage their weight and that is the reason behind the groups' compatibility on diet.

Therefore, as the results indicate, unsuccessful individuals do not follow a healthier lifestyle since they believe that their obesity is due to factors they can not control. On the contrary, successful participants indicated less endorsement about a medical and psychological causality and a higher belief that behavior caused their increased weight
and thus tended to follow a healthier lifestyle compared to unsuccessful participants. In particular, successful individuals reported following a healthier diet like boiling instead of frying food, eating fruits and vegetables and avoiding sweet things or eating between meals. Their exercise levels were significantly improved too compared to the unsuccessful participants who avoided walking or using the stairs and preferred spending more hours on TV. Numerous qualitative (e.g. Byrne et al., 2003; Kayman et al., 1990) and quantitative studies (e.g. Elfhag & Rössner, 2005; Klem et al., 1997; Kruger, et al., 2006; McGuire et al., 1999; Wing & Hill, 2001) support the above results. They suggest that people who successfully lose and maintain their weight loss are more likely to be physically active and follow healthier diet which usually includes a variety of products, so that they don’t experience food deprivations which lead to overeating (Wing & Hill, 2001). Successful weight loss maintainers are also more likely to fit their dietary plans on their daily routine (Kayman et al., 1990). Consequently, from our results we can conclude that less endorsement of medical and psychological model of obesity increases the odds for sustained weight loss.

The second sustaining mechanism refers to the disruption of function of the old behaviour. The analysis of difference between the two groups showed that for successful individuals the function of eating was significantly disrupted while the function of exercise was significantly improved. Thus, compared to the unsuccessful participants, these individuals perceived more benefits from exercising and less benefits from eating. These results find reflection in previous studies with obese individuals. For instance, Ogden et al (in press) in their study conclude that the event which precipitated behaviour
change reduced the function of eating. In particular, participants indicated how they used food to manage their stress and their mood while now they find fewer benefits from food and more benefits from exercising. Thus, the previous unhealthy lifestyle was disrupted as the new healthy behaviour was more rewarding.

The increased function of the new healthy lifestyle was also evident in a group of African-American participants successful in weight loss maintenance (Young et al, 2001). Participants reported improved health, having energy, managing stress and feeling good as the main motivators for maintaining exercise and weight loss efforts. Also, improve sense of control over eating and experiencing more positive events following weight loss were also the motivators for some individuals to sustain their weight loss (Ogden & Sidhu, 2006; Tinker & Tucker, 1997).

The disruption of the perceived benefits received from the unhealthy behaviour is also evident in the area of smoking. Ex-smokers indicate that health reasons and reaching a particular age which made them more vulnerable to illness motivated them to change. They also describe how smoking used to be ‘enjoyable’ ‘glamorous’ and ‘relaxing’ and how it help them manage their stress and socialize (Brown, 1996; Ogden & Hills, 2008) while now is ‘disgusting’ and ‘costly’.

The third sustaining mechanism is the perception that the choice over the previous behaviour has been reduced. The results from our study showed that the choice over having unhealthy dietary habits was reduced while the choice over exercising was
increased. Hence, for successful weight loss participants, was easier to have healthier lifestyle habits than for the unsuccessful participants. The results support other studies. For example, Ogden & Sidhu (2006) and Ogden & Hills (2008) showed that for individuals who had obesity surgery the choice over the quality and quantity of food consumed was reduced due to their decreased stomach size after the surgery. Thus, too much choice can sometimes be overwhelming and prevent individuals from applying control whereas the removal of choice, in this case through the reduced stomach size, reinforces individuals to restore their self-control (Ogden et al., 2005).

Other authors indicate how the new habits and a busy schedule distracted previous drug abusers from their old behaviour while ex-smokers report trying to keep their hands busy or avoiding social gatherings in which people used to smoke (Brown, 1996; Kearney & O’Sullivan, 2003). In addition to these, ex-smokers also report that their choice over smoking was reduced due to the various changes in social norms which made smoking less desirable. These norms included increased cost of cigarettes and restricted public smoking areas.

All the results above provide quantitative support for many studies which conclude that distinct turning points in people’s lives precede behaviour change and thus motivation to change is not always planned but can suddenly appear. However, a set of maintenance mechanisms are required for the behaviour to be sustained. These mechanisms are disruption of function and reduction of choice; i.e. the old behaviour needs to be less rewarding while the individuals are reinforced from the consequences of the new
behaviour and the choice over the old behavior has been reduced as it becomes easier to adopt the new behavior.

The analysis of difference between the two groups in regards to their experience with their consultants indicated that successful participants were significantly more satisfied with their consultant who appeared to be encouraging, respectful, supporting and understanding and provided solutions, had something positive to say and was not judgmental. Therefore, we can argue that consultants and particularly health care professionals can enhance weight loss maintenance when they are more patient-centred. Intervention studies which examined the difference between the experimental and control group concluded that supportive professionals who showed understanding towards their patients help people lose weight, improve their self-efficacy (Ash et al., 2006) and maintain their weight loss in the longer term (Deforche et al., 2005). Therefore, we can assume that a supportive and understanding professional who offers unambiguous information and takes individuals’ beliefs and opinions into consideration can reinforce weight loss maintenance and thus work as a sustaining factor for weight loss. However, to reliably support this argument, more results are necessary to replicate or contradict these conclusions because not many studies examined the impact of patient-centred approach and weight loss maintenance.

3.6.1 Limitations

Despite the significance of our results some limitations need to be considered. Firstly, the generalizability of results needs to be taken with caution. This is because participants in
this study were mainly Caucasian women who attended a slimming club with the aim to lose weight. Therefore, results can not be generalised to men, other ethnic populations or individuals who attempted to lose weight alone or with the help of a dietician. However, it would be of interest to examine whether the results from this group of women are true for men and other ethnic groups.

In addition, there were significant differences between the responders and non-responders as the formers had significantly higher BMI, present weight and maximum weight excluding pregnancy. This is probably because, in cross sectional studies, people with health problems, in this case higher BMI and present weight, are more likely to take part in the study and complete the follow-up questionnaires (Silman & Macfarlane, 2002). Finally, there were also significant differences between people who did not provide full weight history, so we could not send them the main questionnaire. For all the above reasons generalizability of our results needs to be considered with caution.

Secondly, results were based on self-reports which can sometimes be inaccurate because people tend to give social acceptable answers (Bowling, 1995). They were also retrospective as they asked participants to describe their weight loss experiences after they lost or regained weight. Thus, they are under the influence of memory constraints and suffer from recall bias (Silman & Macfarlane; 2002). However, as McGuire et al., (1999) indicated, self-reported current and previous weights are valid.
3.7 CONCLUSION

To conclude, previous research conceptualizes behaviour change as a linear cognitive process where individuals weight the pros and cons of the required behaviour and behave based on the outcome of these calculations. However, previous research and our study indicate that, for the minority of individuals who manage to maintain their weight loss in the longer term, behaviour change occurs in a different way. Sudden events can enhance their motivation to change but behaviour change will only be maintained if sustaining mechanisms concurrently appear. Thus, successful participants are more likely to maintain their new healthy behaviour and enhance their physical activity levels and healthy dietary habits because they have more choice over the behaviours and perceive more benefits from them. However, for the maintenance of initial behaviour change the sudden trigger needs to have a central importance for the individual.
CHAPTER 4 \ STUDY 3 - SUCCESSFUL WEIGHT LOSS: A WITHIN SUBJECTS ANALYSIS

4.1 INTRODUCTION

The previous study indicates that for the minority of individuals who successfully lost and maintained their weight loss behavior change occurred after a sudden event which triggered their motivation to change. The study also indicates that not the event itself but other mechanisms reinforced sustained weight loss. In particular, contrary to the unsuccessful participants, successful individuals maintained their healthy behavior and thus weight loss because a) they perceived more benefits from their new healthy behaviour; b) they experienced less choice over their old unhealthy behavior and c) applied more adoptive, weight management solutions since they understood that their increased weight was due to their unhealthy habits.

Since Study 2 used a between subjects design Study 3 aimed to further explore the above conclusions by examining the differences within the successful group and indicate whether, compared to their current lifestyle, participants endorsed different behaviors, beliefs and attitudes before weight loss and experienced life events. Thus, the aim was to explore the differences within the maintainers group between Time 1 “At Heaviest Weight” and Time 2 “Past Month” regarding those factors. The differences examined concentrated on participants’ previous and current lifestyle and perceptions about their dietary and exercise habits. In particular, the analysis focused on participants’ previous and current behavioral solutions, perception of choice (reduction of choice) and beliefs
about behavior (disruption of function) and described whether these experiences have changed. Individuals’ health status between the two different times will be also included in the analysis.

4.2 AIMS

The aim of the study was to examine the differences within the successful weight loss group between Time 1 “At Heaviest Weight” and Time 2 “During Past Month” concerning:

1. Health status
2. Diet and exercise behaviors
3. Reduction of choice over diet and exercise behaviors
4. Disruption of function of diet and exercise behaviors

4.3 METHOD

4.3.1 Design

A within subjects design was used for this study.

4.3.2 Procedure

As indicated in the previous chapter, participants who consented to participate in Study 2 and 3 were sent the questionnaires. Successful participants were asked to describe their weight management experiences for two different time periods i.e. during their heaviest weight and past month. For both periods individuals were asked to report their weight
experiences regarding a) their health status, b) behavioral solutions for their weight, c) reduction of choice and d) disruption of function.

Specifications for each variable along with their reliability levels are described in detail in the previous chapter.

The link for the questionnaire was sent through email since all responders reported emails as their contact details.

4.3.3 Analysis

A within subjects MANOVA analysis was conducted to examine the differences within the group before weight loss and during weight loss maintenance. Before moving to the main analyses tests for missing values, normality, and univariate and multivariate outliers were applied.

4.4 RESULTS

4.4.1 Data analysis

The results were analyzed in the following way:

4.4.2: to examine the differences within the maintainers group before weight loss and during sustained weight loss in regards to: a) health status, b) behavioral solutions, c) reduction of choice and d) disruption of function.
4.4.2 Differences within the maintainers group in their experiences between Time 1 (at heaviest) and Time 2 (past month)

The section below will describe the differences within the successful participants group as they were at their heaviest and during the past month. The analysis will concentrate in individuals’ health status (perceived symptoms, daily activities), behavioral solutions, reduction of choice and disruption of function. Diet and exercise will be the items within the last three constructs.

With a Bonferroni adjusted alpha (p= 0.05), the within subjects MANOVA analysis showed a significant time effect (F (1,230) = 1182.662, p = .000 Hotelling’s Trace = 5.142, partial eta squared = .837), a significant effect of the combined variable (F (7,224) = 1230.179, p = .000 Hotelling’s Trace = 38.443, partial eta squared = .975) and a significant interaction effect between time and the combined variable (F (7,224) = 2063.820, p = .000 Hotelling’s Trace = 64.494, partial eta squared = .985).

The analysis also showed significant differences within the maintainers group concerning their experiences at their heaviest and during the past month. At their heaviest, maintainers experienced significantly more symptoms and their daily activities were significantly more impaired. In addition, they reported that at their heaviest weight they were significantly more likely to benefit from eating and less likely to benefit from exercise. During the past month it was significantly more likely for them to follow a
healthier dietary and physical activity lifestyle as they find it easier to eat healthily and exercise. (Table 4.1)

Table 4.1: Differences within the maintainers group between Time 1 and Time 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Heaviest (Time 1)</th>
<th>Past month (Time 2)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>M = 5.35, SD = 2.719</td>
<td>M = 2.64, SD = 2.427</td>
<td>.0001*</td>
</tr>
<tr>
<td>Activities</td>
<td>M = 22.64 SD = 4.76</td>
<td>M = 27.94 SD = 4.090</td>
<td>.0001*</td>
</tr>
<tr>
<td>Disruption of function:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>M = 13.83 SD = 4.23</td>
<td>M = 7.35 SD = 3.238</td>
<td>.0001*</td>
</tr>
<tr>
<td>Exercise</td>
<td>M = 7.68 SD = 3.09</td>
<td>M = 8.18 SD = 2.960</td>
<td>.0001*</td>
</tr>
<tr>
<td>Behaviours:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>M = 20.18 SD = 4.49</td>
<td>M = 29.58 SD = 3.101</td>
<td>.0001*</td>
</tr>
<tr>
<td>Exercise</td>
<td>M = 8.35 SD = 1.919</td>
<td>M = 11.49 SD = 1.729</td>
<td>.0001*</td>
</tr>
<tr>
<td>Reduction of choice:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>M = 22.46 SD = 3.99</td>
<td>M = 16.23 SD = 3.710</td>
<td>.0001*</td>
</tr>
<tr>
<td>Exercise</td>
<td>M = 9.61 SD = 1.206</td>
<td>M = 6.16 SD = 1.75</td>
<td>.0001*</td>
</tr>
</tbody>
</table>

* = p ≤ .05

4.5 RESULTS’ OVERVIEW

The study aimed to explore the differences within the successful group in regards to their weight loss experiences when they were at their heaviest and during the past month. Significant differences emerged concerning participants’ health status, behavioral solutions and the sustaining mechanisms. In particular, participants’ health status improved, they tended to follow a healthier lifestyle with enhanced exercise and better dietary habits, less choice and perceived benefits over the unhealthy behavior.
4.6 DISCUSSION

The aim of this study was to examine the differences within the maintainers group between time 1 (at heaviest) and time 2 (past month) in terms of clinical factors (health status, daily activities) and psychological factors (disruption of function, reduction of choice, behavioural solutions).

To the best of our knowledge this is the first study which examined the differences within the successful weight loss maintainers in regards to their weight loss experiences prior and following weight loss. As it was expected these individuals reported improved health status after weight loss. In particular, the results indicated that, following weight loss, health symptoms were significantly reduced and activities were improved. This is in accordance with Lähteenkorva et al., (2000) whose results indicated that maintainers, after losing weight, reported less breathlessness when walking or climbing uphill.

In addition, the results showed that successful participants improved their exercise levels and quality of food after weight loss. We can argue that this might be because the function and choice of exercise was improved with the choice of eating and function of eating was reduced. Therefore, maintainers were significantly more active after weight loss because they perceived more benefits from this behaviour whereas they perceived less reinforcement from eating. Also, following weight loss, they tend to eat more healthy foods as they perceived more benefits from healthy eating and it was easier for them to continue performing that behaviour.
These results are in line with other studies which support that weight loss maintainers managed to sustained their weight loss because they perceived more benefits from exercise and eating and also because the choice over those behaviours was significantly changed (Ogden et al., in press). It is also evident from the experience of ex-smokers who now perceive smoking as disgusting whereas before it was ‘relaxing’ and ‘glamorous’ (Brown, 1996).

Therefore, salient triggers reinforced individuals to lose weight. Their behavior change was maintained due to the sustained mechanisms which reinforced the new behaviour and reduced the choice over the old behaviour (Brown, 1996; Kearney & O’Sullivan, 2003; Young et al., 2001).

Furthermore, despite the significance of the results around the mechanisms which seem to help individuals sustain their weight loss in the longer term it is also important to uncover those factors which motivate and strengthen individuals’ determination to avoid regaining their lost weight. Thus, apart from the benefits they experience through their new behavior and the reduced choice over that behavior what are the individuals’ perceptions about their new and previous experiences which motivate them to sustain their weight? Do they change as individuals and thus prefer their new self instead of the previous one? These questions will be further explored in the qualitative study described below.
CHAPTER 5 STUDY 4 - IDENTITY SHIFT

5.1 INTRODUCTION

Previous research indicates that for some individuals behavior change suddenly occurs after a dramatic experience with no previous planning (e.g. Gorin et al., 2004; Larabie, 2005; Matzger et al., 2004; Miller, 2004). However, although for some individuals the trigger reinforces healthy and sustained behavior change such as quitting smoking (Brown, 1996; West & Sohal, 2006), abstaining from alcohol (Finfgeld, 1998; 1999) and losing weight (Ogden & Hills, 2008; Ogden & Sidhu, 2006) for others it ultimately results in a return to previous unhealthy habits. For example, Ogden et al (in press) highlighted the role of events such as pregnancy, illness and death of a relative and concluded that life events result not only in weight loss but also in weight regain. Therefore, salient events do not always enhance positive behaviour change as the change is based on the way individuals interpret the event (Ogden et al., in press) along with the circumstances which surround this salient event.

Previous research also highlighted that behavior change which occurs after a sudden event is more likely to be maintained in the long term when other sustaining mechanisms appear concurrently with the event (Brown, 1996, Ogden & Sidhu, 2006). For example, Ogden & Hills (2008) indicated that when the function of the old behavior is disrupted, the individual’s choice over when and where to perform that behavior is reduced and people hold a behavioral model of their increased weight then they are more likely to
sustain their behavior change. Others reported that this distressing event underpins sustained behavior change only when it has central importance to the individual (Brink & Ferguson, 1998). For instance, Finfgeld (1998; 1999) concluded that individuals change their behavior and thus abstained from alcohol only when they gradually realize that the consequences of their behavior jeopardized their priorities such as the essence of who and what they want to be. Therefore, it is not the event itself which triggers change but the subsequent mechanisms and the centrality of the event to the individual.

All the above research indicates that since the event threatens individual’s equilibrium by highlighting the potential harms from the unhealthy behavior, some individuals will attempt to re-establish their status-quo by changing towards a healthier life (Kearney & O’Sullivan, 2003). With the desire to re-establish their status-quo and avoid potential risks individuals take control, reorganize their environment and disengage from challenging situations (Brown, 1996; Finfgeld, 1998; 1999; Johnson, 1990).

By reorganizing their self, their life and their environment individuals manage to sustain their healthy behavior change. This behavior maintenance gradually helps them to acknowledge the benefits of the new behavior. These benefits refer to feelings of control, increased self-confidence in their ability to successfully reach their goals, social acceptability, improved relationships and work performance (Finfgeld, 1998; 1999; Lähteenkorva, 2000; Ogden & Hills, 2008). Gradually this behavior change enhances identity shift and a process of reinvention from a previous unhealthy individual to a healthier person. Thus, they tend to redefine themselves as non-smokers (Brown, 1996),
non-alcoholics (Finfgeld, 1998; 1999) or normal-weight people (Lähteenkorva, 2000). For example, Lähteenkorva (2000), in her qualitative study emphasized how successful weight loss maintainers tended to distinguish themselves from obese and never obese individuals since their new body presentation, due to sustained weight loss, altered their self-identity.

Therefore, for some individuals distressing events enhance healthy behavior change. With the aim to reduce the potential risks related to the unhealthy behavior and individuals' health, integrity, relationships and work performance people decide to change by reorganizing their environment and their life. When behavior is sustained, people acknowledge the benefits received from the new behavior and thus are more reinforced to continue endorsing the new behavior. These sustained behavior changes also strengthen the process of reinvention and identity shift towards a healthier individual.

In conclusion, research indicates that life events can bring initial behavior change. If this behavior is sustained in the long term, through the sustaining mechanisms, then individuals may experience a process of reinvention where they identify themselves as healthier people. However, despite that previous research indicates an identity shift towards a healthier individual (Ogden & Hills, 2008) who applies aggressive strategies to impede the occurrence of the unhealthy behavior (Kearney & O'Sullivan, 2003) and distinguish themselves from obese population (Lähteenkorva, 2000) this research does not provide much detail on the characteristics of this new individual and how they differ.
from their previous, unhealthy self. What are those behaviors, cognitions, perceptions which cause the diversity between the previous and new self? Therefore, this study will aim to provide a detailed description of the individuals' perceptions about their self during their obese stage and while maintaining their weight loss and indicate the process of change in those cognitions and perceptions which underlined the old and the new self.

5.2 AIMS AND OBJECTIVES

The purpose of this qualitative study is to further explore successful participants' subjective weight management experiences while maintaining their weight loss. The aim was to investigate the relationship between their experience in successfully maintaining their weight loss and the way in which they perceive themselves and their notion of self identity.

Thus, the aim was to:

1. Gain in depth insights about individuals’ transition from a previously heavier to a currently thinner individual
2. Facilitate a better understanding concerning their perception about their self before and after losing weight.

Have individuals reinvented themselves into new individuals? Do they endorse different perceptions about themselves now that they are thinner?

The study was qualitative and utilized the Interpretative Phenomenological Analysis (IPA Smith et al., 1999) since the aim was for the researcher to examine, in detail, participants'
personal, idiographic experiences thus, no certain hypothesis were expected to be found. The IPA was also chosen since authors argue that is particularly useful when subjective issues such as identity and self are examined (Smith, 1999). Thus, through a detailed analysis of the individual experiences during successful weight loss maintenance the changes in identity and the perception of self will be examined.

5.3 METHOD

5.3.1 Design

The study used a qualitative design with in-depth interviews.

5.3.2 Sample

Ten people were interviewed about their weight management experiences while maintaining a significant percentage of their weight loss. Participants were on average 40 years old and had an average BMI of 29.5kg/m². On average they had lost 26.6% of their initial body weight which they maintained for 4.7 years. These participants were identified from those who participated in the studies described in chapters 3 & 4 of this thesis. Their age and weight characteristics are shown in Table 5.1. To protect participants’ anonymity and confidentiality a pseudonym has been given to all.
Table 5.1: Participants' age and demographic characteristics

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>BMI</th>
<th>Percentage of weight loss</th>
<th>Months of maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary</td>
<td>37</td>
<td>23.8</td>
<td>33.7%</td>
<td>12 months</td>
</tr>
<tr>
<td>Emma</td>
<td>33</td>
<td>25</td>
<td>26.2%</td>
<td>132 months</td>
</tr>
<tr>
<td>Anne</td>
<td>41</td>
<td>26.2</td>
<td>38.6%</td>
<td>12 months</td>
</tr>
<tr>
<td>Emily</td>
<td>33</td>
<td>42.9</td>
<td>20%</td>
<td>36 months</td>
</tr>
<tr>
<td>Kristin</td>
<td>39</td>
<td>25</td>
<td>20.9%</td>
<td>132 months</td>
</tr>
<tr>
<td>Casey</td>
<td>26</td>
<td>32.2</td>
<td>13%</td>
<td>12 months</td>
</tr>
<tr>
<td>Jackie</td>
<td>58</td>
<td>24.7</td>
<td>31.4%</td>
<td>48 months</td>
</tr>
<tr>
<td>Catherine</td>
<td>48</td>
<td>26</td>
<td>20.8%</td>
<td>24 months</td>
</tr>
<tr>
<td>Kerri</td>
<td>42</td>
<td>30.3</td>
<td>31%</td>
<td>24 months</td>
</tr>
<tr>
<td>Jemma</td>
<td>41</td>
<td>33</td>
<td>11%</td>
<td>132 months</td>
</tr>
</tbody>
</table>

5.3.3 Materials

5.3.3.1 The interview schedule

The interviews were semi-structured and included open-ended questions and prompts to encourage participants to speak openly about their weight management experiences.

The questions focused on participants' perceptions about their self before and after losing weight and sustaining the loss in the long term. Initially, the interview concentrated on their experiences before weight loss. Participants were asked to describe: "What do you think contributed to your decision to lose weight?" Prompts such as "health problems and events" were provided. In addition, to their past perceptions individuals were asked to report "How did you feel/think before you lose weight" prompts such as "your life,
appearance, health and social life” were indicated. The final question was on their perceptions about their self before losing weight i.e. “How did you feel about yourself at that time?”

The second part of the interview focused on participants’ perceptions about themselves after losing weight and maintaining some of their weight loss. With the sentence “Now that you successfully kept some of that weight off...” participants were directed towards their current feelings and thoughts.

Initially the researcher asked participants to describe their feelings and thoughts now that they had lost and maintained a significant amount of weight. Then, they were asked to describe their feelings and thoughts in the following questions: “How do you feel now about yourself as a thinner person?” “What do you think prevented the success before?” “Was that person there before?” “What do you think helped that person to come out now?” “Why do you think that person is still there?”. Then there was a final question on their general views about themselves “In general, can you please describe how you feel about yourself now?”

Ethical approval was received from the University’s Ethics Committee.
5.3.4 Procedure

40 successful weight loss participants (maintained at least 10% of their weight loss for a minimum of one year), who completed the screening and follow-up questionnaire, were randomly chosen for the qualitative study. These participants were contacted and invited to participate in the study’s third and final stage. The invitation, which was sent through e-mail, informed members that the study was based on interviews and aimed to further explore their weight management experiences. The invitation also indicated that the interview would be voice recorded and that all personal information would remain strictly anonymous and confidential. Members who showed interest were asked to reply to the invitation, by email, and indicate their interest.

Those participants who showed interest were contacted again to arrange a convenient day and time of the interview.

Before initiating the interview the respondents were thanked for their participation and reassured about confidentiality. The researcher also emphasized the participant’s autonomy to refuse answering any particular question or indicate whether they felt uncomfortable so that the interviewer moved to the next question.

Ethical approval was received by the University’s Ethics Committee (Appendix VIII).
5.3.5 Data analysis

The data were analyzed using the IPA guidelines provided by Smith, Jarman & Osborn (1999) and Smith & Osborn (2006). Each individual transcript was read and re-read by the researcher to ensure familiarity with each participant report. The left-hand margin was used to comment and highlight what was interesting and what reflected participants' perceptions on weight maintenance experiences. The researcher used the right-hand margin to annotate all emerging themes which moved the interview to a more abstract level. These themes were then classified coherently into groups which reflected the participant's views on weight loss and weight loss maintenance. For the individual interview the researcher organized all possible topics. This procedure was followed every time a new transcript was analyzed. The related themes emerging from the interviews were then put together to explain the participants' shared experiences and psychological views. Then, they were connected and grouped under a general heading. Instances for each topic were coded from the transcripts. A table of themes and sub-themes with reference to transcripts was finally developed for each transcript. Each time the researcher was looking for themes already found in previous transcripts but also looked for new ones since individuals can share similar experiences but also different ones.

Throughout the writing process verbatim extracts from the interviews were provided to support the arguments made on participants' experiences. All transcripts were re-read to ensure that themes well represented participants' reports. When analyzing the data the researcher was aware that personal experiences might have an impact on the how
participants' experiences were interpreted. However, objectivity was the principle consideration.
5.4 RESULTS - DISCUSSION
All participants were white women with an average age of 40 years. The majority were married (66.7%), worked full-time or part-time (56%) and had an education equal to a degree (44%).

Participants described their weight experiences before losing weight and indicated how these experiences and, in particular, perception of self had changed after they lost and maintained their weight. From the analysis of the transcripts two overarching themes emerged relating to the pre and post weight loss individual. The first theme (pre-weight loss individual) described a previous restrictive individual whose daily dietary habits were characterised by deprivation and control and whose social interactions were minimal. For this individual, identity was built around their weight and their life was characterised by attempts to regulate their emotions through eating. The second theme focused on the post-weight individual who appeared more liberated in terms of dietary habits, social interactions, emotional regulations and identity. These themes will now be detailed with the use of exemplar quotations.

5.4.1 The restrictive individual
Most participants, before losing weight, they described the endorsement of a restrictive life. Due to the experienced, blatant, negative social discrimination participants preferred to be socially isolated, they restricted their attention around their body and thus endorsed a weight-centred identity, and used a variety of restrictive diets, which reinforced a sense of deprivation, with the aim to control their intake, lose weight and thus not being defined
as fat. Despite their restrictive character these individuals applied unrestrictive behaviors when they regulated their emotions since unhealthy eating during those situations was their only remedy.

5.4.1.1 Social interactions and stigma

Most participants revealed that they avoided social interactions when they were overweight. Some expressed this introversion when they were trying to find excuses not to go out while others tried to remain unnoticed by being quite and sitting in the dark. The social restriction might was due to the discrimination participants' experienced while being obese.

For some this social avoidance was related to the uncomfortable feeling they had when other people were present:

“I didn’t like to socialize. I felt uncomfortable, I was more introvert then. Going out with other people, being uncomfortable in other people’s presence that didn’t have a weight problem” (Catherine)

Some indicated that they found excuses not to go out:

“If they managed to persuade me, if somebody would suggest having a night out and I’d say oh yes fine and then I’d spend the whole time between then and making arrangements and actually going-dreading it and trying to find an excuse to get out of it” (Emily).
Some reported sitting in the corner and just be quiet:

“...I wouldn’t be the one that would get up and dance, I would always be the one that would sit down all night and read. I wasn’t outgoing, I would, you know, sit in the corner, I’d be quite, I’d be very, very quite person because you’re fat and you don’t feel like you’ve got a vibe.” (Jackie)

“And when I did go out I’d end up sitting, trying to hide in a dark corner somewhere and not speak to anybody, because I just felt so embarrassed” (Emily)

For some being to the back of the line was a way to keep distant from social interactions:

“You know, you put yourself to the back of the line, and if you so, and sometimes is very subtle, you don’t realise that you’ve been doing it because you do it for so long” (Anne)

Finally, for some this social isolation implied avoiding personal relationships:

“I didn’t really have, you know, personal relationships with men. I wouldn’t sort of get involved with relationships because I didn’t feel confident enough to in myself” (Emma)

In regards to their social experiences participants reported the social discrimination they experienced when they were overweight. Some indicated the comments they received from others:
“And you know, you walk down the street and the comments that used to get shouted…”

(Emily)

For others this meant being skimmed over:

“It makes you truly believe that you are a second-class citizen... I can remember being in situations where female work colleagues would be talking about going out...because it was something I did not do I wasn’t included in the conversation, I was sort of skimmed over. I don’t think people realize how cruel they can be [laughs]” (Kerri)

For some this discrimination was equalled to be perceived as lazy or stupid:

“Maybe it’s to do with the way people perceive me. People have thought that when they are fat they assume they’re stupid or lazy or something like that” (Kristin)

For others it was a “blatant” discrimination from colleagues:

“I would say its subtle discrimination, it’s not blatant, it’s not something that people voice, it’s just a general attitude and feeling you get from people. When I was at work...and when I was at my biggest, I wouldn’t necessarily get included in social things...if people were going out you know...I wouldn’t get included” (Kerri)

Participants disclosed their impaired social interactions and social discrimination they experienced when they were overweight. This confirms previous research which
indicated that due to social stigma some obese individuals are less likely to date or go out socially (Crossrow et al., 2001). They also tend to experience public distress which diminishes their quality of life as it is related to be ridiculed and discriminated (Kolotkin et al., 2001).

In addition, our results agree with research which argues that obese individuals experience social stigma due to their increased weight and indicate that sometimes obese people remain unnoticed and isolated (Mayers & Rosen, 1999; Puhl & Brownell, 2001). Researchers argue that even health care professionals who are the most knowledgeable about obesity and its underlying factors they still endorse a stigma towards this population (Schwartz et al., 2003). From our results we can argue that these negative attitudes indirectly reinforced social withdrawal as a coping strategy since most obese individuals are likely to internalize the social messages about their physical presence (Schwartz & Brownell, 2004).

5.4.1.2 Fat identity

Most participants described how they used to concentrate their attention to their weight and how they used to identify themselves as “big” or “fat”.

Some indicated how this “fat person” perception started from their childhood:

“I got picked on for being big all the way through school. I mean, I was big, right back as a kid. As a five year old and so on, I was fatter than everybody else” (Emily)
For some being fat was related to being ugly:

“Not only then does make you feel that you are the fat one, but because you’re the fat woman, you feel like you’re the ugly one, and that does bad things to your head and to your confidence” (Anne)

For others being fat and standing in front of a mirror or seeing themselves in pictures was not one of their best memories:

“I can still remember feeling fat, I mean, to catch a sideways glimpse of myself in a mirror and think, I look really matronly, you know, really like, really rounded, big rounded boobs and big bulky abdomen and, you know, my legs were fat...you don’t feel good when you are fat” (Jackie)

“I never thought I was ugly, but I was aware that I was fat, and I’d see photographs of myself and think oh, well, it was just a bad photograph. And it wasn’t; it was just a photograph of me being fat” (Kristin)

Some participants revealed how perceiving their self as fat made them devalue their appearance. They tended to be less interested towards improving the way they looked:

“I didn’t used to maybe make as much of myself as I would go out and I wouldn’t bother about putting makeup on and wouldn’t worry too much about what I was wearing
particularly, or anything like that. I just used to put whatever came to me. It was really
the case of I didn’t really try very hard before because I thought, oh, well, it didn’t matter
too much, you know” (Jemma)

For others having a negative weight-centred perception influenced their mood and
confidence:

“I certainly did not feel happy about myself, I didn’t want to look at myself, I didn’t feel
confident. I permanently felt that people were looking at me or judging me or being
disgusted by me because I was disgusted by myself” (Kerri)

“You’ll always be different dependant on your size whether you want to be or not
because you naturally change what you do and how you express yourself and things. I’ve
been size 6 and I’ve been size 18 and everything in between, and, you know, I’ve been
very different from, size 6 right up to size 18. When you are bigger you try and pretend to
be confident but not necessarily actually being confident whereas when you are slimmer
you don’t feel the need to pretend” (Casey)

And finally, the identity of being fat was related in being restricted behind the big body:

“I’ve always been there but you just hide under the layers of fat. It’d be easier to hide the
fatter you are, you’ve got more to hide behind…” (Casey)
Therefore, most participants described that they used to be weight-centred and tended to restrict their attention around their increased weight and unattractive body. They used their heavy weight to define themselves as fat individuals who were hidden behind layers of fat. This fat identity influenced their confidence and mood along with the way they saw their selves in the mirror or photographs.

Researchers argue that society tends to discriminate these individuals since their weight rejects and rebels against the society's standards of thinness and beauty. The messages, comments and prejudice individuals experience may help to shape their views about body and thus their identity. A qualitative study indicated how significant others such as family members, coaches and husbands can help or impede overweight people from developing their sense of self-worth and self-respect as these people's beliefs reflect participants' perceptions about themselves (Pelican et al., 2005). Thus, participants are more likely to internalise the society's negative messages about weight and think poorly about their self (Schwartz & Brownell, 2004). Based on these results, it can be argued that, when the messages they receive concentrate around their weight, obese people become weight-centred and thus define themselves based on their body shape while they simultaneously minimize their other qualities or skills. However, if the messages focus on their qualities then obese individuals may develop a more positive identity which is broader.

5.4.1.3 Restrictive diet
Apart from the weight-centred fat identity and the social isolation restrictive individuals also endorsed a restrictive dietary behavior which aimed to control their intake, lose weight and avoid being recognised as fat. For most participants this dietary routine
enhanced their sense of deprivation and required from them to be constantly alert in regards to what they were eating.

Some participants with the aim to control their eating and thus avoid weight gains they turned to various restrictive diets such as counting their daily intakes:

“I have tried to counting calories that lasted three days. I have never wanted to go to Weight Watchers because their whole thing is counting every little thing you eat” (Emily)

“I was actually being told what I couldn’t eat. For example I would eat lot of fruit before I lost weight and someone would say to me, oh you can’t have grapes, they are full of sugar, or you can’t have this and you can’t have that and I’d get very confused” (Kristin)

For some these diets were characterised by a separation of food based on their nutrients:

“I tried the Hay Diet as well. You can eat proteins one meal and then carbohydrates another meal, and it was complicated” (Kristin)

Others to lose weight or keep their weight they had to be constantly alert with their diet:

“It’s just made me always have to watch everything and be careful with my body and diet and everything” (Emma)
Finally some indicated how they felt deprived due to their previous restrictive diets:

“Or else the diet did not communicate this before. I felt deprived when I was doing it before” (Anne)

Thus, the experienced social discrimination and weight-centred identity required from participants to be more vigilant with their weight and follow restrictive diets to control their intake and manage their weight. Being dissatisfied with their body prompted them to follow different ways of dieting some of which restricted their caloric intake and thus increased their sense of deprivation.

This comes in line with studies which indicate that obese individuals, particularly female adolescents and female adults, turn to intentional restrictive diets to manage their weight or change their body shape (Casper & Offer, 1990; Williamson et al., 1992). Authors argue that since obesity signifies laziness and uncontrollability obese individuals adopt various weight control behaviors with the aim to reach their ideal weight in a short period of time and thus be socially attractive and accepted (Brownell, 1991; Polivy & Herman, 2000). However, despite their efforts to manage their weight, the majority eventually regain some or all their weight with some of them gaining more than their baseline weight within few years (Marchesini et al., 2004; Polivy & Herman, 2002). Authors argue that, for some people, restrictive diets are related to eating disorders and particularly binge eating as individuals can sometimes overeat when their eating exceeds their cognitive restraints (French & Jeferry, 1994; Lowe et al., 2001). However, before
reaching to this conclusion, an individual’s social, environmental and psychological characteristics need to be considered because diet influences people in different ways depending on the factors referred above (French & Jeferry, 1994). This battle with weight may continue for a long time until people find the most suitable for their situation mechanisms for the maintenance of their weight loss. As our participants indicated, their previous endless struggle to control their weight was followed by their current successful weight loss and weight loss maintenance.

5.4.1.4 Emotional regulation

Most participants found eating as a way to regulate their emotions particularly when being stressed or feeling emotional or bored. For some this regulation was related to a sense of guilt since the quality of food they chose to eat at that particular moment was not the best option.

Some participants reported eating when they were stressed:

“When I got wound up and stressed there are times when I did it and just took a chocolate or the pizza” (Emily)

Others used food to regulate their boredom:

“I’d just eat, used to eat just, you know, not because I was hungry, just because I was bored or fed up or you know there was nothing else to do” (Mary)
Some participants indicated utilizing food when feeling emotional:

"Every time if you needed comfort and I think that is also a huge factor, because there is that comfort in food and if you don’t feel well, then you want something that you think will...people they feel depressed, well they’ll have a bar of chocolate" (Anne)

“I think I did comfort eat a lot as well...you know when you sort of...where you feel emotional...badly about something. And then of course there was food...” (Emma)

Finally for others food was used to regulate emotions after a bad day:

“I’ve had a bad day or feeling particularly low then I absolutely wanted to eat bad and drink bad” (Casey)

However, despite that most participants used food to regulate their emotions some of them experienced guilt after consuming all the unhealthy products:

“I had that circle of bad eating then feeling guilty about the fact that I’d eaten so much” (Kristin)

“You feel depressed you haven’t got much time for yourself, so you eat a bar of chocolate, which does actually, doesn’t help. But you know at that time it does. When
you are actually eating it...it feels good. It’s afterwards...you think, stupid woman, why did you do that? (Jemma)

Some realised that they did not feel better after consuming the bad food:

“And I don’t want it, I don’t really enjoy it, it does not make me feel better” (Emily)

Participants described their attempts to regulate their emotions, particularly their negative emotions such as depression, stress and boredom through food. For some this behavior was followed by guilt as they acknowledged that the expectations they had about the food’s beneficial effects were unseen or temporal. This supports research indicating that the pleasure which accompanies eating is related to guilt and regret (Ogden, 2008). In addition, it replicates studies which indicate that some obese and overweight individuals are likely to use food to compensate emotions such as depression and anxiety (Eldredge & Agras, 1996). However, it is of importance to indicate that not all overweight people manage their negative mood through emotional eating as various third variables such as participants’ personality characteristics, previous dieting, control and food choice mediate this relation (Elfhag & Morey, 2008; Ganley, 1989). Finally, not just individuals with obesity problems eat for emotional reasons but normal weight people do that too (Macht & Simons, 2000). For example, in a study with underweight, normal weight and overweight individuals Geliebter & Aversa (2003) indicated that while overweight participants reported eating more when experiencing negative states or situations normal
"When we go out now, if someone says to me we are going out, I say yeah, fine. I don’t feel self-conscious about it, so I can go one night out now, and I’ll go out and I’ll enjoy myself.” (Emily)

“I feel good. I mean I am the first one up, I want to go out. I’m the first one up and you know I just feel good about myself” (Jackie)

Some indicated being more friendly and sociable:

“For example in social situations when I moved down here and I didn’t really have that many friends or know many people because I was all new, but I joined a few social things and I went to things which were very new and I didn’t know people but I think I wouldn’t have felt as confident to do that if I was, you know, the size I was before” (Emma)

“I feel that I see more people now, although I had friends before, I probably see them more now. I’m much more comfortable with chatting to people and my openness comes out more” (Catherine)

This social liberation and extraversion might be due to the sense of normality and acceptance most participants experienced after weight loss.

This social extraversion might was reinforced by the decreased social discrimination and enhanced social acceptance and normality that participants experienced after weight loss.
Sense of acceptance:

“When you’re slimmer, because everyone accepts you more, then you don’t, you don’t feel the need to pretend” (Casey)

“And I think I’ve now got back to the sort of, just feeling accepted and, you know…” (Kerri)

Sense of normality:

“I feel far more, far more, what’s the word, normal, I feel far more like one of the girls, if that makes sense” (Kerri)

“You’re not a different person but it’s just how you come across better to people and feel that, you know, not that you’re very different but, you know, I feel more part of like everybody else more, I suppose” (Emma)

Some indicated not being outsiders any more:

“I see the other mums at school, and since I’ve lost weight I feel far more like one of them than on, somebody, an outsider on my own” (Kerri)
Weight loss was described as improving participants' social interactions since social discrimination was minimised due to their reduced weight. This comes in line with other research which indicates beneficial psychological effects related to weight loss (Blaine, et al., 2007; Stunkard & Wadden, 1992). For example, in their review about the psychosocial outcomes of surgery Bocchieri et al., (2002) indicated how surgical treatment was related to reduce perceived discrimination and social withdraws and increased social relations in obese individuals who underwent obesity surgery. In addition, Karlsson et al., (1998) reported enhanced social interactions 2 years after obesity surgery. Finally, participants in our study reported enhanced sense of normality and acceptance by society as they were treated as normal individuals and not as second class citizens. This supports previous qualitative research in which participants who undertook obesity surgery felt “accepted” and “valued” by others after they lost weight (Ogden et al., 2006).

Thus, the new individual appears more outgoing and less reserved since their weight loss does not create negative attitudes towards their weight. On the contrary, it seems to reinforce the sense of acceptance and normality since their physical presence has improved and tends to satisfy the society’s standards of beauty and control.

5.4.2.2 New dietary habits

Participants' dietary habits were also characterised by freedom and flexibility. The previous controlled and restricted diets were replaced with more normal, balanced, prober
eating habits which were also healthy. Hence participants felt rather satisfied than deprived or constrained.

Some indicated that due to their flexible new plan they don’t feel deprived:

“I don’t deprive myself; I have something, you know, some sort of treat every day. So, I mean, I don’t feel that, urge to stuff a load of chocolate in my mouth very often because you get these things you can use every day and you can use those with anything you like...there is nothing you can’t eat there’s no reason for you to feel deprived. The plan is so flexible that I can basically eat what I want to” (Mary)

“So we have our little treats, I have had biscuits, I’ve had ice lollies and I’ve counted them into my themes...I don’t feel deprived of anything. If I want a chocolate I can have it. You just count it. I can actually still eat quite a lot of the meals I used to eat and I have enjoyed a cooked breakfast this week. The fact that I can eat all this, it’s tasty and I feel like I am enjoying normal food, not diet food” (Emily)

Some reported having real, prober meals and thus eating more comfortable:

“I started eating, like, not being on a strict diet, but.eating sort of real, prober food and feel that now that’s something I find it quite easy to stick to. Is something that is more like eating more comfortable and just having proper sort of meals, like say pasta, potatoes, meat and things like that. I’m eating well and the right foods” (Emma)
For some being told what they could and not what they could not eat reduced their anxiety concerning food:

"It was all in a book and it was like someone saying right, you can have this and you can have that...and being told what I could do rather than what I couldn’t do was probably...yeah it worked quite well. I enjoy the whole experience of it rather than being worried or nervous about it" (Kristin)

Others reported how this new flexible dietary routine was simultaneously a healthy habit:

"I believe that it’s a healthy eating plan, it’s not a diet, so it’s just as a way of life"
(Casey)

"It is the healthier way to live; you can eat lots of food, lots of goof food, healthy food. We don’t have just salad and nothing else; we have actually nice, healthy, good food.”
(Anne)

For some having this balanced diet signified going out and have what others were having and thus, feeling normal in a diet-wise way:

“You can go out with people and you can eat, you know what...apparently as much as they're eating or whatever they’re eating and you don’t get this idea of being looked at as if to say, we see you’re on diet...” (Kristin)
Finally, some participants revealed how the flexible dietary routine allowed them to spoil themselves sometimes:

“We went on holiday last week, and, you know, I did indulge most days, but as soon as we come back home on Saturday, I got straight back into my healthy eating, back to my plan” (Mary)

“I mostly stick to still keeping on the plan, and then once in a while, then I’ll have a real treat and have you know, cream and something really, as is in mostly we call it bad food, but I just need a treat…” (Anne)

Participants described their changed dietary routine after weight loss. Contrary to the previous controlled and restrictive plan which was related to deprivation participants reported endorsing a more flexible, healthy and comfortable routine which helped them feel more relaxed and happy. This new dietary plan, which is characterized by a balanced consumption of products, impedes binge eating and thus weight gain. This supports research indicating that successful weight loss individuals are less likely to feel deprived since they have a more flexible, balanced dietary lifestyle which impedes them from binge eating and thus regaining their weight (Byrne et al., 2003; Lähteenkorva, 2000). As Young and colleagues (2001) indicated successful participants tended to include all food items in their dietary plan but simultaneously have specific tactics about unhealthy, fatty foods such as cooking them at home or balance them out by having something healthy for
their next meal. Therefore, successful participants have a more balance dietary routine with which they tend to be vigilant and thus avoid regains.

Therefore, this time losing and maintaining weight was a learning experience for most of our participants. They realized that weight loss and weight maintenance is not always accompanied by food restrictions and deprivations. They can have a normal, healthy, balanced and flexible dietary routine which reduces rather than increases their food related anxiety and preoccupation. Through this experience participants changed their dietary routine which is now characterized by a variety of foods that were previously banned from their menu and provides them with a new sense of normality i.e. even if they were overweight (during weight loss) and now are trying to maintain their weight loss food can still be an enjoyment and not a stressor.

5.4.2.3 Emotional regulation

Contrary to their previous attempts to regulate emotions through the consumption of unhealthy products the liberated participants try to find alternatives and thus manage their emotions with healthier methods since emotional eating may produce weight gains.

Some found strategies to discourage themselves from reaching for food when being emotional:
“And then of course there was food, whereas now I’m trying... I’ll try to do something else, instead of reaching for food. I’ve got pictures around to motivate me, like models in bikinis” (Emma)

“And so each time like, I’m going to eat things I kind of say, oh, come on, don’t you want to look in the mirror and like what you see?” (Anne)

Others indicated having a more positive attitude to control their emotions:

“So yeah, it’s just trying to stay positive for it really, you know...” (Jemma)

Finally others reported having more control:

“I know I am in control now with, with my eating which I wasn’t before... I just don’t do that any more [emotional eating]” (Mary).

Therefore, acknowledging that regulating emotions through eating would have a detrimental effect to their weight, participants found alternatives as an attempt to control their eating when being emotional. These options were healthier ways beneficial for their weight. As other studies indicated individuals develop new strategies and find healthy alternatives with the aim to maintain their desired behavior and impede the occurrence of behavior which would obstruct them from accomplishing this goal (Johnson, 1990).
5.4.2.4 Identity: not weight-centred

Weight loss seems to have directed participants' attention away from their physical appearance and thus weight. This individual apart from being more outgoing and socially accepted they seem more relaxed and have expanded their attention towards other things since their options and self-efficacy regarding other activities are increased due to their reduced weight.

For some this liberating self was more relaxed since the sense of being fat had disappeared:

“You know the, the being fat thing isn’t there to make me worry about it or make me sad about it, so, yeah I guess I’ve got less to worry about. The aspect of life that I don’t have to worry about being fat is being different” (Kristin)

Some turned their attention to their appearance:

“Before, wouldn’t even look in a mirror. Now I wear make-up, I make much of an effort with my every day life…” (Catherine)

For some the accomplishment of losing and maintaining weight improved their self-efficacy for other areas in life:
“And knowing that I did that, and do know in my mind that I look now, if I could do this, and then maintain it, then I can do what I want” (Anne)

“I’ve stopped thinking that I can’t do that. I’ve started thinking I can do that. I’m going to do that. The whole attitude has changed.” (Emily)

Some reported how this liberating self helped them to do different things since they were not trapped within their weight:

“I just feel I’m able to do a lot more now, you know, I do quite a lot of exercise and I think that makes me feel really good about myself” (Emma)

“I love going boating. We go on narrow boats for holidays and things, which my husband and I really love. And I wouldn’t have been able to do that really when I was a lot bigger because just...because is quite an active type of holiday, you know, jumping on and off and doing lots of various things. So I wouldn’t do that when I was big” (Emily)

Therefore, participants’ attention was diverted to other parts of their life since they didn’t feel restricted by their weight. Their mental representation about their self shifted from a previously reserved individual towards a more liberated person who is in control and willing to have new and different experiences since their weight is not impeding them anymore. As some participants in Ogden and colleagues’ study indicated (2006), a sense of control particularly concerning eating liberated them and helped them feel relaxed.

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Consequently, weight loss released participants from their fat body within which they were trapped. This liberation due to their reduced weight helped them a) to redirect their restrictive attention towards other aspects of life apart from their weight such as exercise and boating, b) be more socially outgoing and accepted, c) endorse a balanced, flexible dietary routine with which the sense of deprivation was minimised and d) regulate emotions through healthier behaviors.

5.4.3 Determination

Participants' previous negative experiences related to their increased weight prompted their current motivation to maintain their weight loss and thus reduce the chances for the occurrence of the undesired behavior which is related to increased weight. Strategies were developed to keep motivation elevated.

Some admitted being more determined to keep weight off and make sacrifices:

"I think I'm just more, more determined to, to keep the weight off this time. I'm just more, more determined to do it. Nothing is going to stop me, I know there are things in life that can’t help...I’m prepared to sacrifice things now whereas before I wasn’t"

(Mary)

For some, understanding that they worked hard to lose their weight kept them motivated to maintain their new healthy behavior:
"I’ve worked hard to get it off…I don’t want to go back…” (Kerri)

Some reported just not giving up:

“It’s just perseverance and just not giving up… I don’t like it when I put weight on…”

(Emma)

For some remembering how they used to feel about their weight kept their determination elevated:

“When I look back at a picture of how I used to look, I think I’m never going back to that. I think is just embarrassing how I was.” (Emma)

“So I am very careful, but you know, I do feel good about myself. I don’t want to put the weight back on. I don’t want to go back to being a fat person” (Jackie)

5.4.3.1 Strategies

Participants’ determination to maintain weight and healthy behavior and minimize the chances of weight regain reinforced the development of strategies to keep motivation elevated.

Some reported having pictures around the house as a tactic to maintain their motivation since they wanted to keep looking good:
“It's just perseverance and just not giving up...if I sort have an unhealthy meal or several unhealthy meals, then the weight will go up and I'll feel horrible...I don't like it when I put weight on...I just make sure that I work hard with the sort of exercise...also I've got pictures around to motivate me, like models in bikinis...” (Emma)

“When I look back at a picture of how I used to look, I think I'm never going back to that. I think is just embarrassing how I was. I have pictures of how I used to look stuck up in the bedroom, I've got them stuck on my fridge and inside the cupboard to remind me...when I'm thinking oh, I could eat some rubbish and I am thinking, no. You are not going to start that again. I don't want to take a step back; I want to keep going forward.”

(Emily)

Others reported regular weighing as one of their basic strategies:

“And I haven't missed a single week, ever. When I've gained weight I always go and get weighed without a fail. I make a point of measuring myself each week as well as weighing myself” (Casey)

“So I am very careful, but you know, I do feel good about myself. I don't want to put the weight back on. I don't want to go back to being a fat person. I go every week to get weighted. Tonight's our night and I'll go tonight to get weighted even though I'm on night shift and I know my weight will be different because I'm on night duty. I will still go and get weighed because I don't want to get out of my target range” (Jackie)
Some reported that clearly specifying what they wanted and experiencing all the rewards from weight loss and then make it part of their life kept them from going back:

“I think you have to get your head in the right place. It’s all about getting it all set in your brain what it is that you want to do. Over the couple of years it has become a new way of life, so I now no longer want to go back to my former life of yo-yo dieting and feel so good and healthy at the moment so that’s what’s keeping me focused because it’s just my way of life now” (Catherine)

Compared to their previous weight loss attempts participants are significantly more determined to maintain their behavior change and continue experiencing all the rewarding aspects of weight loss and avoid all the disappointing experiences of their previous increased weight. This comes in line with studies which indicate that this reward system enhances individuals’ motivation to maintain their behavior change and thus their weight loss (Ogden & Hills, 2008). These benefits can be related to their increased self-esteem and control (Finfgeld, 1998; 1999) or the fact that they are socially accepted and not ignored (Sarlo-Lähteenkorva, 2000).

In addition, participants invented various strategies such as regular exercise, regular weighing, having pictures in different places etc to boost their motivation and continue maintaining their weight which is among their main future goals. This verifies other qualitative studies with ex-smokers (Brown, 1996), ex-alcohol abusers (Finfgeld, 1998; 1999) and individuals who sustain their weight loss (Johnson 1990; Lähteenkorva, 2000).
Most individuals can sometimes be assertive as a means to control their environment and thus avoid the occurrence of the undesired behavior (Kearney & O’Sullivan, 2003).

5.5 RESULTS’ OVERVIEW

The aim of this qualitative study was the in depth exploration of participants’ experiences while maintaining their weight loss and the further examination of the mental representations they endorsed concerning their self. The analysis of transcripts revealed an identity shift from a previously restricted towards a liberated individual. In particular, participants, before weight loss, described endorsing a restraint life which was characterised by restrictive dietary routine, diminished social skills and social stigma and a selective attention around their weight which they utilized to define themselves as fat individuals. All this negativity was regulated through the consumption of unhealthy foods.

On the contrary, the liberated individual, after weight loss, endorsed a more flexible and comfortable dietary plan, was less reserved in social situations and felt accepted by the society. In addition, from a weight-centred became a person-centred individual and the attention expanded to new qualities of life such as exercise and boating and discovered alternative, healthier ways to manage emotions. Finally, the liberated individual appears more determined to maintain weight loss and new healthy behavior with the aim to minimize the occurrence of the unhealthy behavior and thus weight gain. Various tactics are invented to keep motivation elevated.
5.6 CONCLUSIONS

This qualitative study aimed to examine successful weight loss individuals’ experiences while maintaining their weight and gain in depth insights about their transition from a previously heavier to a currently thinner individual and also facilitate a better understanding concerning their perception about their self before and after losing weight.

Ten women accepted to participate in the study through an email invitation which was sent to them. Participants were on average 40 years old and had an average BMI of 29.5kg/m². They lost on average 26.6% of their initial body weight which they maintained for 4.7 years.

Participants initially described the social stigma and discrimination they experienced when they were overweight. This prejudice was in a form of negative comments, being excluded from social gatherings, being skimmed over in conversations or being perceived as lazy and stupid. Probably this discrimination was the reason behind participants’ restrained life. More specifically, participants endorsed a restrictive lifestyle which was evident in three areas of their life: their social interactions, perceptions about their self and dietary routine. In particular, negative attitudes towards them due to their increased weight made them less reluctant to socialize or create personal relationships. Some participants indicated difficulties in socializing or developing closer personal relationships particularly with men. In addition to this, individuals were prone to internalize the derogatory messages they received and thus followed restrictive diets with the aim to lose weight, improve their appearance and satisfy the society’s standards of
beauty and thinness and thus be more accepted. This, preoccupation with their weight underlined participants’ restrictive attention around their body and formulated a weight-centred identity i.e. they tended to portray themselves as “fat” or “big” individuals.

This comes in line with previous research which argues that overweight and obese people tend to internalize the society’s negative attitudes about their weight and as a result they apply restrictive diets with the aim to improve their physical presence and be more accepted (Brownell, 1991; Polivy & Herman, 2000; Schwartz & Brownell, 2004). In a qualitative study, obese individuals who struggled with their weight for many years indicated how the culture of blame and derogatory attitudes caused their hesitation to socialize and their extreme dieting to lose weight. Similarly to the present study participants in the Thomas et al study preferred to be called “fat” or “big” rather than obese or overweight since the latter definitions increased the society’s disapproval (Thomas et al., 2008)

Despite their restrictions which were applied to various areas of their life, before weight loss, participants tented to be less inhibited when regulating their emotions and in particular their negative emotions. More specifically, they utilized unhealthy food to cope with negative emotions, boredom and stress. As Ganley, (1989) indicated some obese individuals attempt to regulate their emotions through eating. However, not only overweight people use food as a strategy to regulate emotions (Geliebter & Aversa, 2003) and if this happens it depends from other third factors (Elfhag & Morey, 2008).
After weight loss and during weight loss maintenance participants were no longer trapped in their weight but appeared more liberated concerning the same factors discussed above. In particular, participants reported a sense of acceptance and normality after weight loss since they did not feel as outsiders any more but rather as members of the society. In addition, because society was no longer focused on their weight the experienced acceptance enhanced their social interactions and reinforced a redirection of attention away from their body and towards new life experiences such as travelling and boating. Further to this, the redirection of attention towards new qualities of life and self gave them the opportunity to appreciate themselves, learn things about their self which were previously hidden behind layers of fat and covered by their weight-centred identity.

Further to this, the liberated individual reported the endorsement of a more sensible, comfortable, healthy dietary lifestyle which impeded the sense of deprivation and enhanced the feeling of satisfaction and normality concerning diet. This agrees with studies which concluded that unsuccessful individuals are more likely to restrict their self from desired foods whereas successful participants endorse a more flexible diet (Byrne et al., 2003; Kayman et al., 1990). Finally, the new individual appears more determined to maintain weight loss and the new healthy behavior and minimize the chances of weight regain. This determination is boosted through various strategies such as regular weighing and having pictures of the old self on the fridge. As Kearney & O’Sullivan (2003) argued, some participants used assertive behaviors as a strategy to control their environment and thus avoid the undesired behavior which in that case could be the consumption of alcohol, drugs or unhealthy food.
Cutting across all themes was the issue of timeline. During their previous weight loss attempts participants believed they could return to their unhealthy behavior as soon as they reached their goal weight and still maintain their lost weight. On the contrary, their current weight loss experience was a learning process through which they realized that to continue sustaining their weight loss, experiencing all the social and personal rewards and making plans for the future this healthy behavior had to be continuous rather than temporal and thus keep this behavior for the rest of their life.

As Anne indicated “I needed to know that I was doing this for the rest of my life, not just doing it until the diet ended, and I think that’s it and I do now see that I am doing this for the rest of my life, and that otherwise I will not be as I am now. If I stop doing this, I will go back to where I was before and that sounds awful.”

Some understood that this new behavior is for a life change.

As Mary indicated: “You’ve got to change your, the way your eating for a life; it’s not just, you know, for a period of time, it’s permanent. You’ve got to make a permanent change, and it’s what I’ve done…”

Jackie admitted: “I think, just because before it’s always been for an event, whereas this time it was, when I went onto it this time it was for a life change”.

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Therefore, participants experienced a shift in perception about the timeline of their healthy behavior change. For them losing and maintaining their weight loss was a learning process within which they experienced a change from the short-term diet mentality towards a long-term lifestyle change. In other words, successful individuals realized that behavior change is not something temporal but an ongoing process which needs to be maintained in the long term if they wish to impede the return to their previous restrained self and continue making plans for the future. Thus, as Finfgeld, (1998) and (1999) indicated people redefine themselves and sustain their behavior change when this behavior suits their self representation and future plans. These results also agree with researchers who argue that health care professionals need to encourage individuals to see obesity and behavior change as a chronic condition rather than a short-term process (Anderson & Wadden, 1999; Noël & Pugh, 2002).

The results from this study are supplementary for the previous quantitative studies as they provide more insights into the sustaining conditions of behavior change. In particular, based on the conclusions from the previous quantitative study, a behavior change is sustained in the long term when the choice over their unhealthy behavior is reduced, the benefits from the old behavior are disrupted and individuals hold a behavioral model of the causes and solutions to their problem. The current qualitative study indicates that this behavior maintenance, which is reinforced by the sustaining mechanisms, highlights an identity shift and a sense of reinvention from a previous restrictive towards a liberated individual. However, it is of importance to indicate that this identity shift was implicit and not explicit as participants did not directly admitted a process of reinvention but this
shift was implied from the transcripts. Therefore, there is a possibility that participants have not actually realised this reinvention and the new emerging individual. If this is true is there a chance that they will return back to their previous lifestyle which is related to unhealthy behavior, restrictive diets and weight cycling?

The issue of identity shift and the process of reinvention, is evident in studies with successful weight loss maintainers (Ogden & Hills, 2008; Lähteenkorva, 2000), ex-smokers (Brown, 1996) and individuals who abstain from alcohol (Finfgeld, 1998; 1999). Behavior change is sustained as it re-establishes individuals' equilibrium, corresponds to their goals and priorities and reinforces rewards which were previously disrupted from their unhealthy behavior. While sustaining their behavior change a shift in identity emerged from a previously restrained towards a more liberated individual.

5.6.1 Limitations

The current study provides important insights in participants’ views about their self and behavior change while maintaining their weight loss. Despite, using semi-structured interviews to allow individuals to tell their own story and direct the discussion in areas the interviewer have not thought about, the analysis still is based on the researcher’s interpretation which is directly influenced by personal experiences.

The aim of IPA is to understand individuals’ views and experiences in regards to an event or topic by interpreting their responses. However, how easy it is to capture what
participants say between the lines or understand particularly when it is difficult for them to communicate their experiences in a satisfactory way?

Finally, participants in our sample were women who lost weight through a commercial weight loss program. Thus, the results from the current study can to be generalized to other women who lost weight on their own or with the help of a professional and are currently maintaining it. It would be of interest to examine whether these women share the same experiences with the women in our sample. In addition, since our sample was only women it would be of interest to examine the weight experiences in men who lost a significant amount of weight and are currently maintaining more than 10% of their weight loss. Did they endorse similar, restrictive dietary patterns, did they define themselves based on their weight or were their social skills impaired due to their increased weight before weight loss? Have they become more liberated after weight loss and more sociable?

In conclusion, for some obese and overweight people sudden life events reinforce the endorsement of a healthier behavior. The new behavior is sustained in the long term when individuals experience a reduction of choice and a disruption of function over the unhealthy behavior and realize that their increased weight was due to internal controllable factors such as the consumption of high-calorie foods. While these mechanisms impede the occurrence of the unhealthy behavior and reinforce the maintenance of the new behavior individuals experience a gradual shift in identity from a previous fat, restrictive person towards a liberated individual who a) is more inhibited and adopts a balanced
dietary routine, b) more extravert and socially accepted, c) less concerned about their weight and more focused in their appearance and finally d) more determined to sustain weight loss and healthy behavior with the aim to continue making plans for the future.
CHAPTER 6  GENERAL DISCUSSION

SUMMARY
This final chapter of the thesis will review the findings presented in the previous chapters and attempt to synthesize them to provide a complete picture of the area of weight loss and successful weight loss maintenance. The implications of the results for theory and practice are discussed. The last part of the chapter refers to the limitations of the research and ends with a brief concluding section.

6.1 SUMMARY OF RESULTS
This thesis has investigated the issue of successful weight loss and maintenance in the context of obesity with a focus on the role of triggering life events and a shift in self identity. The first study aimed to profile the different weight histories described by an obese population and to assess the extent to which these histories vary according to a number of demographic and weight factors. The second study then focused on differences between two types of histories, namely those who regained some or all of their weight loss and the minority of people who sustained a significant amount of their weight loss and to assess the role of life events, the evaluation of the events and their consequences in distinguishing between these two groups. The third study then assessed within group differences in terms of the role of life events in determining differences in weight change. The final study then presented an in depth analysis of the factors relating
to successful weight loss maintenance with a focus on identity shift. The results from these different studies will now be explored in depth.

Study 1 profiled the different, more complicated weight histories of an obese population and examined the extent to which these histories are described by various demographic and weight factors. From the analysis of participants' individual weight history graphs five different groups emerged which seemed to significantly differ in regards to their age and marital status and various other weight factors such as their BMI, present weight, maximum weight, most weight ever lost and years in weight management.

From the above conclusions it can be argued that while past research focused attention in the effect of weight change to individuals' physical and psychological health this study illustrated that apart from these relations, weight change patterns can be utilised as a dependent variable and be related to individuals' demographic and weight characteristics. In other words, these factors may influence people's weight changes and this is something future research needs to examine. In addition, the issue of defining weight histories in a less simplistic way was also discussed since more complicated groups, than the ones reported in the literature, were developed in the current thesis. Therefore, it was concluded that the contradictory results in the area of weight cycling might be due to the way weight histories were used and developed.

The analysis also examined the differences between the obese and overweight participants concerning their weight change patterns and found significant differences
between the two groups. Obese participants reported more gradual weight gain and weight cycling with overall increase while overweight participants were more likely to indicate a history of weight loss, weight cycling with return to baseline or initial weight stability. Thus, different weight patterns help to understand that even if both obese and overweight people have increased weight this weight results not only from gradual weight gain but also from previous weight loss. In addition, it can be argued that these results have some practical implications particularly in the area of weight loss. In particular, even if both obese and overweight individuals have increased weight which can be managed through behavioral modifications such as diet and exercise health care professionals also need to take their patients' weight history patterns into consideration before preparing an individualistic treatment plan. This, agrees with other authors who argue that before preparing a treatment plan professionals need to take into account people's characteristics such as their weight patterns (Lang & Froelicher (2006); Tod & Lacey, 2004).

Based on their weight histories and their success in weight loss and maintenance the above population could also be grouped as those who regained some or all of their weight loss and those who maintained a significant amount of their lost weight. Therefore, Study 2 focused on the differences between the two groups and attempted to examine whether experienced life events differentiate the two groups when they are accompanied by some sustaining variables. Results revealed significant differences between the two groups with successful participants indicating more life events and enhanced endorsement of the sustaining factors i.e. more benefits from the healthy behavior, less choice over the old
behavior and an internal locus of causality about obesity which was related to more healthy solutions.

In addition, while the majority of previous research examined the differences between the two groups there was a lack of information about the differences within the successful group between their weight experiences during their heaviest weight and maintenance weight. Therefore, Study 3, which occurred simultaneously with Study 2, examined the differences within the successful group in terms of their weight experiences when they were at their heaviest and as they were in the past month. The analysis was conducted in regards to the role of life events in determining behavior change and thus weight change and maintenance. Results indicated the significant contribution of sudden events to weight loss and maintenance and their relation to the sustaining mechanisms. More specifically, successful participants reported more perceived benefits from their new behavior and less benefits and choice over their old, unhealthy behavior. In addition, they endorsed a healthier lifestyle since they understood that their previous increased weight was due to their behavior. Apart from these, successful participants also indicated more health benefits and improved mobility due to their reduced weight.

These results are supplementary to the current literature (e.g. Anderson at al., 1999; Baak, et al., 2003; Kayman et al., 1990; Kruger et al., 2006; McGuire et al., 1999; Ogden 2000; Ogden & Sidhu, 2006; Wing & O'Hill, 2001; Wing & Phelan, 2005) as they describe not only the behavioural, psychological and weight profile differences between the two groups but also explain the underlying cognitive factors which reinforce behavior
change and maintenance. In other words, they describe the inner, unseen factors which seem to be the fundamental aspects for the noticeable behavior change and sustained weight loss and seem to motivate individuals to maintain their weight loss.

In addition, these results agree with the theory of behaviourism and particularly operant conditioning based on which a behavior will occur if it receives a positive reinforcement whereas is less likely to occur when the reinforcement is negative or is withdrawn (Boeree, 1998). This observation can be supported by the fact that unhealthy behavior is interrupted due to the reduced benefits while the new behavior is maintained due to improved perceived benefits. Benefits are also among the significant concepts in the Health Belief Model as it argues that people will change their behavior when the perceived benefits exceed perceived costs (Conner & Norman, 2005). However, contrary to this, the thesis' current model includes benefits as a maintenance factor whereas HBM includes benefits as an underlying factor for behavior change. Thus, perceived benefits can be a significant factor for behavior change and behavior maintenance.

This thesis has also demonstrated the significant influence of reduced choice over the behavior. It seems that when individuals have less choice over their unhealthy behavior then they are more likely to inhibit it since increased choice can be sometimes overwhelming and might lead to overconsumption than control of intake. As Ogden et al. (2006) indicated in a qualitative study with individuals who undertook obesity surgery reduced stomach thus reduced choice over eating helped individuals to gain control over their behavior; control which was previously absent. In accordance with this, i.e. reduce
choice decreases the occurrence of the unhealthy behavior, public campaigns can be developed which will aim to reduce availability of some products or make the acquisition of those products more difficult so that individuals have less choice over consuming them. For example, increasing the price of particular food types while reducing the price of healthier meals can redirect individuals' attention towards healthier, less calorie induced products and thus reinforce maintenance of weight loss.

Apart from the life events and sustaining mechanisms, successful participants were also more likely to receive a positive attitude from their consultant which seemed to help them during their weight loss and maintenance. This provides some practical implications as it verifies previous research which argues about the importance of health care professionals' attitudes and behavior towards the obese patient. The current results indicated that for successful weight loss and maintenance practitioners need to apply a self-empowerment model of obesity based on which the two parties are both the experts who exchange experiences and knowledge around weight loss and the patient is responsible for the decision making always under the advice of the professional. Apart from the information exchange during the consultation the professional offers support, understanding, empathy and respect to the patient. If these qualities enter the health practice then they may help people to manage their weight.

The final study, Study 4, aimed to examine the factors which are related to sustained weight loss with a focus on identity shift. The last study was a qualitative one with 10 successful weight loss participants who provided their consent to participate in the study.
Results from the transcripts revealed an identity shift from a previously restrained towards a liberated individual whose attention is directed in other attributes of life and appears more determined to maintain behavior and avoid the occurrence of the undesired behavior and thus weight gain. For the individuals, maintenance of weight loss was a learning process through which they realised that healthy behavior change is not something permanent but an ongoing process which needs to be part of their lifestyle if they want to continue making plans and experiencing all the weight loss related rewards.

6.2 TO CONCLUDE

The results across the four studies provide some insights into sustained behavior change and successful weight loss maintenance and the role of life events and self identity. This section will attempt to integrate the above results and provide a comprehensive picture concerning these issues.

Based on the participants' weight histories it seems that while the majority of them attempt and are successful in losing weight most of them will regain some or all of their weight while only the minority successfully maintain their weight loss. This difficulty in managing weight and sustaining weight loss drives most people to be in a constant struggle with weight which most times leads to weight cycling.

This thesis provides an alternative approach to the area of maintenance as it argues that sustained behavior change and thus weight loss is related to life triggers. In particular, while cognition models argue that for some individuals the decision to change behavior is
the end outcome of gradual decision making and progressive planning based on their beliefs, attitudes and experiences (Ogden & Hills, 2008; Resnicow & Vaughan, 2006) this thesis argues that for others motivation for behavior change suddenly arrives after a sudden event. Since this event threatens their equilibrium individuals will change towards a healthier behavior with the aim to re-establish their status-quo. However, it is of importance to indicate that while some individuals adopt a healthier behavior following an event others will continue their unhealthy behavior both having the aim to re-establish their balance. It can be argued here that whether people change their behavior after the event depends on the way they perceive the event. If they perceive it as a threat to their goals and identity then they are more likely to change than when no risk is perceived.

However, even if life events reinforce healthy behavior change how they are related to sustained behavior change and in this case weight loss maintenance and why some individuals even if they change due to a life event they return to their previous habits and thus regain weight?

This thesis argues that the new behavior is maintained in the long term when three sustaining mechanisms accompanied the sudden event. These factors relate to the disruption of function and reduction of choice over the previous unhealthy lifestyle and the matched model of increased weight which relates to perceived causes of the problems and its’ solutions. In particular, it is argued that after a sudden trigger, which prompts behavior change, individuals are more likely to maintain their new healthy dietary habits and physical activity because a) they tend to perceive more benefits from their new
behavior and fewer benefits from their old behavior b) the choice over the old behavior is reduced while the choice over the new behavior is enhanced and c) they endorse a psychological model of obesity as they believe that their increased weight was due to internal controllable factors such as unhealthy lifestyle and not heredity or medication and thus adopted a healthier behavior as a solution. Thus, in the current thesis, successful participants managed to sustain their new behavior and thus maintain their weight loss as they experienced more benefits from exercising and less benefits from eating since food could not regulate emotions anymore, they found it easier to continue maintaining a healthy lifestyle and realised that their previous weight was due to their damaging behavior which is now translated into a healthier lifestyle.

Apart from the sustaining mechanisms, what seems to be important for the maintenance of behavior change and thus weight loss is a change in identity and a process of reinvention from an individual who struggled with weight and was unsuccessful in sustaining weight loss towards a healthy, successful individual who keeps weight loss and is motivated to impede large weight regains. This thesis examined the individuals' weight management experiences when they were at their heaviest and as they are now i.e. maintaining weight and identified an identity shift from a previous restrictive towards a liberated individual. This diversity between the previous and new individual was expressed in regards to participants' social life, perception of self, dietary habits and regulation of emotions.
More specifically, participants, at their heaviest, reported the social discrimination and negative attitudes they experienced due to their increased weight. For some, this bias appeared in a form of comment while for others it was a blatant prejudice which was indirectly denoted through others' behavior such as being skimmed over. Participants, tended to internalize the negative social messages they received and this negativity was unintentionally transferred into their private life. In particular, they restricted themselves from socially interacting with others and tended to be reserved and introverts as they wished to remain unnoticed; isolated and avoid the negativity they received from others. This disapproval was internalised and they applied restrictive diets with the aim to lose weight, improve their physical presence and thus be accepted by the society. Finally, since other people used their weight to define them as “obese”, “overweight”, “lazy”, or “stupid” they, as well, focused their attention around their weight; they became weight-centred and thus defined themselves as “fat” or “big”. Other qualities of life and self had minimal importance. However, despite their restrictive behaviors in various areas of their life and restrictive attention around their weight participants, before weight loss, had no boundaries when regulating their emotions as they utilised food, and particularly unhealthy food, to manage their depression, boredom and stress.

On the contrary, after weight loss and while maintaining their reduced weight participants became more liberated concerning their social interactions, self identity, dietary habits and emotional regulation. In particular, weight loss released participants from their fat bodies within which they felt trapped and unable to undertake various activities and enhanced the sense of social acceptance and normality. Having the opportunity to expand
their experiences along with the society's reduced focus over their weight redirected their attention away from their body, towards other qualities of life, and helped them to be more confident, more relaxed about their appearance and less weight-centred. This improved self-esteem and social acceptance prompted them to be more extraverts and less reserved concerning their social relationships. Apart from this, liberation was also evident in their dietary lifestyle as participants endorsed a more comfortable, flexible dietary routine which impeded the sense of deprivation and disinhibition and enhanced the sense of normality concerning food as they weren't on diet any more. Finally, the new individual appears more determined to continue maintaining the healthy behavior and weight loss and impede the occurrence of the previous unhealthy behavior and thus weight regains. Strategies to accomplish this and boost motivation were developed which concentrated on a more healthy regulation of emotions, regular weighing and having pictures of the old self around the house.

Cutting across all themes was the issue of timeline concerning the maintenance of the new healthy behavior. Before, participants tended to endorse a short-term mentality about their behavior and believed that when the diet ended they could return to their previous behavior and still maintain their weight loss. However, their current weight loss experience was a learning process within which they understood that healthy behavior change is not something temporal but a long-term process which they needed to make part of their lifestyle if they wished to continue making plans for the future and experiencing all the social and personal rewards.
Therefore, life events are related to behavior change which is maintained in the long term when people experience some benefits from the new behavior while benefits from the previous behavior are disrupted, it becomes easier for them to include their new behavior in their daily routine and understand that previous problems were due to their unhealthy behavior. While sustaining mechanisms are the maintenance of behavior an identity shift from a previous restricted towards a liberated individual occurs. Individuals internalize their new habits, behavior and self and thus the chances of sustained behavior are enlarged.

6.3 THEORETICAL IMPLICATIONS

Apart from the practical and theoretical implications discussed above this thesis provides a strong theoretical implication about behavior change and its relation to life events. More specifically, based on the model by Ogden & Hills (2008), it is argued that, sometimes and for some individuals, motivation for behaviour change suddenly arrives with no previous planning. As West & Sohal (2006) indicated, life triggers, with no previous planning and gradual decision making, activate motivational tension to change. In other words, when tension to change appears then individuals are more likely to change. However, this change is not always the outcome of weighing the pros and cons as other cognition models indicate (West 2005).

Furthermore, as the model of Ogden and Hills indicates, behavior change will be sustained in the long term with three sustaining mechanisms follow the event. These factors relate to the disruption of function, reduction of choice and a behavioral model of
the health problem. Finally, the new healthy behavior and the related health benefits will be sustained when there is a shift in identity from a previously unhealthy individual e.g. overweight or smoker to a currently healthy person e.g. liberated or ex-smoker.

6.4 LIMITATIONS

The considerations about each study’s limitations have already been mentioned in previous chapters and, thus, here the shortcomings will be briefly described. Firstly, participants’ weight history was based on self-reports which can sometimes be inaccurate as people tend to give social acceptable answers or can be influenced by memory constraints and thus suffer from recall bias. In study 2 were significant differences between responders and non-responders thus the generalizability of results needs to be taken with consideration. In addition, classification for the five weight change groups and successful and unsuccessful weight loss groups suffers from classification bias since definitions were based on the individual graphs and the researcher’s insights and thus different definitions could be also provided. In line with this, the analyses of transcripts in the qualitative study were also based on the researcher’s interpretation which is directly influenced by personal experiences. Finally, despite that qualitative studies aim to gain deeper insights in individuals’ views and experiences in regards to an event or topic is not always easy to capture what participants say between the lines or understand particularly when it is difficult for them to communicate their experiences in a rich way.

Apart from the limitations relevant to each study, there are some limitations which apply to all three studies described above. Firstly, in all three studies almost all participants
were Caucasian women who lose weight by attending a commercial weight loss program. Therefore, results can not be generalised a) to other women who lost weight by themselves or with the help of a professional, b) women with a different ethnic background i.e. African and c) men.

Furthermore, the use of cross-sectional design is another shortcoming shared by all studies. A longitudinal design could have provided a deeper insight about participants’ experiences and more importantly the changes in their weight so that the influence of recall biased was minimised. Sadly, the application of such design was not possible for practical reasons.

Finally, the last shortcoming relates to the variables included in the questionnaires which were predefined by the researcher. Even if the variables were taken from previous qualitative studies in which participants’ insights were explored still, the factors in the current studies were predefined and thus some issues might had been kept out.

6.5 CONCLUSIONS

The studies presented in this thesis focused on the area of sustained behavior change and in particular weight loss and maintenance. According to the findings successful weight loss maintenance is related to the experienced life events which when accompanied by the sustaining mechanisms of reduction of choice, disruption of function and matched model of obesity reinforce sustained behavior change and thus weight loss maintenance. The continuation of the new, healthy behavior reinforces an identity shift from a previously restrained towards a liberated individual.
REFERENCES


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Ogden, J. & Jubb, A. How consistent are beliefs about causes and solutions to illness? Psychology, Health and Medicine. In press


APPENDICES
Appendix I - Letter of ethical approval for study 1, 2 and 3

17 Απριλίου 2009

Ms Eleni Epiphaniou
Department of Psychology
School of Human Sciences

Dear Ms Epiphaniou


I am writing to inform you that the Chairman, on behalf of the Ethics Committee, has considered the Amendments requested to the above protocol and has approved them on the understanding that the Ethical Guidelines for Teaching and Research are observed.

Date of confirmation of ethical opinion: 3 January 2007

Date of approval of amendment to protocol: 20 April 2007

The list of amended documents reviewed and approved by the Chairman is as follows:-

<table>
<thead>
<tr>
<th>Document</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your letter requesting an amendment</td>
<td>19/04/07</td>
</tr>
<tr>
<td>A copy of the recruitment email</td>
<td>19/04/07</td>
</tr>
</tbody>
</table>

Yours sincerely

Catherine Ashbee (Mrs)
Secretary, University Ethics Committee
Registry

cc: Professor T Desombre, Chairman, Ethics Committee
Appendix II – Advertisement on the members’ protected side

Ursinil WORLD

discover the amazing you

LifelineOnline | WEIGHT-LOSS SURVEY

UNIVERSITY OF SURREY - Participant Information

Title of the study: Weight loss: what works and why?

Dear Member,

We very much hope that you will accept our invitation to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

We are interested in how people manage to lose weight and the differences between those who do and do not manage to keep this weight off in the longer term. This research project aims to investigate the differences between those people who have lost weight and kept it off in the longer term and those people who have struggled with their weight.

Taking part in the study will be a chance for you to talk about your weight loss experiences. Moreover, your involvement in this study will help us gain a better insight into the factors which increase the likelihood of weight loss maintenance. The results will be valuable to further refine the support we give to members. We aim to understand exactly why people differ in their ability to lose weight while following Food Optimising so we can make the experience more rewarding to individual members.

If you decide to take part in the study please complete this questionnaire which is the screening questionnaire. It will only take about 5 minutes to complete. Please be as honest as possible as there are no right or wrong answers.

We would like to contact you again and ask you more details about your weight loss experiences. If you agree, you will be asked to complete the study’s follow-up questionnaire which will take no more than 30 minutes. If you think this is possible please provide your details at the end of this questionnaire.

All of the information that is collected about you during the course of this research will be kept strictly confidential. Any information about you which is recorded by the researchers will have your name and address removed so that you cannot be recognized from it. Results from this study will be published in reports and scientific journals but no participant will be identified individually.
Title of the study: Weight loss: what works and why?

Dear Member,

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Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

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Taking part to the study will be a chance for you to talk about your weight loss experiences. Moreover, your involvement in this study will help us gain a better insight into the factors which increase the likelihood of weight loss maintenance. The results will be valuable to further refine the support we give to members. We aim to understand exactly why people differ in their ability to lose weight while following Food Optimising so we can make the experience more rewarding to individual members.

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All of the information that is collected about you during the course of this research will be kept strictly confidential. Any information about you which is recorded by the researchers will have your name and address removed so that you cannot be recognized from it. Results from this study will be published in reports and scientific journals but no participant will be identified individually.

Your personal details which will be given in the screening questionnaire will be used to send to you the follow-up questionnaire. When all questionnaires are finally gathered all personal details will be coded and made anonymous. After the results have been analyzed all questionnaires will be stored in a secure place for a minimum of 7 years. All computer data will be secured and only the researchers will have access to them. All these processes will run in accordance with the Data Protection Act 1998.

Any complaint or concerns about any aspects of the way you have been dealt with during the course of the study will be addressed. Also if you feel the need to contact us and ask further questions before you decide whether you will participate or not please don’t hesitate to contact: Miss Eleni Epiphaniou, Department of Psychology, School of Human Science, University of Surrey, Guildford, Surrey GU2 7XH, UK., e-mail: e.epiphaniou@surrey.ac.uk.

All the information about your participation in this study will be kept completely confidential.

Thank you for your participation.
Appendix IV - Screening questionnaire for study 1

Section 1

This section refers to your weight history.

1. What is your present weight? _________

2. What is your present height? _________

3. What was your highest weight ever (excluding pregnancy)? _________

4. What was your lowest weight since 18yrs? ______

5. What is the most weight you have ever lost? ______

6. How long did/have you maintained this weight loss for? ______ (months/years)

7. Are you currently trying to lose weight? YES / NO

8. How old were you when you first became overweight? ______ (yrs)

9. How old were you when you first tried to lose weight? ______ (yrs)

10. How many years have you been trying to lose weight for? ______ (yrs)

11. What is your current target weight? __________

12. If you have reached your target weight how long ago was it? ______(months, years)

Please complete the following AGE/WEIGHT record as accurately as possible from when you were 18yrs. using whatever measure of weight you are happy with (lbs, stones and kg).

<table>
<thead>
<tr>
<th>AGE</th>
<th>WEIGHT</th>
<th>AGE</th>
<th>WEIGHT</th>
<th>AGE</th>
<th>WEIGHT</th>
<th>AGE</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>______</td>
<td>32</td>
<td>______</td>
<td>46</td>
<td>______</td>
<td>60</td>
<td>______</td>
</tr>
<tr>
<td>20</td>
<td>______</td>
<td>34</td>
<td>______</td>
<td>48</td>
<td>______</td>
<td>62</td>
<td>______</td>
</tr>
<tr>
<td>22</td>
<td>______</td>
<td>36</td>
<td>______</td>
<td>50</td>
<td>______</td>
<td>64</td>
<td>______</td>
</tr>
<tr>
<td>24</td>
<td>______</td>
<td>38</td>
<td>______</td>
<td>52</td>
<td>______</td>
<td>66</td>
<td>______</td>
</tr>
<tr>
<td>26</td>
<td>______</td>
<td>40</td>
<td>______</td>
<td>54</td>
<td>______</td>
<td>68</td>
<td>______</td>
</tr>
<tr>
<td>28</td>
<td>______</td>
<td>42</td>
<td>______</td>
<td>56</td>
<td>______</td>
<td>70</td>
<td>______</td>
</tr>
<tr>
<td>30</td>
<td>______</td>
<td>44</td>
<td>______</td>
<td>58</td>
<td>______</td>
<td>72</td>
<td>______</td>
</tr>
</tbody>
</table>
Section 2

This section asks few questions about you.

1. Age: _______

2. Sex: Male □ Female □

3. Which of the following best describes you?
   White □ Black African □ Black Caribbean □ Asian □ Other □

4. Do you work?
   Full time □ Part time □ I am a student □ I am not working at the moment □

5. Marital Status:
   Single □ Living with a partner □ Married □ Divorced/Separate □ Widowed □

6. Level of Education: a. ≤ GCSE/O Level □
   b. A Level □
   c. Degree □

Contact Details: We would like to contact with you further and ask you more about your weight loss experiences. If you are happy to be contacted please provide your details below.

Name: ___________________________ Address: ___________________________
Tell No: _______________________ E-mail: ___________________________
Appendix V - Questionnaire for successful participants

We would like to further examine your weight loss experiences when you were at your heaviest and in the past month.

Please be as honest as possible. There are no right or wrong answers. We are only interested in your views. All information will be kept completely confidential.

Please think back when you were AT YOUR HEAVIEST.

How old were you at this weight? .................................. 
How much weight have you lost since then? .................................

1. Listed below are a number of symptoms that you may or may not have experienced when you were AT YOUR HEAVIEST. Please indicate, by circling Yes or No, whether you experienced any of these symptoms AT YOUR HEAVIEST.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>I experienced this symptom at my heaviest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Yes</td>
</tr>
<tr>
<td>Sore Throat</td>
<td>Yes</td>
</tr>
<tr>
<td>Nausea</td>
<td>Yes</td>
</tr>
<tr>
<td>Breathlessness</td>
<td>Yes</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Yes</td>
</tr>
<tr>
<td>Stiff Joints</td>
<td>Yes</td>
</tr>
<tr>
<td>Sore Eyes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wheeziness</td>
<td>Yes</td>
</tr>
<tr>
<td>Headaches</td>
<td>Yes</td>
</tr>
<tr>
<td>Upset Stomach</td>
<td>Yes</td>
</tr>
<tr>
<td>Sleep Difficulties</td>
<td>Yes</td>
</tr>
<tr>
<td>Dizziness</td>
<td>Yes</td>
</tr>
<tr>
<td>Loss of Strength</td>
<td>Yes</td>
</tr>
</tbody>
</table>

2. Please answer the following questions for how you felt about your health AT YOUR HEAVIEST.

Would you say your health was: □ poor □ fair □ good □ very good □ excellent
3. The following questions are about activities you might do during a typical day. **AT YOUR HEAVIEST** did your health limit these activities? If yes, how much?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes, limited A lot</th>
<th>Yes, limited A little</th>
<th>No, not limited at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigorous activities such as running, lifting heavy objects, participating in strenuous sports</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Moderate activities such as moving a table, pushing a vacuum cleaner, bowling or playing golf</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Lifting or carrying groceries</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Climbing several flights of stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Climbing one flight of stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bending kneeling or stooping</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking more than a mile</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking half a mile</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking 100 yards</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bathing and dressing yourself</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

4. To what extent do you agree that the following WERE causes of being overweight?

<table>
<thead>
<tr>
<th>Cause</th>
<th>Strongly Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of exercise</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Not being physically active</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Eating sweet foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Eating high calorie foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Eating when not hungry</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Inactive lifestyle</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Genetics</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Hormone imbalance</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Slow metabolism</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Depression</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Lack of will power</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Laziness</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
5. To what extent did you do the following AT YOUR HEAVIEST?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not at all</th>
<th>Very Little</th>
<th>Somewhat</th>
<th>A Lot</th>
<th>To a great extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat to reduce sadness</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat for comfort</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat to reduce stress</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to reduce boredom</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to keep myself occupied</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to look good</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat to distract myself from negative thoughts</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to feel better</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. At YOUR HEAVIEST did you engage in any of the behaviors described below?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not at all</th>
<th>Very Little</th>
<th>Somewhat</th>
<th>A Lot</th>
<th>To a great extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat fruit and vegetables</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Boil or bake food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat sweet foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Use the stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Spend hours watching TV</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat fried food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cook your own food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat between meals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Overeat during family gatherings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
7. How easy or difficult was it for you to do the following AT YOUR HEAVIEST?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very easy</th>
<th>Somewhat easy</th>
<th>Neither easy nor difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat fruit and vegetables</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Boil or baking food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat sweet foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Use the stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Spend hours watching TV</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat fried food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cook food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat between meals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Overeat during family gatherings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

8. Did you experience any of the following events at YOUR HEAVIEST? Please tick (√) where appropriate.

- Heart attack
- Sleep apnoea
- Relationship break-up
- New relationship
- Difficulty to walk a mile
- Breathing problems
- Deciding to have children
- Reached my heaviest weight
- Clothes did not fit me
- Doctor said I was at high risk of health problems
- Started a new job
- A family member had a serious illness
- My husband/children/co-workers teased me about my weight
- Relationship problems
NOW PLEASE DESCRIBE HOW YOU HAVE FELT AND BEHAVED IN THE PAST MONTH

1. Listed below are a number of symptoms that you may or may not have experienced in the PAST MONTH. Please indicate by circling Yes or No, whether you have experienced any of these symptoms in the PAST MONTH.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>I have experienced this symptom in the past month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Yes</td>
</tr>
<tr>
<td>Sore Throat</td>
<td>Yes</td>
</tr>
<tr>
<td>Nausea</td>
<td>Yes</td>
</tr>
<tr>
<td>Breathlessness</td>
<td>Yes</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>Yes</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Yes</td>
</tr>
<tr>
<td>Stiff Joints</td>
<td>Yes</td>
</tr>
<tr>
<td>Sore Eyes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wheeziness</td>
<td>Yes</td>
</tr>
<tr>
<td>Headaches</td>
<td>Yes</td>
</tr>
<tr>
<td>Upset Stomach</td>
<td>Yes</td>
</tr>
<tr>
<td>Sleep Difficulties</td>
<td>Yes</td>
</tr>
<tr>
<td>Dizziness</td>
<td>Yes</td>
</tr>
<tr>
<td>Loss of Strength</td>
<td>Yes</td>
</tr>
</tbody>
</table>

2. Please answer the following questions for how you have felt about your health in the PAST MONTH?

Would you say your health is: □ poor □ fair □ good □ very good □ excellent
3. The following questions are about activities you might do during a typical day. Has your health limited these activities in the PAST MONTH? If yes, how much?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes, limited A lot</th>
<th>Yes, limited a little</th>
<th>No, not limited at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigorous activities such as running, lifting heavy objects, participating in strenuous sports</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Moderate activities such as moving a table, pushing a vacuum cleaner, bowling or playing golf</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Lifting or carrying groceries</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Climbing several flights of stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Climbing one flight of stair</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bending, kneeling or stooping</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking more than a mile</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking half a mile</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking 100 yards</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bathing and dressing yourself</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

4. To what extent did you do the following in the PAST MONTH?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not at all</th>
<th>Very Little</th>
<th>Somewhat</th>
<th>A Lot</th>
<th>To a great extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat to reduce sadness</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat for comfort</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat to reduce stress</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to reduce boredom</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to keep myself occupied</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to look good</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat to distract myself from negative thoughts</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Exercise to feel better</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
5. In the PAST MONTH have you engaged in any of the behaviours described below?

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Not at all</th>
<th>Very Little</th>
<th>Somewhat</th>
<th>A Lot</th>
<th>To a great extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating fruit and vegetables</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Boiling or baking food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating sweet foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Using the stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Spending hours watching TV</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating fried food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cooking food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating between meals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Overeating during family gatherings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. How easy or difficult is it for you to do the following?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very easy</th>
<th>Somewhat easy</th>
<th>Neither easy nor difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat fruit and vegetables</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Boil or baking food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat sweet foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Use the stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Spend hours watching TV</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat fried food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cook food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat between meals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat during family gatherings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Section 2

This section refers to the quality of care and support you received from your consultants while you were trying to lose weight or maintain the weight loss. Can you please characterise the type of care you received?

1. To what extent did you find the consultants:

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Sometimes</th>
<th>Usually</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encouraging</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Respectful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Understanding</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Supportive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Informative</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Non-judgemental</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. Now please indicate whether the consultants:

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Sometimes</th>
<th>Usually</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gave information in simple words</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Were active listeners</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Showed understanding</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Had always something positive to say</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Helped me find solutions in various problems</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Showed respect towards my wishes, concerns and difficulties</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Left me to decide what was best for me based on their information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix VI – Questionnaire for unsuccessful participants

We would like to further examine your weight loss experiences during the past month. Please be as honest as possible. There are no right or wrong answers. We are only interested in your views. All information will be kept completely confidential.

1. Listed below are a number of symptoms that you may or may not have experienced in the PAST MONTH. Please indicate by circling Yes or No, whether you have experienced any of these symptoms in the PAST MONTH.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>I experienced this symptom in the past month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Yes</td>
</tr>
<tr>
<td>Sore Throat</td>
<td>Yes</td>
</tr>
<tr>
<td>Nausea</td>
<td>Yes</td>
</tr>
<tr>
<td>Breathlessness</td>
<td>Yes</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Yes</td>
</tr>
<tr>
<td>Stiff Joints</td>
<td>Yes</td>
</tr>
<tr>
<td>Sore Eyes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wheeziness</td>
<td>Yes</td>
</tr>
<tr>
<td>Headaches</td>
<td>Yes</td>
</tr>
<tr>
<td>Upset Stomach</td>
<td>Yes</td>
</tr>
<tr>
<td>Sleep Difficulties</td>
<td>Yes</td>
</tr>
<tr>
<td>Dizziness</td>
<td>Yes</td>
</tr>
<tr>
<td>Loss of Strength</td>
<td>Yes</td>
</tr>
</tbody>
</table>

2. Please answer the following questions for how you have felt about your health in the PAST MONTH?

Would you say your health is: □ poor □ fair □ good □ very good □ excellent
3) The following questions are about activities you might do during a typical day. Has your health limited these activities in the PAST MONTH? If yes, how much?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes, limited a lot</th>
<th>Yes, limited a little</th>
<th>No, not limited at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigorous activities such as running, lifting heavy objects, participating in strenuous sports</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Moderate activities such as moving a table, pushing a vacuum cleaner, bowling or playing golf</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Lifting or carrying groceries</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Climbing several flights of stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Climbing one flight of stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bending kneeling or stooping</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking more than a mile</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking half a mile</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Walking 100 yards</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bathing and dressing yourself</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

4) To what extent do you agree that the following are causes of being overweight?

<table>
<thead>
<tr>
<th>Cause</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of exercise</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Not being physically active</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Eating sweet foods</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Eating high calorie foods</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Eating when not hungry</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
5) To what extent did you do the following in the PAST MONTH?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not at all</th>
<th>Very Little</th>
<th>Somewhat</th>
<th>A Lot</th>
<th>To a great extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat to reduce sadness</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat for comfort</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat to reduce stress</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to reduce boredom</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to keep myself occupied</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to look good</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat to distract myself from negative thoughts</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise to feel better</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
6) In the **PAST MONTH** have you engaged in any of the behaviors described below?

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Not at all</th>
<th>Very Little</th>
<th>Somewhat</th>
<th>A Lot</th>
<th>To a great extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating fruit and vegetables</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Boiling or baking food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating sweet foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Using the stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Spending hours watching TV</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating fried food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cooking food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating between meals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Overeating during family gatherings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
7) How easy or difficult it has been to do the following during the PAST MONTH?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very easy</th>
<th>Somewhat easy</th>
<th>Neither easy nor difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat fruit and vegetables</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Boil or baking food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat sweet foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Use the stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Spend hours watching TV</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat fried food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cook food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eat between meals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Overeat during family gatherings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

8. Have you experienced any of the following events in the PAST MONTH? Please tick (√) where appropriate.

<table>
<thead>
<tr>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart attack</td>
</tr>
<tr>
<td>Sleep apnoea</td>
</tr>
<tr>
<td>Relationship break-up</td>
</tr>
<tr>
<td>New relationship</td>
</tr>
<tr>
<td>Difficulty to walk a mile</td>
</tr>
<tr>
<td>Breathing problems</td>
</tr>
<tr>
<td>Deciding to have children</td>
</tr>
<tr>
<td>Reached my heaviest weight</td>
</tr>
<tr>
<td>Clothes did not fit me</td>
</tr>
<tr>
<td>Doctor said I was at high risk of health problems</td>
</tr>
<tr>
<td>Started a new job</td>
</tr>
<tr>
<td>A family member had a serious illness</td>
</tr>
<tr>
<td>My husband/children/co-workers teased me about my weight</td>
</tr>
<tr>
<td>Relationship problems</td>
</tr>
</tbody>
</table>
Section 3

This section refers to the quality of care and support you received from your consultants while you were trying to lose weight or maintain the weight loss. Can you please characterise the type of care you received?

1. To what extent did you find the consultants:

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Sometimes</th>
<th>Usually</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encouraging</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Respectful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Understanding</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Supportive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Informative</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Non-judgemental</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. Now please indicate whether the consultants:

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Sometimes</th>
<th>Usually</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gave information in simple words</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Were active listeners</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Showed understanding</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Had always something positive to say</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Helped me find solutions in various problems</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Showed respect towards my wishes, concerns and difficulties</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Left me to decide what was best for me based on their information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix VII – Letter of ethical approval for study 4

07 April 2008

Eleni Epiphaniou
Dept of Psychology
FAHS

Dear Eleni

Weight Loss: What works and why?
EC/2006/115/Psych

I am writing to inform you that the Chairman, on behalf of the Ethics Committee, has considered the Amendments requested to the above protocol and has approved them on the understanding that the Ethical Guidelines for Teaching and Research are observed.

Date of confirmation of ethical opinion: 3 January 2007.

Date of approval of amendment to protocol: 7 April 2008.

The list of amended documents reviewed and approved by the Chairman is as follows:

<table>
<thead>
<tr>
<th>Document</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of amendments</td>
<td>7 April 08</td>
</tr>
<tr>
<td>Standard letter to participants</td>
<td>7 April 08</td>
</tr>
<tr>
<td>Interview schedule</td>
<td>7 April 08</td>
</tr>
</tbody>
</table>

Yours sincerely

Aimee Cox (Miss)
Secretary, University Ethics Committee
Registry

cc: Professor T Desombre, Chairman, Ethics Committee
    Dr F Macfarlane, Deputy Chairman, Ethics Committee