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WEIGHT-LOSS EXPERIENCES VS. UNDERGRADUATE NUTRITION EDUCATION COMPETENCIES: A QUALITATIVE COMPARISON

David John Rogerson

A doctoral project report submitted in partial fulfilment of the requirements of Sheffield
Hallam University for the degree of Doctor of Professional Studies

December 2015

ACKNOWLEDGEMENTS

There are two people that I must firstly acknowledge and thank for their guidance, input, support, and help during the conceptualisation, development and completion of this thesis. I have to thank my Director of Studies Hora Soltani for her fantastic advice, the many meetings and emails, and of course, her kind words of encouragement. Hora you have been professional, courteous, conscientious and considerate. Without your help and support I would simply not have produced a thesis of this standard and published this work. Those thanks have to be extended to Rob Copeland too, who has similarly offered incredibly useful advice, guidance, feedback, ideas, and his unique perspective. You have both readily offered your time, which in Higher Education is a very limited commodity, and my work has benefitted from your experience and support. I thank you both very much. I must also thank Deborah Harrop for assisting me with my search strategy, and Peter Allmark for advising me about epistemology and methodology; your help and advice was much needed and was of great benefit to me, thank you both very much.

I must, of course, thank and acknowledge my partner Karen for being patient, tolerant and supportive over the past few years. This project has been both challenging and time costly and I am not too convinced that many people would have tolerated how focussed and detached from reality I have been whilst completing it. In a similar vein though I have to extend the same level of thanks and perhaps an apology to my family; I've all but disappeared over the past couple of years trying to complete my Professional Doctorate. It really has been a labour of love and hate.

CANDIDATE'S STATEMENT OF ORIGINAL AUTHORSHIP

I declare that the work contained herein is original and my own, unless stated otherwise. Where appropriate, the work of other authors has been cited and referenced in the conjoining list of materials cited for each chapter, using the SHU Harvard referencing system.

David Rogerson

October 2015

PUBLICATIONS ARISING FROM THIS THESIS

Chapter 4: Study One:

Under review:

ROGERSON, David, SOLTANI, Hora and COPELAND, Robert (2015). The weight-loss experience: A qualitative understanding. *BMC public health*.

Chapter 5: Study Two:

Accepted for publication:

ROGERSON, David, SOLTANI, Hora and COPELAND, Robert (2015). Undergraduate nutrition education might not adequately address weight management. *Public health nutrition*, in press, corrected proof, 19 May 2015. DOI: 10.1017/S1368980015001305.

ABSTRACT

It has been suggested that nutritionists might not be fully-equipped to deal with many diet-related issues, which are often complex, multi-faceted problems, because nutrition education propagates the partial understanding of dietary issues, reflecting nutrition science's poor engagement with psycho-social knowledge. To investigate these suggestions two qualitative investigations were performed sequentially. The first study investigated the weight-loss experiences of a group of individuals, to characterise the complexity of this dietary problem. The second study contrasted the participants' experiences with the Association for Nutrition's undergraduate core competency criteria using a qualitative methodology.

For study one, participants (n=8) with weight-loss (n=4) and weight-maintenance experiences (n=4) were interviewed using semi-structured interviews, to understand weight loss at the agential level. For study two, the interview and core competency data were combined and analysed using Framework Analysis. Emergent themes were compared between cases (participants vs. core competencies) using framework matrices. Studies one and two were underpinned by critical realism.

In study one the participants described barriers to (dichotomous thinking and behaviour, environments, social pressures and weight centeredness) and facilitators of their weight-loss goals (mindfulness, knowledge, exercise, readiness to change, structure, self-monitoring and social support) highlighting that weight loss was multidimensional. In study two, knowledge, exercise, planning, psychological constructs and behaviour-change techniques, determinants of eating, and social support emerged as important features of weight loss to be embedded into curricula. The competency criteria provided clear or comprehensive guidance to education providers on all aspects discussed by the participants apart from exercise, psychological constructs and behaviour-change techniques, self-management, and social support.

This thesis revealed that physical, environmental, social, and behavioural factors assist and inhibit weight-loss, and that accredited nutrition courses might not fully reflect the weight-loss needs and experiences of dieting individuals. Nutritionists might require greater knowledge of psychology and behaviour change to better understand and accommodate weight-loss needs.

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CHAPTER 1: INTRODUCTION

1.0: Obesity

The World Health Organisation (WHO) defines obesity as an abnormal accumulation of body-fat that has developed to the extent that it negatively impacts health (World Health Organisation 2014). Body Mass Index (BMI) is an index of weight-for-height that is used to categorise an individual's weight status (Harding et al. 2008). A BMI in excess of $25 \text{ kg}\cdot\text{m}^2$ is regarded as overweight and a BMI equal to and in excess of $30 \text{ kg}\cdot\text{m}^2$ is considered to be obese (Howarth et al. 2006; 2007). Overweight and obesity are associated with poor physical and mental health and are considered to be an important medical problem (Swencionis et al. 2012, Swinburn et al. 2011). The medical implications of obesity relate to its ability to expedite chronic disease and diminish the quality of life of its sufferers (Lam et al. 2012). Overweight and obesity are linked to chronic diseases such as type II diabetes (Yaturu 2011), coronary heart disease (Ryan 2005), stroke (Bhatti et al. 2013), hypertension (Elks and Francis 2011), cancer (Pischon, Nöthling and Heiner. 2008), and appear to be linked to osteoarthritis (Gross et al. 2005), sleep apnoea (Lam et al. 2012), and benign prostate hypertrophy (Stamatiou and Copanitsanou 2012). Obesity is also associated with poor body image and low self-esteem (Dixon et al. 2003, Schwartz and Brownell 2004), depression and suicidal ideation (Swencionis et al. 2012), and sexual health problems such as such as a lack of desire, enjoyment, avoidance of intimacy, and anxiety (Kolotkin et al. 2006).

The negative consequences of obesity transcend physical and mental health issues however and it appears that anti-fat biases and weight-related stigma have become increasingly prevalent over time (Lewis et al. 2011, Wang, Brownell and Wadden 2004). This has led to the marginalisation of some overweight and obese individuals in some aspects of society (Lewis et al. 2011). Overweight and Obesity appear to carry important economic implications too and the growing cost of obesity has become a major economic problem in recent years (Wang et al. 2011). Indeed, Withrow and Alter (2011) suggested that up to 2.8% of global healthcare expenditure was the result of overweight and obesity in 2011. However, Wang et al. (2011) suggested that projected economic implications of overweight and obesity are conservative estimates and that economic consequences transcend the reported approximations. In the US alone, Wang et al. (2011) revealed that 4-7% of healthcare expenditure was directly related to overweight and suggested that indirect costs such as increased disability rates, increased

mortality before retirement age, early retirement, increased disability pensions, work absenteeism, and reduced productivity are likely to be several times greater than the direct medical costs.

Obesity and overweight are most prevalent in developed western society but appear to be increasing rapidly across the world (Swinburn et al. 2011). Data from the Department of Health in England suggests that most English adults are now overweight and that 14% of English children between the ages of 2-10 are obese (Department of Health, 2011). Worryingly, these numbers are predicted to be increasing with the Foresight report predicting that up to 90% of English adults will become overweight and/or obese by 2050 if current trends continue (Butland et al. 2007). Similarly, Wang et al. (2011) predicts that by 2030 11 million more UK adults will become obese and suggest that the associated medical costs of treating obesity would increase by £1.9 - £2 billion per year as a result of the growth of obesity. The rapid (and continuing) growth and economic implications of obesity have led to suggestions that obesity now represents a major health-care crisis in the UK (Shan 2008). Indeed, the UK's National Institute for Health and Care Excellence have suggested that the economic implications of obesity now underscore the importance of developing effective weight-loss treatments (National Institute for Health and Care Excellence, 2006).

Mechanistically, apart from where overweight and obesity are the result of an inherited, genetic disorder (Wilding 2011), weight gain is the product of a positive energy balance where the energy obtained from the diet supersedes the energy cost of living and activity (Eckmekcioglu and Touitou 2011). Weight loss, therefore, is the product of a negative energy balance where the energy cost of living and activity supersedes the energy obtained from food and drink (Eckmekcioglu and Touitou 2011). Despite the simple thermodynamic basis, weight gain and obesity are complex issues with a wide range of causative factors identified in the literature. These range from physiological (Berthoud et al. 2011, Myers et al. 2012), genetic (Fawcett and Baruso, 2010), behavioural and psychological antecedents (Davis 2009, Mesas 2012), to wider socio-political issues that drive energy consumption and reduced energy expenditure at the population level (Swinburn et al. 2011). Indeed, the obesogenic environment has now become a popular description of a multidimensional socio-political model that promotes population-level obesity (Giskes et al. 2011).

1.1: Weight Loss

Many treatments have been developed to facilitate weight loss, ranging from lifestyle modifications that consist of dietary counselling and interventions, physical activity and behaviour-change therapies (Butryn et al. 2011), to pharmacotherapy (Halper et al. 2012), and bariatric surgery (Ochner et al. 2013). Research indicates that a weight reduction of 5-10% is sufficient to achieve long-term health improvement (Burke et al. 2011) and a weight reduction of 10% is regarded as being clinically significant in the literature (Kraschnewski et al. 2010, Stubbs and Lavin 2013). On the basis that negative energy balance is the underpinning factor in weight loss, dietary manipulations are implicit weight-loss strategies and a wide range of dietary modifications and weight-loss programmes have been developed and reported to help people lose weight (Bye et al. 2005, Dansinger et al. 2005, Sacks et al. 2009). Behaviour-change therapies, which work to modify behaviours and promote weight and health-related goals, have been validated in the literature too (Befort et al. 2008), and might also be effective at achieving weight loss in some (Alberts, Thewissen and Raes 2012, Carter and Jansen 2013, Stubbs et al. 2012), but not all individuals (Michie et al. 2011, O'Reilly et al. 2014, Stubbs and Lavin 2013). Lifestyle interventions are composite treatments that have been shown to help people achieve clinically-significant weight loss (Hagobian and Phelan 2013, Salinardi et al. 2013), maintain weight loss (The LookAHEAD Research group 2003, 2007, 2010), and typically comprise of diet, behaviour-change, and physical-activity interventions. It has been suggested that the additive effects of a lifestyle intervention result in weight-loss effects that are greater than the sum of its parts (Andrade et al. 2010, Chaput et al. 2011). While short-term successes have been observed with most weight-loss treatments, trends indicate however that individuals regain lost weight upon treatment cessation (Mason et al. 2013), and in some cases participants appear to regain all of their lost weight once dietary and behaviour-change interventions have been discontinued (Riebe et al. 2005). This has led some to suggest that obesity and weight gain are chronic conditions that might require life-long treatment (Stubbs and Lavin 2013).

Empirical data suggests that weight loss follows a trajectory of weight reduction, plateau, and regain (Hagobian and Phelan 2013, Look AHEAD Research Group 2010, Riebe et al. 2005). Successful long-term weight loss therefore appears to be challenging (Kraschnewski et al. 2010), and long-term weight management appears to consist of weight-loss, weight-loss maintenance, and weight-gain stages (Stubbs and Lavin 2013).

It has been suggested that weight loss is experienced under a milieu of negative physiological adaptations that predispose individuals to regain weight (Stubbs and Lavin 2013). Data indicates that losing weight leads to increased appetite, increased desire to eat and abnormal preoccupations with food (Sumithran et al. 2011). Cravings appear to exacerbate when dieting (Fabbriatore et al. 2013, Vankoningsbruggen et al. 2012), and a reduced energy cost of living appears to subsist once an individual loses weight at or beyond clinically significant levels (DeLaney et al. 2014, Liebel et al. 1995, Wiegler et al. 1988). It has been hypothesized that these adaptations serve to restore individuals back to a habituated, pre-dieted level of body-mass (Blomain et al. 2013), and might explain why a large proportion of individuals regain lost weight over time. Indeed, evidence indicates that 83% of individuals regain weight after one year of achieving weight loss (Kraschnewski et al. 2010). Given that long-term weight control appears to be difficult (Kraschnewski et al. 2010, Riebe et al. 2005), research has sought to identify factors that differentiate successful dieters, who have achieved and maintained weight loss, from unsuccessful dieters, who have been unable to achieve or maintain their weight-loss goals (Nakade et al. 2012).

Evidence indicates that successful dieters modify their lifestyles and behaviours to achieve preliminary weight loss (Teixeira et al. 2004). They experience noticeable successes in these early weight-loss efforts (Stubbs et al. 2011), establish important weight-loss behaviours (Hindle and Carpenter 2011), and are robust to threats to their weight status (Stubbs et al. 2012). Successful weight maintainers appear to sustain and remodel weight-loss behaviours over time (Hindle and Carpenter 2011, Stubbs and Lavin 2013), and possess social-support structures that reinforce positive behaviours (Teixeira et al. 2012). Whilst almost any diet will achieve weight loss as long as insufficient energy is consumed (Asher et al. 2013, Dansinger et al. 2005), an optimal diet might be one that promotes satiety (Leidy et al. 2010, Wycherley et al. 2012), is flexible enough to allow for digression (Teixiera et al. 2010), but be suitably restrained enough to achieve and/or maintain weight loss. Flexible restraint therefore appears to be a recurring factor in weight-loss research (Befort et al. 2008, Teixeira et al. 2010), and might be a determining factor that facilitates early weight loss and long-term weight maintenance by allowing individuals to accommodate digressions but still achieve negative energy balance or maintain energy equilibrium (Sairanen et al 2014).

Collectively, evidence indicates that weight loss and weight maintenance are complex achievements that are predicated on dietary adjustments (Wycherley et al. 2012,

Korczak and Kister 2013), physical activity (Andrade et al. 2010, DeLaney et al. 2014), behaviour changes (Carter and Jansen 2012, Stubbs et al. 2012), and social structures that support the attainment and maintenance of weight-related goals (Kiernan et al. 2012, Turner-McGrievy and Tate 2013). While evidence is beginning to unpick factors associated with successful weight management, it appears that much of this evidence has been conducted using quantitative methods such as questionnaires (Sairanen et al. 2014, Teixeira et al. 2010, Vogels et al. 2005), surveys (Abildso et al. 2014, Befort et al. 2008, Pacanowski et al. 2014), and rating-scales (Turk et al. 2004) to identify and quantify the weight-related phenomenon of interest. This research is typically underpinned by naïve realist epistemology, reduced and analysed statistically, understood deterministically, and might not fully elucidate the complexity of its experience.

Whilst quantitative investigation is providing new and important insights into weight management, quantitative study is limited due to the rigidity of its underpinning meta-theory, lack of contextual understanding, and loss of important meaning perspectives (Guba and Lincoln 1994, Ritchie et al. 2013). The tendency towards quantifying weight-loss behaviour in the literature has led some authors to question the depth of weight-management understanding (Reyes et al. 2013). The in-depth, qualitative study of weight management appears to be in its preliminary stages at the time of writing (Aherne et al. 2013, Burke et al. 2009, Chambers and Swanson 2012, Hammarström et al. 2014, Hindle and Carpenter et al. 2011, Morgan et al. 2011, Reyes et al. 2013), and while this research is now beginning to appear in the literature, participants are often obtained from intervention studies elsewhere (Aherne et al. 2013, Burke et al. 2009, Hammarström et al. 2014, Morgan et al. 2011). The current qualitative literature, therefore, might not fully reflect the experiences of dieting individuals who undertake their weight-loss journeys independent of research-based intervention, without the support of professional teams of dietitians, nutritionists, psychologists, physical activity practitioners, and researchers. Indeed, participants in research studies might be predisposed to biases, such as the Hawthorne effect, experienced as a consequence of their participation, which might affect study outcomes and influence data (McCambridge et al. 2014). It is possible, then, that the existing evidence might be biased towards an understanding of weight management within the constraints of an artificial environment, perhaps representing those seeking treatment within specific clinical contexts as opposed to those who wish to lose weight outside the constraints

and advantages of clinical situations. Importantly, weight-loss-specific research appears to be lacking in the qualitative literature, which appears to be biased towards the exploration of weight-loss maintenance (Hindle and Carpenter 2011, McKee et al. 2013).

1.2: Nutritionists

Nutritionists work alongside dietitians and other health professionals in UK hospitals and clinics and might work with patients with weight-management needs (Cade et al. 2012). Nutritionists might also provide support and guidance to weight-loss clients and client-groups privately, independent from the NHS (Association for Nutrition 2014). Nutritionists work in diverse roles to educate and promote healthy living, in public health and policy development, in research and academia, in industry, or within private practice (Association for Nutrition 2014, Cade et al. 2012). To become registered in the UK nutritionists must possess an undergraduate or postgraduate nutrition degree, register with the UK Voluntary Register of Nutritionists (UKVRN), which is regulated by the Association for Nutrition (Association for Nutrition, 2012), and demonstrate three years of relevant professional experience within five years of application to the register (Association for Nutrition 2012). The Association for Nutrition (AfN) also accredits UK nutrition degree programmes, which must adhere to strict professional standards and competency criteria to gain accredited status (Association for Nutrition 2012). These competency criteria are broad and consist of five key areas of specialist knowledge: *'Science'*, *'Food Chain'*, *'Social/Behaviour,' Health and Wellbeing'* and *'Professional Conduct'* that also contain specific, comprehensive sub-criteria (Association for Nutrition 2012). The competency model forms the curriculum framework of accredited nutrition degrees in the UK, and education providers must evidence how these core competencies are embedded into their programmes if they are to achieve accreditation (Association for Nutrition 2012).

Nutrition education and training have however been criticised by authors who suggest that because nutrition science has been biased towards quantitative study (Schubert et al. 2012), reflecting its development from a biomedical paradigm (Landman and Wootton 2007), and limited recognition of psycho-social knowledge (Crotty 1993, Delormier et al. 2009, Pelto et al. 2003), that nutrition education propagates only a partial understanding of many diet-related issues (Schubert et al. 2012). These authors also contend that agential knowledge is currently lacking in the literature, and that

socially-engaged nutrition research is often biased towards multifaceted, structural explanations of dietary choice, such as the obesogenic environment (Schubert et al. 2012). Growing evidence indicates that weight loss is a complex, multi-dimensional challenge with physical, social and behavioural elements (Hays et al. 2008, Valente et al. 2009). Data is also beginning to suggest that dieters possess individual-specific needs that require specific attention for weight-loss treatment to be successful (Aherne et al. 2013 Stubbs et al. 2011). If agential data is indeed lacking in nutrition science (Schubert et al. 2012), then it is plausible that important information might be missing from the literature that is required to understand the individual-specific needs of dieters. Importantly, if nutrition education is not sufficiently engaging with social science knowledge (Schubert et al. 2012), then nutritionists might not have the knowledge and skills needed to provide effective weight-loss treatment and/or counselling. It is not clear then, on the basis that weight loss is complex and individual-specific, if undergraduate nutrition education adequately encompasses the complexity of weight-loss experience and equips student nutritionists with the knowledge and skills necessary for the successful prevention and treatment of overweight and obese individuals (Aherne et al. 2013, Chambers and Swanson 2010, Hindle and Carpenter 2011, Reyes et al. 2012).

1.3: Purpose of this Thesis

This thesis was designed to reflect the preceding discussion and explore the experiences of a group of dieters to obtain rich, detailed, agential information about their weight-loss experience, and contrast this information with the AfN's core competency model, to investigate if nutritionists' education is commensurate with a complex dietary problem. For the purposes of this thesis a dieter will be defined as an individual who has manipulated their diet in order to achieve a weight-loss goal, and a maintainer will be defined as an individual who has achieved a weight-loss goal and is maintaining weight loss. The AfN's core competency model provides the framework for accredited nutrition degrees in the UK (Association for Nutrition 2012), and therefore provides an estimate of undergraduate nutrition curricula. This thesis will therefore explore the suggestion that undergraduate nutrition education might not adequately reflect the holism of weight-loss experience, and equip student nutritionists with the knowledge and skills needed to work with weight-loss clients. In order to appropriately contextualise the development of this project and provide necessary background information, a detailed and specific review of literature follows this chapter.

CHAPTER 2: LITERATURE REVIEW

2.0: Introduction

This chapter is separated into three parts. Firstly, this chapter explores literature which investigates the weight-management experience and provides a narrative and critical account of this evidence. Secondly, this chapter documents the development of the UK nutrition register, the creation of the AfN to oversee the register and nutrition degree course accreditation, and the concerns of authors who have criticized nutrition science and the educational model that they claim proliferates an incomplete understanding of multifaceted dietary problems. Finally, this chapter will conclude the previous reviews and contextualise the development of the aims and objectives of this research from the information discussed.

2.01: Review Format

In order to provide a detailed and critical overview of the literature, narrative overviews of the articles identified were undertaken: one for weight-management experiences and one for nutrition education. Gasparyan et al. (2011) and Green et al. (2006) suggest that narrative overviews are appropriate tools to synthesize studies of different epistemological and methodological underpinnings, describe and evaluate varied sources of information, present a broad perspective, and challenge and problematize an area of interest. Within the boundaries of a narrative overview this chapter sought to synthesize and evaluate the research identified, document the history and development of the education of nutritionists in the UK, provide a narrative account of the opinions of the authors identified, and contextualise the aims and objectives of this thesis. However, while narrative overviews can synthesize, discuss and critique a broad range of evidence, and can be effective, informative and illustrative tools, these reviews have been criticised for a lack of procedural transparency (Green et al. 2006), and for their unsystematic approach to identifying, appraising and reporting literature (Gasparyan et al. 2011). This has led some to suggest that narrative overviews might be prone to subjectivity, error, and bias (Green et al. 2006). However, while these have been important criticisms of narrative reviews, similar concerns have also been articulated about systematic reviews too (Boell and Cecez-Kecmanovic 2014), which are considered to be more robust and rigorous tools to synthesize and evaluate evidence (Green et al. 2006). Likely, criticisms of narrative and systematic review practice are the product of poor reporting and inadequate rigour employed by some authors (Green

et al. 2006), which exacerbate inherent methodological issues with these methods (Boell and Cecez-Kecmanovic 2014).

To accommodate some of the issues exacerbated by poor reporting, error, and bias that might be promoted by narrative overviews, Gasparyan et al. (2011) recommend that a narrative overview should report its search methodology and adopt a more systematic approach to analysing, synthesizing and reporting data. Therefore, to improve transparency and rigour in line with these recommendations, this review chapter will report the protocols used to select and appraise the literature identified for the two reviews contained herein, similar to the reporting conventions of systematic reviews (Boell and Cecez-Kecmanovic 2014). However, whilst this chapter will adopt some of the methodical reporting practices of a systematic review, a systematic review of the literature is most appropriate for narrow and unequivocal research questions (Boell and Cecez-Kecmanovic 2014), and was not an appropriate method for undertaking the literature reviews of this thesis, which needed to synthesize a broad range of literature with disparate epistemological and methodological underpinning. This chapter will therefore maintain the comprehensiveness, breadth and novelty of good narrative overview practice (Boell and Cecez-Kecmanovic 2014), report search strategies used to locate research, and quality appraise literature to evaluate evidence (where appropriate) for issues such as methodological rigour and validity/credibility, which have been criticisms of qualitative research (Hammersley 2007). This will be undertaken to accommodate the disadvantages of narrative overviews and better align the methods of this chapter with some aspects of systematic review practice, as recommended by some authors (Boell and Cecez-Kecmanovic 2014). In order to identify the weight-management experience and U.K nutrition-education literature two literature searches were undertaken. The first search was undertaken to locate the qualitative weight-management experience literature (in UK residents only); the second was performed to locate literature that explores the education and training of UK nutritionists. All literature search strategies, including search terms, databases, Boolean operators, and limits, were constructed in consultation with an information scientist, piloted prior to retrieving the final documents, and are described overleaf.

2.1: SEARCH STRATEGY

2.1.1: Weight-Management Experiences

Published peer reviewed, full-text, original research and review articles, in printed and electronic formats, that described weight-management experiences (weight loss and weight-loss maintenance), were obtained from the search strategy depicted in table 2.1. Research was located using databases where standardised search terms were identified in the title, abstract and keywords fields. Search terms were tested prior to the final search being completed and three pilot searches, conducted from 2013 – 2015, were undertaken to finalise the search strategy so that the located articles accurately reflected the inclusion criteria. Searches were not date limited and because this thesis was interested in only UK resident's experiences, only articles published in the English language from the UK were included in the review. Articles were excluded if they did not meet the inclusion criteria.

Table 2.1: Weight-Management Experiences Search Strategy

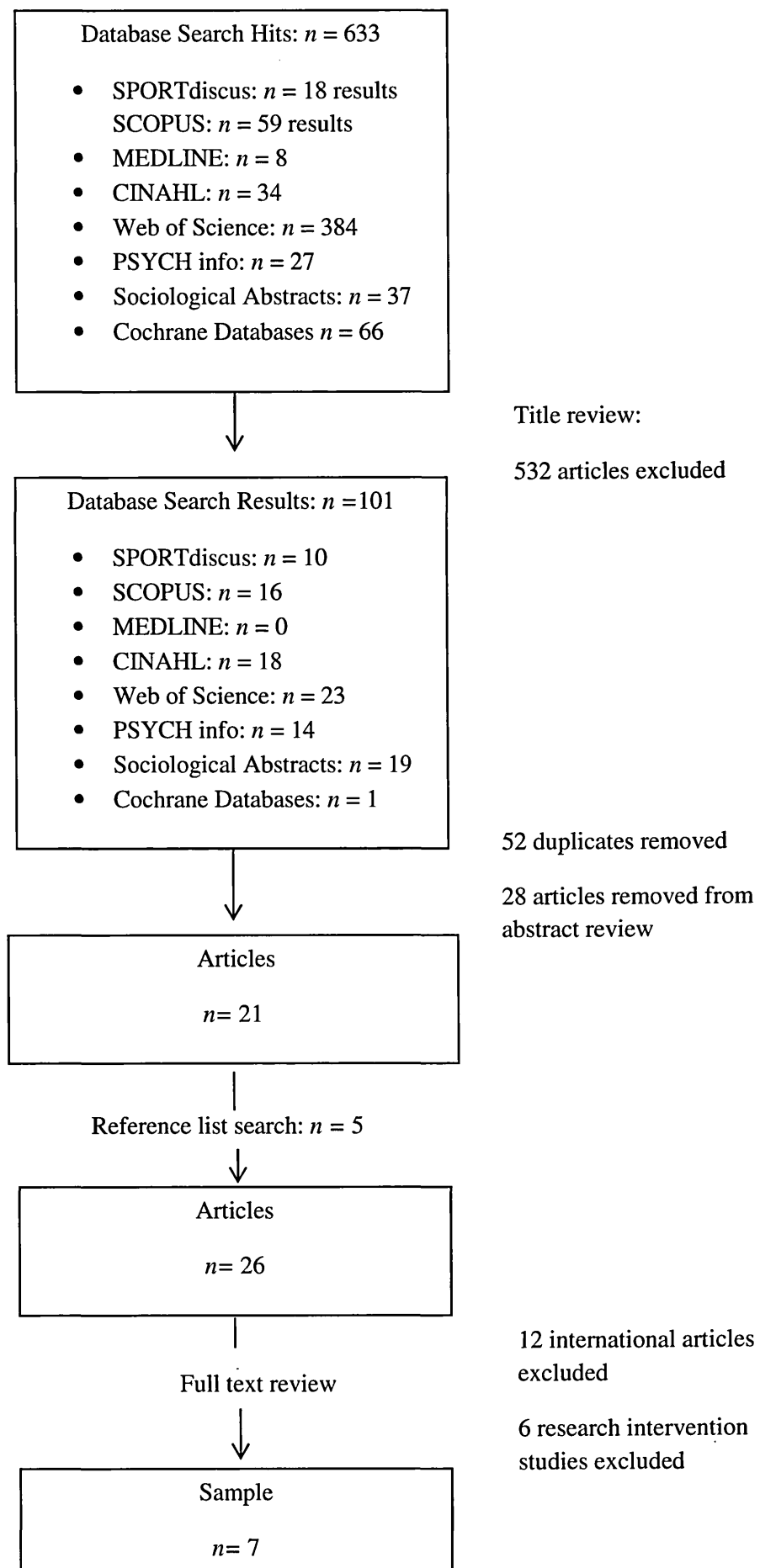
Weight-Management Experiences	
Search terms and operators	<ul style="list-style-type: none">• “Weight loss” OR “weight maintenance” OR “weight management” OR “Weight-loss” OR “weight-maintenance” OR “ weight-management”• AND Experiences OR Perceptions
Databases	<ul style="list-style-type: none">• SPORTdiscus• SCOPUS• MEDLINE• CINAHL• Web of Science• PSYCH info• Sociological Abstracts• Cochrane Database

A total of 101 relevant documents were identified from the database search; 52 duplicates were deleted and 27 documents were excluded from a review of their abstracts. Studies were excluded if they did not reflect experiences of weight loss and weight maintenance ($n = 10$), were conducted using quantitative methods ($n = 7$), if they were service evaluation articles ($n = 5$), investigated gestational, pre or postnatal weight

management ($n= 3$), or weight management associated with bariatric surgery or pharmacotherapy ($n =3$). A total of 21 articles from the database search remained at this point in the search process. The reference lists of these articles were then examined to locate additional literature, from which five further studies were identified. The location of these five articles might indicate that the search terms, synonyms and operators used to locate the literature were either insufficient to locate all of the evidence in this area or that additional databases might need to have been consulted to locate further literature. Indeed, the identification of these articles via the reference search highlights important limitations of the search strategy used to locate the research for this review.

From this sample of 26 articles, studies were then further excluded by reviewing the full text. Articles were excluded at this point if they were revealed to be non-UK ($n =12$), and if participants had or were currently undertaking research-based weight-loss or weight-maintenance interventions ($n = 6$). Non-UK studies were excluded due to the established links between societal norms, stigma, cultural weight-status ideals, and political and economic factors that might lead to societal-specific experiences of weight management (Cummins and MacIntyre 2012, Swinburn et al. 2011, Swencionis et al. 2012). Studies where participants had or were completing research-based weight-management interventions were also excluded due to the artificiality of the research environment and the potential for bias that participating in research might introduce into data (McCambridge et al. 2014). Of the excluded sample ($n = 19$), a total of 5 studies were non-UK; the remaining 11 studies were aligned to research interventions of some description. A final sample, which met all of the inclusion criteria and explored the weight-management experiences of UK residents not aligned to research, was confirmed, consisted of 7 articles, and was reviewed (see 2.4). A schematic breakdown of this literature search strategy can be found in figure 2.1.

Figure 2.1: Literature search 1: Weight-Management Experiences



2.1.2: Nutrition Education

Identical to the search strategy for weight-management experiences, published peer reviewed, full-text, original research, and review articles in printed and electronic formats were identified from the search strategy, depicted in table 2.2. This search strategy sought articles that discussed or investigated nutrition education in the UK. The AfN was founded in 2010 by the Nutrition Society and developed the accreditation model for undergraduate nutrition degree programmes in the UK (Cade et al. 2012), therefore only UK articles published in the English language from 2010-2015 were included in this search. Research was identified using databases where standardised search terms were identified in the title, abstract and keywords fields, and through liaison with the AfN directly. Like before, search terms were refined through a process of pilot searching which was conducted in 2013-2015; the final search strategy was completed on February 28th 2015.

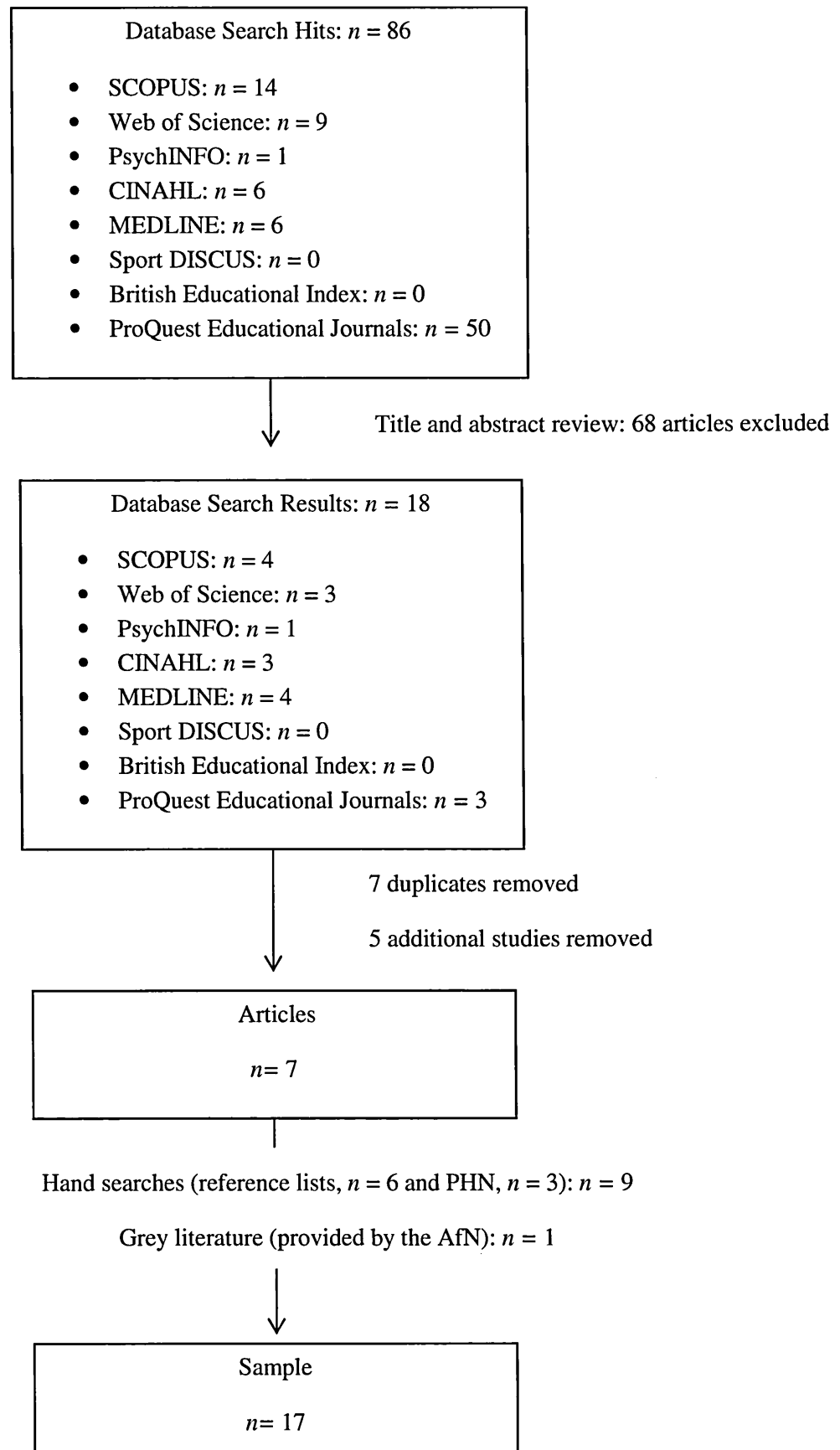
Table 2.2: Nutrition-Education Search Strategy

Nutrition Education	
Search terms and operators	<ul style="list-style-type: none">• Nutritionist* AND• Educat* OR Trainin* OR Knowledge
Databases	<ul style="list-style-type: none">• Scopus• Web of Science• PsycINFO• CINAHL• MEDLINE• SportDISCUS• British Educational Index• ProQuest Educational Journals

A total of 18 relevant documents were identified from the database search; 7 duplicates were deleted and 6 studies were removed at this stage, upon detailed inspection of the abstracts. These studies were excluded due to not discussing or evaluating the education of nutritionists ($n = 5$), or were not relevant to the education and training of nutritionists in the UK ($n = 1$). A further 6 studies were located by reviewing the reference lists of studies identified through the database search, and 3 studies were located by hand searching Public Health Nutrition (PHN), which is an internationally recognised nutrition journal published in the UK by the Nutrition Society. All issues of

Public Health Nutrition were hand searched between 2010 (volume 13) and 2015 (volume 18, issue 4: March 2015). Seven of the documents identified through the reference list searches (Crotty 1993, Eide 1982, Hughes et al. 2004, Landman, Buttriss and Margetts 1998, McKenzie 1980, Murcott 2000 and Peltó et al. 2003) were published prior to the establishment of the AfN, but were included due to their importance in the establishment of the competency frameworks and nutrition curricula developed for the UK, and for their critical appraisal of nutritionist's knowledge, education and training. In addition to the database and hand searches the AfN provided the author with one document to assist with this thesis, which was also included in the review. A schematic representation of this search strategy can be found in figure 2.2. Articles for both searches were handled in the Refworks data management database (Refworks-COS, Bethesda MA), and were filed separately within folders that indicated their area of interest (Weight-Management Experiences vs. Nutrition Education), and source (database, reference list search, etc.).

Figure 2.2: Literature search 2: Nutrition Education



2.2: QUALITY ASSESSMENT

2.2.1: Weight-Management Experiences

A total of seven qualitative articles were located from the literature searches and were assessed for quality using the Critical Appraisal Skills Programme (CASP) qualitative checklist. This tool was developed by the Critical Appraisal Skills Programme to evaluate qualitative research, is recommended by the Cochrane Collaboration (Hannes 2011), and is as an appropriate tool to appraise the methodological quality of qualitative research in line with the aims of this review chapter (Hannes 2011). All studies were assessed for quality by the principal investigator, who appraised the research alone. While it is customary that quality appraisal is conducted by two or more investigators in research (Hannes 2011), it was deemed necessary for the purposes of this thesis that the principal investigator should conduct the quality appraisal as an individual. This, however, might represent an important limitation that needs to be considered when interpreting this review. Typically, multiple reviewers appraise the quality of literature in order to ensure reliability/dependability of the assessment as a measure to evaluate the validity/dependability of the research; inter-rater reliability/consistency has therefore become an important consideration for systematic reviews in recent years (Berkman et al. 2013). Because this appraisal was conducted by the principal investigator only, it is therefore possible that the reliability/dependability of this assessment is uncertain. However, it should also be noted that the inter-rater reliability of quality appraisal appears to be difficult to standardise, with reviewers demonstrating disparity in their assessments empirically (Berkman et al. 2013); further work is perhaps needed to enhance the reliability/dependability of quality assessment.

In order to achieve the quality assessment of this review, each of the 10 items of the CASP checklist, along with its sub-components, was entered into an Excel 2010 spreadsheet (Microsoft, Redmond, WA, USA), and each article was cross referenced with the criteria of the tool and scored as *yes*, *no*, *not clear* against each criterion, as indicated by the instructions for the tool. Once this was completed for each study, a new spreadsheet was created in Excel which synthesized the results of the quality assessment for each article without the subcomponents of the CASP instrument, to highlight areas of association and discordance visually and concisely. As before, a suffix of *yes*, *no*, *not clear* was indicated for each area of the CASP tool within the matrix. Details of this are presented in table 2.3. Results of this preliminary quality

assessment highlighted that each study was missing important criteria from the CASP assessment instrument. A recurrent issue in the studies identified was that information concerning researcher-participant relationship dynamics was not fully disclosed by authors. This information highlights the power relationship in the research process, the co-production of knowledge, and is an important consideration when interpreting the results of qualitative research (Kuper et al. 2008). Transparency in the reporting of researcher-participant dynamics and power relations is important to verify the credibility (which is partially synonymous with internal validity, Hannes 2011), of qualitative research findings (Kuper et al. 2008). This is particularly important for phenomenological and realist research (Kuper et al. 2008, Ritchie et al. 2013), and might indicate that the authors did not fully engage with or report reflexivity in their studies, which is considered to be a good practice requirement (Kuper et al 2008).

Issues with the rigour of the data analysis processes were also apparent for five of the seven studies located (Epiphaniou and Ogden 2010, Green, Larkin and Sullivan 2009, Hindle and Carpenter 2011, McKee et al. 2013 and Whale et al. 2014). In all instances, these authors did not provide a detailed or transparent account of how data was analysed and how codes, themes and concepts were formed, advising readers to consult sources elsewhere for detailed breakdowns of how data management and analysis occurs within the conventions of their underpinning research paradigms. Whilst it might be expected that publishers' word limits might necessitate the exclusion of this information, the clear exposition of data collection and analysis is increasingly becoming a requirement of published qualitative research (Mays and Pope 2000, Hannes 2011, Ritchie et al. 2013), and studies need to document how important decisions have been made to confirm the credibility and dependability (which is partially synonymous with reliability, Hannes 2011) of the study's findings (Mays and Pope 2000). Whilst quoted data was often used to corroborate findings in the results sections of these articles, none of the studies reviewed discussed or demonstrated how their codes and themes evolved during the analytical processes using data examples, which might also be necessary to assert that codes and themes are reliable/dependable (Lincoln and Guba 1985, Mays and Pope 2000). In all of the studies reviewed, member checks/respondent validation was also not reported, which enhances validity/ credibility of study findings similarly, and is an important and essential practice in some qualitative methodologies (Ritchie et al. 2013).

Further issues for five of the seven studies identified (Chambers and Swanson 2012, De Souza et al. 2005, Epiphaniou and Ogden 2010, Green, Larkin and Sullivan 2009) were

that the authors did not fully discuss the contribution of the research to the existing evidence, how findings could be translated to other populations, how findings might be used elsewhere, or identify areas in need of further investigation. Therefore, in many instances the value of the research and how these studies contributed to knowledge was not fully explored. Mays and Pope (2000) propose that understanding the relevance of qualitative research, determined through the author's clear explanation of how research adds to knowledge, is important when assessing the quality of qualitative literature. For many studies reviewed here (Chambers and Swanson 2012, DeSouza et al. 2005, Epiphaniou and Ogden 2010, Green, Larkin and Sullivan 2009), this was not fully explored by authors, who assumed that relevance of their research findings was tacit information. Another important issue identified via the CASP instrument's criteria was that methodologies and research designs were not always appropriately justified (Chambers and Swanson 2012, Green, Larkin and Sullivan 2009, Whale et al. 2014). Importantly, the underpinning ontology and epistemology of the research was not disclosed in some of the articles (Chambers and Swanson 2012, Whale et al. 2014). This is important, as different epistemologies necessitate different approaches to the investigation and interpretation of phenomena, meaning that the methodologies and methods used to investigate phenomena need to conform to the conventions of the meta-theoretical framework underpinning the research (Ritchie et al. 2013). Importantly, this needs to be reported to ensure trustworthiness of the data collection, interpretation and analytical processes (Ritchie et al. 2013). On the basis that all qualitative studies in this review missed two or more criteria from the CASP tool, the quality of the qualitative weight-management evidence might be disputed. An abbreviated assessment of the quality of these studies can be found in table 2.3.

2.2.2: Nutrition Education

The majority of articles identified for the review of nutrition education consisted of historical case study accounts detailing the development of nutrition in the UK ($n = 3$), expert opinion pieces / commentaries that provided narrative accounts of literature ($n = 10$), modified *Delphi* studies ($n = 2$), and a case study review detailing the development of a new competency framework ($n = 1$). The article obtained from AfN was a guidance document detailing the competency requirements for undergraduate degree accreditation. Due to the variability of information obtained pertaining to nutrition education in the UK, and a clear lack of rigorous and controlled research, quality appraisal of these articles was not deemed to be relevant. Indeed, preliminary findings

from the literature search for nutrition education indicated that there is a lack of research which investigates the education of nutritionists in the UK. While the critical commentaries located for this review discuss, appraise and critique the education of nutritionists, these are biased commentaries that express opinion (Green, Johnson and Adams 2006), and empirical support for the claims of these authors were not evident from the literature located for this review. Indeed, the lack of empirical support reflects a lack of exploratory research which investigates the education of nutritionists in the UK at the time that this review was undertaken.

Table 2.3: Quality Assessment

Reference:	Chambers and Swanson (2012)	De Souza and Ciclitira (2005)	Epiphaniou and Ogden (2010)	Green, Larkin and Sullivan (2009)	Hindle and Carpenter (2011)	McKee et al. (2013)	Whale et al. (2014)
Was there a clear statement of the aims?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is a qualitative methodology appropriate?	Not clear	Yes	Yes	Not clear	Yes	Yes	Not clear
Was the research design appropriate?	Not clear	Yes	Yes	Yes	Not clear	Yes	Yes
Was the recruitment strategy appropriate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was data collected in a way to address the research issue?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Has the research - participant relationship been considered sufficiently?	No	Not clear	Not clear	No	No	No	No
Have Ethical issues been considered?	Yes	No	Yes	Yes	Not clear	Not clear	Not clear
Was data analysis rigorous?	Yes	Yes	Not clear	Not clear	Not clear	Not clear	Not clear
Clear statement of findings?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
How valuable is the research?	Not clear	Not clear	Not clear	Not clear	Clear	Clear	Not clear

2.3: DATA EXTRACTION AND DATA SYNTHESIS

2.3.1: Weight-Management Experiences

Data for all studies was extracted and synthesized using a spreadsheet in Microsoft Excel 2010 (Microsoft, Redmond WA, USA), which detailed research underpinnings, aims, participants, findings, and was designed for this aspect of the review specifically. This procedure differed from other methods such as the Joanna Briggs Foundation meta-aggregation model for qualitative research. The Joanna Briggs Meta-aggregation model seeks to generate generalisable recommendations for practitioners and policy makers via the production of 'lines of action' (Hannes and Lockwood 2011), which serve as recommendations for decision-making at the policy or clinical level. This particular method is characterised by a three-phase approach: study data (themes) are obtained, pooled and categorised, and via further aggregation, synthesized into statements as 'lines of action' for policy makers to implement (Joanna Briggs Institute 2014). In this way, the meta-aggregation technique is somewhat analogous to constant comparative analysis or thematic analysis; verbatim data is extracted, synthesized and aggregated (into actionable outcomes). The methods used to extract and synthesize data in this review, however, more closely align to that of thematic synthesis (Hannes and Lockwood 2011); data (themes, findings) were extracted from the studies in order to draw conclusions based on common elements in the research, and thus findings in this chapter will be presented as important concepts and themes that emerged from the studies reviewed and not 'lines of action'. An important point highlighted in the quality appraisal of this review is that the reliability/dependability of the findings of the studies reviewed in this chapter might be disputed; in many instances the authors did not explain how codes and themes emerged with the use of supportive, verbatim text. An important tenet of the meta-aggregation technique is that data must be secure and supported by verbatim quotes (Hannes and Lockwood 2011), therefore this technique would not be appropriate to synthesize the data in this review, which appeared to be heterogeneous and lacking methodological rigour in many instances.

The majority of the studies ($n = 4/7$) sought to understand successful weight-loss maintenance: Chambers and Swanson (2012), Epiphaniou and (Ogden 2010), Hindle and Carpenter (2011), McKee et al. (2013). Two of the studies examined factors that differentiated dieters who were able to maintain clinically significant weight losses ($> 10\%$ body-mass, Stubbs and Lavin 2013) from those who were not: Chambers and

Swanson (2012), McKee et al. (2013). One study sought to understand the experiences of successful weight maintainers only: Hindle and Carpenter (2011). One study sought to understand the experiences of unsuccessful dieters: Green, Larkin and Sullivan (2009). One study sought to understand male experiences of dieting: De Souza et al. (2005). One study sought to understand a hypothetical shift in identity that coincides with successful weight maintenance: Epiphaniou and Ogden (2010). The final study sought to understand experiences of societal pressures and social support that coincide with weight loss: Whale et al. (2014). An abbreviated version of the spreadsheet document used to extract data can be found in table 2.4.

2.3.2: Nutrition Education

Data from all documents was extracted and synthesized using spreadsheets in Microsoft Excel 2010 (Microsoft, Redmond WA, USA), which detailed the aims and findings of all documents. In total, 13 articles were commentaries/discussion pieces: Cade et al. (2012), Crotty (1993), Delormier et al. (2009), Eggers and Kennedy (2010), Eide (1982), Landman et al. (1998), Landman and Wootton (2007), McKenzie (1980), Murcott (2000), Pelto et al. (2003), Rozin (1981), Schubert et al. (2012) and Williamson (2010). Two articles were Delphi studies: Hughes (2004) and Jondottir et al. (2004). One article was a qualitative case study: Meeker et al. (2013). The final article was the guidance document obtained from the AfN: Association for Nutrition (2012). An abbreviated version of these spreadsheet document used to synthesize the data can be found in table 2.5.

Table 2.4: Weight-Management Experiences Articles

Reference	Epistemology & Methodology	Aim	Participants	Data Collection	Main Themes
Chambers and Swanson (2012)	Thematic Analysis*	Factors associated with successful and unsuccessful maintenance	20 adults (females = 15, males = 5, 30 – 67 years)	Semi-structured interview	Weight History; Monitoring Weight Changes; Taking Action
De Souza and Ciclitera (2005)	Feminism, Grounded Theory	Explore male experiences of dieting	8 white, males (age = 44.8 ± 9 years)	Semi-structured interview	Legitimacy; Support
Epiphaniou and Ogden (2010)	Phenomenology, IPA	Explore changes in self-perception with weight-loss maintenance	10 females (age = 39.8 ± 8.8, mean loss = 24.7 ± 9.1 for 56.4 ± 53.4 months)	Semi-structured telephone interview	Restrictive individual; Liberated self
Green, Larkin and Sullivan (2009)	Phenomenology, IPA	Understand diet failure	11 self-selected Dieters (females = 9, males = 2)	Semi-structured interview	Dieting mode; “Multi me”; Not me; Modern Life; Challenges of emotional and social eating
Hindle and Carpenter (2011)	Phenomenology, Colaizzi Method of Thematic Analysis	Explore experiences, perceptions and feelings of weight maintainers (1 + year)	10 female maintainers (age = 44 ± 12.3 years, mean loss = 20.7 ± 10.9 kg, over 30 ± 16.3 months)	Semi-structured interview	Motivations to lose weight; Approach taken to lose and maintain weight; Support; Difficulties associated with maintenance
McKee et al. (2013)	Constructivism, Thematic Analysis	Investigate weight maintenance success vs. failure	18 members of the public: Regainers $n = 9$ Maintainers $n = 9$	Semi-structured interview	Goal Regulation; Self-Control
Whale et al. (2014)	Thematic Analysis*	Explore experiences of societal pressure and support regarding obesity and weight loss and attitudes towards health policy intervention	10 female members of Commercial weight-loss Programmes (age = 34-65 years)	Semi-structured interview	Conflicting weight norms; Policy Support

Table 2.5: Nutrition-Education Articles

Reference	Document	Aims	Findings	Importance
Association for Nutrition (2012)	Guidance document	Accreditation guidance	N/A	Details core competencies
Cade et al. (2012)	Commentary/ Case Study	Detail new AfN, UKVRN and competencies	AfN and UKVRN established to further professionalisation	Discusses core competency and curriculum development
Crotty (1993)	Commentary	Discuss the role of qualitative research in nutrition	Pre and Post swallowing paradigms	Nutrition give little attention to social knowledge
Delormier et al. (2009)	Commentary/ Narrative Review	Discuss limits of social theories in dietary problems	Eating is a social phenomenon	Structural models needed in nutrition
Eggers and Kennedy (2010)	Commentary	Discuss statutory regulation	Diversification and development of nutrition profession	Chronicles establishment of AfN
Eide (1982)	Commentary	Explore realities of food access	Theoretical models explain food access	Advices of improved social orientation
Hughes (2004)	Delphi Study	Develop PHN competencies	7 competency areas developed	Developed competency model
Jonsdottir et al. (2010)	Delphi Study	Consensus for practice contexts	29 competencies rated essential	Nutrition science essential
Landman et al. (1998)	Case Study	Describe the development of PHN	PHN developed between 1992-1997	Chronicles curriculum development
Landman and Wootton (2007)	Case Study	Chart progress of nutrition in UK	Establishment of AfN, nutrition professionalisation	Details UKVRN, AfN, course accreditation
McKenzie (1980)	Commentary/ Review	Food habits and how they change	Understand behaviour	Social Nutrition agenda
Meeker et al. (2013)	Case Study / Review	Competencies for emergency nutrition	20 competencies, 161 indicators	Competencies established
Murcott (2000)	Commentary	Overview sociology of nutrition inequality	'Political arithmetic' model	Social dimensions of eating and choice
Pelto et al. (2003)	Commentary/ Statement	Identify emerging orientations	Integrate social and biological	Integrated model needed
Rozin (1981)	Commentary	Understand food selection	Knowledge imbalances	Social science undervalued
Schubert et al. (2012)	Commentary/ Narrative Review	Critique current placement of social research in Nutrition	Agential information lacking	Critiques nutritionist's education
Williamson (2010)	Commentary	Discuss nutritionist's qualification in response to <i>Which?</i> report	The need for statutory regulation	Differentiates registered nutritionists from other nutritionists

2.4: NARRATIVE OVERVIEW

2.4.1: WEIGHT-MANAGEMENT EXPERIENCES

Preliminary findings of this review indicate that the qualitative weight-management research is in its infancy, evidenced by the fact that the earliest of the studies identified for this review (De Souza and Ciclitera 2005) was undertaken in 2005, and that the majority of studies located ($n = 4/7$) explored weight maintenance only. The qualitative understanding of weight loss, which precedes the weight-maintenance phase and might establish behaviours necessary for life-long weight management (Reyes et al. 2013, Sairanen et al. 2014, Stubbs and Lavin 2013), might not be fully elucidated within the literature identified in this review. The following review will discuss each of the included studies in chronological order to provide a sequential, narrative exploration of the evidence, but will also synthesize, contrast and evaluate the research concurrently to provide critical insights into the qualitative weight-management literature.

2.4.2: De Souza and Ciclitera (2005)

De Souza and Ciclitera (2005) explored the experiences of eight dieting men using grounded theory. An iterative sample of six heterosexual and two homosexual men were recruited to describe their weight-loss experiences as dieting males. Results of the study captured two main themes which the authors conceptualised as the categories '*Legitimacy*' and '*Support*'. The authors explained that heterosexual participants felt the need to legitimate their dieting through (perceived) masculine motives, clearly differentiating their engagement with weight loss from (perceived) feminine motivations. The authors revealed that the heterosexual males explained that health-related motives underscored their weight-loss efforts, rather than explicit body-image goals, which they were quick to admonish. This differed from the homosexual participants who explained that they experienced body-image pressures within the gay community and sought to conform to those body-image ideals with the use of their dieting. Despite reporting health goals as primary motivators for dieting however, the heterosexual males also explained that dieting to attract a partner was a valid motivator for weight loss, contradicting the earlier admonishment of body-image motives. The authors noted that despite these participants explaining that their dieting was driven by

health-related goals, appearance was clearly a key motivator for the heterosexual males too.

The pressure to attain body-image ideals reflected the later work of Whale et al. (2014), who found that female motivations to lose weight were the product of societal pressures to conform to body-image ideals propagated by popular media and celebrity culture. It is interesting to note that the heterosexual participants in De Souza's study felt the need to distance their motivations away from appearance, despite reporting that losing weight to attract a partner was a valid motivation for dieting, indicating that body-image was not perceived to be a legitimate motivator for weight loss by these participants. The authors explained that this perception might reflect a stereotypical gender bias, where dieting to improve appearance is perceived to be a feminine concern by UK society. For the heterosexual participants in De Souza's study, dieting needed to be validated as an endeavour underscored by masculine intentions.

2.4.2.1: Weight-loss Failure and Social Support

All of the participants in De Souza's work reported histories of failed weight loss and described negative experiences of restrictive diets, which often led to weight regain upon cessation. Histories of failed weight-loss attempts were described by participants in the studies by Chambers and Swanson (2012), Epiphaniou and Ogden (2010), Green, Larkin and Sullivan (2009), Hindle and Carpenter (2011), and McKee et al. (2013), and were a recurrent trend in the literature reviewed here. While this might be a sampling issue in the evidence—participants in all studies ranged from 30 – 65 years of age (data was missing for people < 30 years old and who might not have dieted yet)—this might also indicate that weight management is a cyclical experience of success and failure for some. Six of the eight participants were members of a slimming club, and all participants reported different modes of support that they experienced, including support from clubs, friends, family, and colleagues. This support took two forms: practical support in understanding and following the diet and emotional support which was provided by partners and significant others. Five of the six slimming club members attended the group with their partners and for four of these participants the decision to undertake the diet was directly influenced by their spouse/partner.

The concept of support seemed to be a recurrent theme in all of the literature identified for this review. Interestingly, for some of the heterosexual participants in De Souza's work, the decision to diet was rationalised as a means to support a dieting spouse rather than for the attainment of their own weight-loss goals directly. This rationalisation partially reflected the heterosexual participants' need to legitimate dieting through masculine rationalisations, and so for some of these participants, dieting was also rationalised as a means to help their (female) partners achieve weight loss, rather than themselves. Interestingly, one of the homosexual men described his partner as being threatened by his weight-loss efforts however, and was openly unsupportive of his goals, fearing that losing weight might make him more attractive to others. Hindle and Carpenter (2011) and Whale et al. (2014) describe similar incidences in their research too, and suggested that this lack of support might be subconscious and unintentional, and perhaps because the dieting participants' social contexts had adjusted to accommodate new health-related behaviours that differentiate them from their spouses and social circles, fostering a form of division.

2.4.3: Green, Larkin and Sullivan (2009)

Green, Larkin and Sullivan (2009) explored weight-loss failure and participants' explanations of weight-loss failure in eleven self-selected participants using Interpretive Phenomenological Analysis (IPA). The authors revealed that participants described a state of vigilance when seeking weight loss, which the authors themed as '*Dieting Mode*'. This '*Dieting Mode*' was complex and revealed to be a state of effortful, heightened self-awareness and discipline around dieting and health-related behaviours. Interestingly, participants explained that '*Dieting Mode*' existed dichotomously to a non-dieting mode, and participants described other, less disciplined mental states where attentiveness to these behaviours did not exist—a conceptualised '*Vigilant Self*' was contrasted with a '*Wayward Self*'. Interestingly, the authors noted that a heightened awareness of eating behaviour persisted even when not actively losing weight, indicating that the participants placed value judgements on their eating behaviours, and that attentiveness to food choice persisted despite not actively seeking weight loss. Participants explained that this attentiveness created guilt and turmoil about food choices and eating behaviours when not adhering to a weight-loss diet. Participants also described important '*tipping points*' where dieting needed to be initiated as a response

to excess behaviour and unwanted weight gain, and that dieting would commence and persist as long as this perceived urgency to lose weight remained.

2.4.3.1: Dichotomy

The dichotomous relationship between vigilance and waywardness were underpinned by the description of multiple selves, which were themed as '*Multi Me*' by the authors. The description of multiple selves was constructed to represent an inner conflict between episodes of restricted behaviour and unplanned, disinhibited eating, which participants struggled to understand. The authors explained that this led to a sense of uncertainty about self-identity. A dichotomous relationship between stringent rigidity and poor adherence resonated in several of the articles in this review (Green, Larkin and Sullivan 2009, Chambers and Swanson 2009, McKee et al. 2013), and might be a recurrent factor in weight-management experiences. Reasoning diet failure, the theme '*Not Me*' was formed to encompass factors that were perceived to be beyond participants' control. These could be internal, such as the perception of low metabolism and food addiction, and external, such as the complexity or rigidity of the diet itself. Participants explained that they believed that their dieting would inevitably fail due to the presence of internal factors, partitioning blame for a lack of success away from personal responsibility. Reflecting the earlier work of De Souza et al. (2005), male participants ($n = 2$) placed a high degree of responsibility for their dieting onto female partners, inviting their partners to monitor and assist them with their efforts, perhaps underscoring stereotyped gender roles and the need for social support with weight-loss efforts concurrently. The concept of social support was an important factor within several of the studies discussed in this review (Chambers and Swanson 2010, De Souza and Ciclitira 2005, Hindle and Carpenter 2011), and the effects of significant others in the lives of dieters could be either positive and reinforce behaviours (De Souza and Ciclitira 2005, Hindle and Carpenter 2011), or be destructive and discourage the development or maintenance of behaviours antagonistically (Chambers and Swanson 2010, Hindle and Carpenter 2011).

The '*Modern Life*' theme described the participants' perception that dieting was an inevitable component of modern life. The authors explained that participants were well versed in the vocabulary of the dieting industry and understood the concepts of calorie balance and calorie counting. Interestingly, the authors explained that this knowledge

sometimes functioned as an impetus for disengagement. To explain, when participants overspent their calorie allowances this would lead to the perception of failure and the desertion of their dieting, reflecting the dichotomous thinking patterns described earlier. This was also later observed by Chambers and Swanson too (Chambers and Swanson 2012), highlighting that for some dieters, weight-loss behaviours exists as something that they are either rigidly compliant with or completely disengaged with—a paradigm of success vs. failure. A lack of time, the pace of modern life and food marketing were explained to be problematic as well, highlighting that environmental factors present important challenges to adherence for some. This too reflected the later findings of Chambers and Swanson (2012), who found that weight gainers in their research cited similar reasons for their failure to achieve and maintain weight loss.

2.4.3.2: Food and Mood

Eating was revealed to be a potent modifier of mood for participants in Green, Larkin and Sullivan's research, and emotional eating was an important challenge articulated by the group (Green, Larkin and Sullivan 2009). Eating could be for hedonistic pleasure or initiated as a coping mechanism for unfortunate life events, security, rebellion, and as a response to external factors and stimuli. Eating was an emotive activity. This too was highlighted in other studies included in this review (Chambers and Swanson 2012, Epiphaniou and Ogden 2010). Eating was also revealed to be a social activity however, and overeating occurred as a consequence of social interaction and bonding, also highlighting that eating is a complex activity with social dimensions. This was problematic however, and was an often cited reason for failure by participants in all of the studies reviewed. Interestingly, the successful maintainers in the later studies of Epiphaniou and Ogden (2010) and Hindle and Carpenter (2011) reported that adjusting their cognitions to allow for digressions, unplanned events, and social occasions fostered greater success and better long-term adherence. For these participants, flexible eating habits and food cognitions were part of their ongoing journey—food choices and eating behaviours were no longer a dichotomy of accomplishment and catastrophe. Unrealistic eating habits and internalised responses to rigid eating might therefore be important factors that underpin weight-loss failure for some.

2.4.4: Epiphaniou and Ogden (2010)

Epiphaniou and Ogden (2010) explored the experiences of 10 adult females who had successfully maintained a 26.6% weight loss for an average of 4.7 years in order to understand a hypothetical shift in identity that occurs as a consequence of long-term weight-loss maintenance. Using IPA, Epiphaniou and Ogden (2010) revealed that participants experienced a shift in identity towards a flexible, liberated conception of the self. Prior to achieving weight loss participants explained that they perceived their lives to be characterised by restriction, which the authors described as the '*Restrictive Self*'. This restriction was multifaceted, and consisted of internalised responses to external consequences of its presence. To explain, restriction could be experienced as social discrimination and stigma which resulted in self-imposed social exclusion, to avoid social occasions and interactions that might bring attention towards body shape and size. Participants explained that due to the societal focus on body-image that their body-shape became a focal point of their self-identity, and that this weight-centred identity fostered self-criticism and depressed mood due to the perception of being unattractive and marginalised. Participants explained that this then coincided with a perceived need for restrictive dietary habits that were adopted to achieve a more socially acceptable body-shape, and underscored complex linkages between societal pressures, cognitions and behaviour. Reflecting the later work of Chambers and Swanson (2012), emotional eating was used as an important mechanism to modify mood for these participants, where food was used as a tool to regulate stress, boredom, and alleviate depressed mood. Despite preliminary feelings of satisfaction that coincided with eating for these purposes however, these occasions often led to feelings of guilt and shame thereafter.

2.4.4.1: Liberation

Following the achievement and maintenance of weight loss participants described a shift in identity towards a '*Liberated Self*'. This liberated self was characterised by a loss of social reservation, positive self-image, and flexible dietary habits. Participants explained that social interaction and the perception of acceptance became the norm as feelings of self-worth grew, resulting in increased confidence. Participants reported a shift in their eating habits, which transitioned from the restrictive routine that fostered deprivation and guilt, towards flexible habits that eliminated anxieties and bettered

adherence, echoing participants in other studies (Hindle and Carpenter 2011, McKee et al. 2013). Interestingly, participants explained how weight loss shifted their self-identities away from their weight centeredness towards one that was not dominated by weight-related issues. Some participants explained that they now felt able to achieve new tasks and goals, and that this improved self-worth strengthened their determination to maintain their losses and not regain weight. This determination was reflected in the development of strategies used to monitor weight changes, like regular weighing, heightening vigilance towards maintaining weight, similar to the later findings of Hindle and Carpenter (2011) and Chambers and Swanson (2012).

2.4.5: Hindle and Carpenter (2011)

Hindle and Carpenter (2011) used phenomenology to explore the experiences, perceptions and feelings of 10 female participants who had achieved and maintained a 23.1 (\pm 8.5) % weight loss for 29.9 (\pm 16.3) months. Four major themes appeared from their study: *'Motivations to Lose Weight'*, *'Approaches Taken to Lose and Maintain Weight-loss'*, *'Support'*, and *'The Difficulties Associated with Weight Maintenance'*. Participants explained that they had struggled with their weight for a long time, citing a lack of sufficient motivation to engender long-term change. Participants revealed that short-term restrictive diets and unrealistic goals were reasons for their previous failures, and suggested that formative life-events such as failing health became important motivators for them to make life-long changes. Participants explained that these events precipitated the realisation that dietary changes needed to be life-long and not an interim measure to achieve a short-term body-image ideal. This meant that participants became focussed on consistency, became less rigid, and adopted flexible habits. Participants engaged in self-monitoring activities such as food diaries and regular weighing, which prompted feelings of control, and was a formative perception underpinning successful weight loss in several of the studies reviewed in this chapter (Chambers and Swanson 2012, Epiphaniou and Ogden 2010, Green, Larkin and Sullivan 2009). Participants achieved weight loss by minimising high fat and high sugar foods, engaging in regular physical activity, utilising commercial weight-loss programmes such as weight watchers, and consulting health professionals for guidance.

2.4.5.1: Social Support

Participants articulated the benefits of social support, and the slimming group members celebrated the benefits of the group dynamic which provided reassurance, advice and counselling, reflecting other studies (De Souza and Ciclitera 2005, Chambers and Swanson 2012). Participants explained that the support of family and friends was particularly important, especially when family members modified their behaviours to reflect the participants' goals. However, once weight loss diminished and participants transitioned towards weight maintenance, the support and positive reinforcement from others diminished concurrently, and participants explained that this negatively impacted their motivation. Importantly, participants explained that maintenance required the same diligence to diet and physical activity as their initial weight loss, but that the lack of tangible progress and diminished affirmation made maintenance equally challenging. Participants reported too that other people would act as saboteurs, subconsciously, by articulating negative opinions about their weight loss, downplaying or discouraging their efforts, and/or encouraging them to actively stop losing weight before they had achieved their goals. These negative experiences reflected those of one of the participants in De Souza's earlier work (De Souza and Ciclitera 2005), and participants in Whale's later study (Whale et al. 2014), which explored societal pressures and societal support for weight loss in female slimming club members. For the participants in Hindle and Carpenter's research, the external motivation and affirmation and support of others reinforced their habits, and highlighted how social factors might help to legitimise and reinforce weight management for some (Hindle and Carpenter, 2011).

2.4.6: Chambers and Swanson (2012)

Chambers and Swanson (2012) explored the behavioural and psychological factors associated with successful and unsuccessful weight-loss maintenance using semi-structured interviews in 20 participants (15 female, 5 male), who were allocated into Lifelong Weight Maintainer (LMWs $n = 6$), Active Weight Maintainer (AWM's $n = 8$) and Weight Gainer (WGs $n = 6$) groups. Results of the study differentiated the behaviours of those that were able to achieve and maintain weight loss with those that were not, which were reflected in the emergence of two main themes: '*Monitoring Weight*' and '*Taking Action*'. Participants who were AWMs were more vigilant to weighing and monitoring than the WGs, who weighed themselves less frequently and

inconsistently. Interestingly, the LWMs appeared not to engage with weight monitoring at all, however both AWMs and LWMs responded less negatively to weighing than the WGs, who appeared to experience strong and negative emotional reactions to being weighed. These participants described being depressed and despondent when learning of an increase in weight, highlighting that weight-status was an emotionally charged issue that precipitated the avoidance of self-monitoring activities. Successful participants also engaged with other monitoring activities such as monitoring how clothes fit, particularly the LWMs who also used clothing as a subjective trigger to initiate weight loss. Successful weight maintainers (AWMs and LWMs) monitored health and fitness indicators, activity, and dietary intakes too, where a tacit understanding of failure to maintain these habits would lead to weight regain created vigilance towards their long-term maintenance.

Hindle and Carpenter (2011) similarly reported that successful dieters in their research engaged with self-monitoring activities, citing that these behaviours engendered a sense of control. Interestingly, however, participants in Green, Larkin and Sullivan's (2009) earlier study reported that Calorie counting, when unsuccessful or imperfect, prompted the sensation of failure and lead to overeating and disengagement with dieting, paradoxically. Chambers and Swanson (2012) also discussed the emergence of a '*Taking Action*' theme, and revealed that successful weight maintainers (AWMs and LWMs) adjusted both their diet and activity behaviours readily to accommodate weight fluctuations. This contrasted with the WGs, who approached weight loss aggressively and via the single strategy of food restriction. Interestingly, WGs viewed these eating patterns as separate from their normal eating behaviour and used aggressive strategies to achieve short-term weight-loss goals. This created the perception that success could only be achieved through the strict adherence to specific, restrictive, dietary rules, which were revealed earlier to underpin dietary failure by Green, Larkin and Sullivan (2009). An important reflection of the successful maintainers in Hindle and Carpenter's (2011) earlier study was the realisation that dietary choices had to reflect a life-long behaviour change, to foster greater long-term consistency.

2.4.6.1: Physical Activity

Beneficial roles of physical activity for weight management were described by the maintainers in Chambers and Swanson's research (Chambers and Swanson 2012), and

all but one participant in the maintenance groups (AWM and LWM) used physical activity as a means to control their weight. This too reflected the earlier findings of Hindle and Carpenter (2011). The WGs however discussed an aversion to physical activity, citing time restrictions or lifestyle interruptions as reasons for their non-engagement with the behaviour. The recognition of lifestyle interruptions was articulated by participants in the later study by McKee et al. (2013), which revealed that successful and unsuccessful maintainers differed in the consistency and routine of their weight-loss behaviours; unsuccessful maintainers were much more likely to abandon behaviours due to the presence of lifestyle events and disruption; successful maintainers were robust to such events. Also similar to the McKee et al. (2013), successful maintainers responded to weight gain immediately, and made conscious attempts to lose gained weight. The authors suggested that for these participants weight maintenance was achieved within pre-defined limits of weight-related acceptability, that once breached, action was taken quickly. In contrast, despite recognising gain, weight gainers did not take action until they felt mentally prepared, delaying their attempts until they had the emotional willpower to do so.

2.4.6.2: Coping and Resiliency

The ability to cope also appeared to be a differentiating factor between AWMs, LWMs and WGs, and coping with setbacks was revealed to be a discerning factor between the groups. This too was a recurrent theme for some of the other studies reviewed here (Hindle and Carpenter 2011, McKee et al. 2013). Lifestyle interruptions were problematic for gainers, who cited lifestyle factors as interfering with weight loss and used these reasons to disengage with their efforts. Maintainers were revealed to cope and accept interruptions as normal however, and built adjustments around these factors into their lifestyles, consistent with participants in other studies (Hindle and Carpenter 2011, McKee et al. 2013). Control was themed as an important factor differentiating the AWMs and LWMs from the WGs by the authors, and gainers exerted variable levels of control which depended on their state of mind. The perception of control was reported earlier by Green Larkin and Sullivan (2009), who revealed that a perceived lack of control was a contributor to diet failure, and similarly by Hindle and Carpenter (2011) who found that self-monitoring activities engendered the perception of control, which was revealed to underpin the successes of the maintainers in their study. Interestingly,

the AWMS articulated a greater need for control compared to the life-long maintainers, indicating that life-long weight maintainers were more relaxed about controlling their eating and exercise habits, reflecting Epiphaniou and Ogden's (2010) hypothesis that long-term weight loss prompts a transition from perceived restriction to liberation and flexibility.

2.4.7: McKee et al. (2013)

McKee et al. (2013) investigated the psychological and self-regulatory factors associated with successful and unsuccessful weight-loss maintenance in a group of 18 participants (16 female, 2 male). Using thematic analysis the authors revealed that goal regulation and self-control were key factors that differentiated those that maintained their weight loss ($n = 9$) from those that regained weight ($n = 9$). Results of the study indicated that long-term realistic goal-setting, consistent routine, self-monitoring, the avoidance of deprivation, and successful coping strategies, were associated with successful weight-loss maintenance, reflecting participant experiences elsewhere (Chambers and Swanson 2012, Green, Larkin and Sullivan 2009, Hindle and Carpenter 2011). The authors explained that successful maintainers viewed weight loss as a lifestyle change rather than a diet, similar to the earlier findings of Hindle and Carpenter (2011). The need for realistic goal-setting was articulated by the successful maintainers, which was also reflected in the frustration of re-gainers, who reported discouragement and desertion of behaviours if their goals were not readily met. The perception of failure and poor ability to cope with setbacks was earlier reported by Chambers and Swanson (2012), who similarly found that weight gainers became disenchanted when goals were not readily achieved, or when setbacks compromised their rigid compliance to their plans. Hindle and Carpenter (2011) also revealed that goal-setting was an important factor that contributed to the successes of their participants, and found that once participants had lost weight and reached a weight plateau, that they adjusted their goals away from weight loss, expanding them to reflect wider behaviours that reinforced weight-loss maintenance, such as exercise. McKee et al. (2013) found similar results, and reported that participants explained that goal-setting is a technique that is needed to be used and manipulated indefinitely to maintain weight loss over time.

2.4.7.1: Self-Control

The concept of self-control was revealed to be particularly important, which encompassed the establishment of routine, self-monitoring, dietary deprivation, and coping. For the maintainers, the establishment of routine and organisation was described to be pivotal to their successes. Re-gainers explained that a lack of organisation underscored failure, highlighting that organisation and self-management are important factors to ensure long-term consistency. Self-monitoring consisted of activities that allowed participants to track and monitor progress, such as food diaries and calorie counting, which created a sense of accountability. Similar to the earlier findings of Green, Larkin and Sullivan (2009), re-gainers reported apprehension about monitoring activities however, and avoided the behaviour. The concept of restrictive eating leading to failure was reflected here too, and the deprivation theme revealed that successful maintainers avoided deprivation by allowing for controlled digressions, recognising that feelings of deprivation lead to destructive eating patterns. The re-gainers maintained a polarized attitude towards food however, and continued to view certain foods as forbidden, which was reported to then lead to binge-eating and destructive behaviour. The importance of effective coping mechanisms was revealed within this study too, and maintainers were revealed to be resourceful and adaptable to lapses in restraint, viewing them as normal and temporary, and accommodating them with dietary adjustments and increased physical activity. Re-gainers, however, were passive towards lapses in restraint, similar to the re-gainers of Chambers and Swanson's study (Chambers and Swanson 2012).

2.4.8: Whale et al. (2014)

Whale et al. (2014) investigated the weight-loss attitudes and motivations of 10 female commercial weight-loss programme attendees, to understand how losing weight might be influenced by societal pressures surrounding weight loss, and how these pressures might inform their attitudes towards the development of weight-loss health-care policy in the UK. Using thematic analysis the authors revealed that two main themes emerged: '*Conflicting Weight Norms*' and '*Policy Acceptance*'. The '*Policy Acceptance*' theme was developed by the authors to describe participants' responses to health policy in the U.K, was separate from the exploration of weight-management experiences, and will not be discussed in this review. For a detailed description of how the participants

experienced '*Policy Acceptance*' readers are advised to refer directly to Whale's article (Whale et al. 2014). Similar to the earlier findings of Epiphaniou and Ogden (2010), the females explained that they felt pressure and confusion about societal weight norms, that being thin was perceived as being ideal, that overweight lead to negative social judgement and marginalisation, and that they felt pressured to conform to societally-dictated body-image ideals and lose weight. These pressures were manifested in the ideation of thin celebrities, and the negative judgements imposed on those that do not conform to the body-image ideals by the UK media.

The females explained that once they achieved weight loss their social circles and friends reacted negatively; being on a diet unsettled social routines and conflicted with the norms of eating out and food-related social events. Similar concerns were raised by the homosexual participant in De Souza's earlier study (De Souza et al. 2005), and participants in Hindle and Carpenter's study (Hindle and Carpenter 2011), who also found that social circles and significant others can react destructively to their weight-loss efforts. The authors explained that participants experienced conflict between the ideation of a thin body-ideal and the reality that overweight and obesity is fast becoming the norm in the UK, meaning that stigma around overweight and obesity might be diminishing, and that the acceptance of overweight might be becoming more apparent in UK society. This was reported to create conflict for participants, who understood that they wanted to lose weight to improve body-image and social acceptability, but that the social landscape was fast changing to reflect an increasing acceptance of overweight, and that their social environments conflicted with the weight-loss behaviours they needed to adopt to achieve their weight-loss goals. For these participants, these factors created turmoil and challenged their motivations, but perhaps also highlighted that important linkages exist between social acceptability, body-image, and motivation, reflecting DeSouza and Ciclitira's earlier research (DeSouza and Ciclitira 2005). Social acceptability and improved body image might be important motivators for some dieters, and appear to be influenced by media and popular culture.

2.4.9: Summary

This review described the weight-related journeys of dieters in rich detail, highlighting factors associated with successful and unsuccessful weight loss and weight-loss maintenance efforts. Several recurrent concepts were identified, including the positive

role of social support (De Souza and Ciclitera 2005, Hindle and Carpenter); highlighting the role that significant others might play in weight management. Antagonistically, significant others and friendship groups could also be destructive (De Souza et al. 2005, Hindle and Carpenter 2011, Whale et al. 2014), creating challenges and problems or fostering uncertainty about weight-loss motivations for some. The concept of dietary rigidity appeared within several studies reviewed here (Chambers and Swanson 2010, Epiphaniou and Ogden 2010, Green, Larking and Sullivan 2009, Hindle and Carpenter 2011, McKee et al, 2013), and it was revealed that unrealistic dieting was associated with unsuccessful weight loss and poor weight-loss maintenance, which then lead to unrestrained eating and negative thinking patterns and guilt. Flexible approaches to dieting underscored the successes of many dieters, who were able to incorporate and accept digressions into their routines (Chambers and Swanson 2010, Epiphaniou and Ogden 2010, Hindle and Carpenter 2011, McKee et al. 2013). Effective coping mechanisms underscored long-term success similarly, particularly in response to day-to-day challenges such as time issues and lifestyle restraints, but also to unfortunate life events too; emotional eating was revealed to be a challenge for unsuccessful dieters in particular (Chambers and Swanson 2012, Green, Larkin and Sullivan 2009, McKee et al. 2013). For most dieters in these studies, weight loss created a sense of heightened vigilance to weight-related behaviour. Long-term weight maintainers were particularly proactive about responding to fluctuations in weight, using simple dietary and physical activity adjustments to accommodate weight increases when needed (Chambers and Swanson 2012, Hindle and Carpenter 2011, McKee et al. 2013). Unsuccessful dieters, however, were passive about changes to weight status, and tended to make use of aggressive dietary manipulations to lose weight once they had the cognitive and emotional resources to do so (McKee et al. 2013). Importantly, the successful dieters highlighted in this review viewed dieting as a long-term lifestyle adjustment, rather than a short-term measure to lose weight or achieve a body-image ideal (Chambers and Swanson 2012, Epiphaniou and Ogden 2010, Hindle and Carpenter 2011, McKee et al. 2013). Weight management was viewed as a life-long commitment by the successful dieters in the articles reviewed.

While this review discusses important and detailed information about the experiences of dieters in the UK, issues with this evidence need to be considered when interpreting the research. Firstly, for all of the studies samples were biased towards white, middle-class

adults, and so the experiences of ethnic minorities and other social classes within the UK population were not explored. In many instances participants had complex histories of failed weight loss, and so the experiences of first-time dieters were missing similarly. The in-depth exploration of the weight-loss experience, which might be different to the weight-maintenance experience, was also under-represented in the literature, and only 2 studies (DeSouza and Ciclitera 2005, Whale et al 2014) appeared to investigate weight-loss experiences specifically, and this was not an explicit aim of these studies. The targeted, in-depth exploration of weight-loss experience might be important: Hindle and Carpenter (2011) revealed that successful weight maintenance was built upon behaviours and cognitive changes that were experienced and developed during the earlier weight-loss stage. The exploration of these factors might be important to identify and understand the factors that lead to successful or unsuccessful weight management, which might not be fully elucidated within the evidence discussed in this review.

Participants' age-ranges varied between 30 years and 65 years and so the experiences of young adults were also missing. The experiences of male dieters might not be fully explored similarly, and of the seven studies reviewed in this chapter, only one study actively sought to investigate the experiences of male dieters specifically, and this study sampled males who were in monogamous relationships only (DeSouza and Ciclitera 2005). The experiences of young, single males were not explored in any of the studies reviewed here. Many of the issues with the research identified might reflect that the qualitative exploration of the weight-management experience is in its infancy at the time that this review was undertaken. Therefore, additional, high quality, qualitative research that explores weight management is now required to add to the body of knowledge in this area. Additional research to explore the weight-loss experiences of UK dieters, to provide new insight into an important forerunner of successful or unsuccessful long-term weight maintenance, might now be required specifically.

2.5: NUTRITION EDUCATION

A preliminary finding from the following review is that there is a lack of empirical evidence which investigates the education and training of nutritionists in the UK. The

nutrition education literature appeared to be biased towards commentaries, case studies, and opinion-piece articles. From the articles located for this review, the following section will document the development of nutrition in the UK, the UKVRN, the Nutrition Society's development of the AfN to oversee the UKVRN, the development of the AfN's core competency framework, and the critiques of authors who have questioned the foundation of nutrition science and nutrition education and training.

2.5.1: Nutrition

Nutrition has been described as an applied and multidisciplinary science (Schubert et al. 2012), and nutritionists in the UK have a broad range of career opportunities and roles available to them that reflect the multifaceted nature of nutrition expertise (Eggers and Kennedy 2010). Nutritionists develop, deliver and evaluate nutrition programmes and policies, generate evidence, and apply scientific knowledge to educate about the impact of food and dietary choice on health and wellbeing (Cade et al. 2012). Traditionally in the UK, nutritionists worked on the population level only, to promote good health through dietary choice in the primary and secondary prevention of nutrition-related illness and disease (Eggers and Kennedy 2010). The role of the nutritionist has diversified in recent times however, and now nutritionists work with communities, groups, and individual clients in a number of contexts and scenarios which range from public health and disease prevention, to the provision of nutrition programmes within professional sport (Cade et al. 2012). With the expansion of the Sure Start programme and the impact of the National Service Frameworks registered nutritionists might also work in clinical environments in the National Health Service (NHS), working alongside dietitians and other health care providers, which was traditionally not within the remit of nutritionists in the UK, to provide support and services to individuals (Cade et al. 2012, Eggers and Kennedy 2010).

2.5.1.2: Dietetics vs. Nutrition

Dietitians and nutritionists are governed by different regulatory models (dietitians are statutory regulated and nutritionists are voluntarily regulated) however areas of practice overlap between the professions (Eggers and Kennedy 2010). While in the past dietitians and nutritionists were distinguished based on their scope of practice (dietitians worked mostly in clinical contexts and nutritionists worked on a population

level) barriers between the disciplines have begun to dissolve in recent times (Landman and Wootton 2007). The devolution of professional boundaries reflects a growing lack of dietitians in the UK and the increasing professionalisation of nutritionists, which has continued to advance since the late 2000's (Eggers and Kennedy 2010, Cade et al. 2012, Landman and Wootton 2007). While nutrition has continued to develop, diversify and grow, there has been concern about the proliferation of spurious dietary information and nutritional advice made available to the public, often channelled through popular media, which has led to debate within the scientific community about the regulation of nutrition professionals (Eggers and Kennedy 2010). This has also led to discussion about the appropriateness and scientific underpinning of some nutrition qualifications (Williamson 2012). This debate was born out of the proliferation of media figures and diet celebrities marketing supplements, nutritional products, and providing unsolicited dietary advice, which has been reported to be pseudo-scientific and even dangerous by some (Williamson 2012). Worryingly, many of these media figures are doing so without any relevant professional education or training (Cade et al. 2012, Williamson 2012).

Williamson (2012), in her commentary, discussed a 2012 *'Which?'* magazine report that highlighted the potentially harmful practices of a group of *'Nutritional Therapists'*, where unfounded dietary advice and complex supplements protocols were provided to a group of undercover researchers who complained of fictitious ailments. Explaining how potentially dangerous advice might be provided to the public, Williamson (2012) described fundamental differences in how dietitians and nutritionists in the UK are regulated, and highlighted how the term *'Nutritionist'*, and its variants (such as *'Nutritional Therapist'*), are not titles that are currently protected by the Health and Care Professionals Council, which is an independent UK-wide health regulator that establishes professional training, conduct and performance standards of health professions (Cade et al. 2012). Williamson (2012) revealed that anyone regardless of qualification or experience can call themselves a *'Nutritionist'* or *'Nutritional Therapist'*, advising that ongoing work is needed in the UK to professionalise nutrition and ensure title protection. Furthering the professionalisation of nutrition in the UK, ensuring evidence-based practice, professional conduct, and firmly establishing the nutritionist's code of ethics, has been an ongoing priority of the Nutrition Society in the past and for the AfN most recently (Landman and Wootton 2007). Indeed, work has

been ongoing since the 1980's to professionalise nutrition, ensure statutory regulation, and safeguard the public against nutritional quackery (Cade et al. 2012, Eggers and Kennedy 2010, Landman et al. 1998, Landman and Wootton 2007). Furthering the discussions of Williamson (2012), Cade et al. (2012) explained that the governing bodies for nutritionists and dieticians have an important responsibility to reverse the proliferation of nutritional quackery observed in the UK, and further promote evidence-based nutrition and the registered workforce. In this context, Cade et al (2012) discussed the importance of the specialist register of nutritionists, which was first established by the Nutrition Society in the 1980's, and the importance of title protection for professional nutritionists who have achieved registered status with the AfN. Cade et al (2012) explained that continuing to grow and develop the register of nutritionists, and achieving statutory regulation, would help to safeguard the public against nutritional quackery and unqualified individuals soliciting nutritional advice without underpinning knowledge, competency, skills or experience.

2.5.2: The Nutrition Society

The Nutrition Society was established in 1941 to advance the scientific study and application of nutrition knowledge, and was the regulatory body that developed and hosted the United Kingdom Voluntary Register of Nutritionists (UKVRN), which is the specialist voluntary register of UK Nutrition professionals, prior to the establishment of the AfN in 2010 (Landman et al 1998, Landman and Wootton 2007, Cade et al. 2012). Landman et al. (1998) and Landman and Wootton (2007) document the development of professional registration in nutrition in the UK and explain how the modern iteration of the UKVRN came to be established. The authors also document the development of accredited undergraduate degree programmes, revealing that the nutrition curriculum was designed to reflect the competencies required for registered status, and that these were later implemented to standardise knowledge and competence in the sector. Landman and Wootton (2007) explain that a register of accredited nutritionists was originally developed by the Nutrition Society in partnership with the Institute of Food Science and Technology, held by the Institute of Biology. Landman and Wootton (2007) go on to reveal that the register was developed in response to important questions posed by John Waterlow in 1981, a prominent British physiologist, which challenged the Nutrition Society, and in particular individuals who identified

themselves as ‘*Nutritionists*’, asking if entry qualifications into the profession had been defined by the Nutrition Society, or if they were even required at all.

Landman et al. (1998) documented how the Nutrition Society later developed an additional, independent nutrition register with the support of the Department of Health in the 1990s. The authors revealed that nutritionists registered to the independent register were required to evidence specialist competencies in public health nutrition, along with underpinning competencies in nutrition science, if they were to achieve registration. Landman et al. (1998) explained that the Nutrition Society adopted the Department of Health's (1994) core curriculum for ‘*Nutrition in the Education of Health Professionals*’ as its underpinning model, to align it with national policy goals at the time. Later, it was revealed, in 1999, the Nutrition Society merged the register of accredited nutritionists with their independent register, unifying the two and offered registrants the titles of ‘*Registered Nutritionist*’ (RNutr) or ‘*Registered Public Health Nutritionist*’ (RPHNutr), depending on their areas of expertise (Landman and Wootton 2007). Landman et al (1998) revealed that achievement of registered public health nutritionist status however required individuals to evidence competencies that reflected the role of a public health nutritionist, along with competencies required for registered nutritionists, differentiating the two statuses in terms of competency requirements. Public health nutritionists worked at the population level in the primary prevention of nutrition-related illness; nutritionists worked in industry and academia; local authorities and other environments, in a variety of roles that required knowledge and expertise in nutrition science (Landman et al. 1998).

2.5.2.1: Underpinning Competency in Nutrition Science

In 2002 the Nutrition Society stipulated that all registered nutrition professionals should share the common core competency of an underpinning knowledge of nutrition science, and that an undergraduate nutrition degree would become a requirement of professional registration (Landman and Wootton 2007). The Nutrition Society proposed that 2007 would be a target deadline to achieve this aim (Landman and Wootton 2007). The identification and stipulation of an underpinning competency in nutrition science for nutritionists was later verified by Hughes et al. (2004), and Jonsdottir et al. (2010), who through consultation with world-leading experts in the field, found that underpinning knowledge of nutrition science was essential for effective practice. Documenting the

Nutrition Society's newfound entry requirements to the register, Landman and Wootton (2007) described how registration during the 1990's and 2000s accommodated individuals who might not have possessed a formal nutrition education, but possessed extensive (>7 years) relevant work experience, and allowed them to apply for registered status. Landman and Wootton (2007) also reveal that the stipulation of a nutrition degree later became necessary to ensure common knowledge between registrants. Landman and Wootton (2007) explain that the Nutrition Society and Association of Professors in Human Nutrition convened to establish a working group to achieve this aim, to develop the core values and core competencies that distinguish nutritionists from other health professionals, which was derived and built upon from the earlier '*Core Curriculum for Nutrition in the Education of Health Professionals*' (Department of Health 1994). This led to the establishment of the fundamental concepts, principals, and theories that were needed to be understood by nutritionists that pre-dated the core competency model and UK nutrition curriculum of the AfN. Landman and Wootton (2007) explain that this model needed to be written in language that could be shared between health professionals, such as doctors, nurses and other allied health professionals, who might also provide nutrition education and services to patients (Cade et al. 2012, Landman and Wotton 2007). The biomedical underpinning and medical language of nutrition knowledge however would later form the basis of critiques of authors elsewhere (Schubert et al. 2012), who suggest that nutrition science might neglect or misinterpret important psycho-social knowledge, which proliferates into the educational models used to develop the nutrition workforce.

2.5.2.2: Associate Nutritionist

The Nutrition Society developed associate nutritionist entry to the UKVRN in 2002 to support the development of nutrition graduates who had underpinning knowledge obtained from undertaking an undergraduate nutrition degree, or a taught postgraduate degree, but lacked the three years' experience necessary to achieve full entry to the register (Eggers and Kennedy 2010). The creation of associate entry would therefore provide recent nutrition graduates with professional body recognition, to assist their career development, and establish a tiered workforce (Landman and Wootton 2007). In the 1990's, the earlier collaborative party of the Nutrition Society and Association of Professors in Human Nutrition proposed that the Nutrition Society should accredit

nutrition degree courses in the UK in addition to courses in public health nutrition, which were already being accredited at the time (Landman and Wootton 2007). This was to coincide with the developments and continuing regulation of the nutrition register. In the late 1990's Landman et al (1998) published a qualitative case study that documented how the Nutrition Society developed the original public health nutrition curriculum (between 1992-1997), which was designed to reflect specialist competencies in public health nutrition and British national nutritional policy relevant at the time. The development of the curriculum was to assist with the goal of the society to further the professionalisation of public health nutrition, which was originally focused on the promotion of improving population health through nutrition in the primary prevention of diet-related illness (Landman et al. 1998).

2.5.2.3: Competency Model

Landman et al. (1998) revealed that the curriculum was developed to reflect a competency model, which was determined through consultation with practitioners and employers to obtain consensus about the nature and scope of public health nutrition, which was originally defined within the constraints of cognitive abilities and biomedical knowledge only. Meeker et al. (2013) explain that competencies can be defined as behaviours and technical attributes that individuals must possess in order to perform effectively within a specified role, and is a common model used to ensure transparency and benchmark knowledge and skills in medical and health professionals. Landman et al. (1998) revealed that the original competency agenda was later extended beyond the realms of biomedical knowledge however, to recognise the need for interpersonal skills and transferable knowledge, reflecting a movement towards the recognition of knowledge and skills required of nutritionists beyond subject-specialism. The authors explained that knowledge and competence in psychological, social and cultural factors; in health education, health promotion, policy and programme development; and in sociology and politics, were increasingly becoming important requirements of professionals, and was eventually stipulated in the model that was developed by the society. Landman et al. (1998) explained that this was important to define levels of competence based on transparency, equity, and flexibility of access; for the competency model to reflect inter-professional knowledge and expertise, to manage the complex

demands of nutrition, and to assist collaborations with social scientists and health professionals who might work with nutritionists to provide services and/or education.

Developments to the nutrition register in the late 2000's saw the Nutrition Society develop the UKVRN, and separate registration to the register from membership to the Nutrition Society (Landman and Wootton 2007). In doing so the Nutrition Society then established the AfN to oversee the register, further the quest for professionalisation, and continue course accreditation; the Nutrition Society would remain as the learned society for nutrition in Europe and would continue to publish journals, textbooks, and offer CPD activities (Landman and Wootton 2007). The AfN was established by the Nutrition Society to be the professional body for registered nutritionists in the UK, aligning the regulation of the profession with the structural models used within medicine and dentistry, where professions are regulated by law through specialised councils such as the General Medical Council or Health and Care Professionals Council, and maintain membership of a professional association, such as the British Medical Association or British Dietetics Association (Landman and Wootton 2007). The AfN was established primarily to continue the task of achieving statutory regulation in the UK (Eggers and Kennedy 2010).

2.5.3: The Association for Nutrition

With the establishment of the AfN in 2010 the Nutrition profession in the UK evolved and four categories of nutritionists were developed: two at junior level; '*Associate Public Health Nutritionists*' and '*Associate Nutritionist*', and two at fully registered level; '*Registered Public Health Nutritionist*' and '*Registered Nutritionist*' (Cade et al. 2012). The structure of the register was later streamlined however to reflect the increasing diversification of the profession, eliminate confusion about the application process, and create equity between the competence requirements for registered nutritionists and registered public health nutritionists (Cade et al. 2012), which had previously been lacking (Landman et al. 1988). Therefore, one single registered status, '*Registered Nutritionist*', and one junior nutritionist, '*Associate Nutritionist*', was developed by the AfN (Cade et al. 2012), and is the model currently in use at the time of writing (Association for Nutrition 2012).

To gain entry to the register nutritionists must demonstrate knowledge and application of 5 core competencies (along with relevant sub-competencies) which can be found in table 2.6 (details of the sub-components of the competencies are not contained within the table). In addition to demonstrating the 5 core competencies, applicants eligible for full registration must demonstrate professional experience and document their work by submitting a portfolio of evidence detailing work that they have undertaken within three of the last five years (Association for Nutrition 2012). Associate nutritionists must demonstrate knowledge of all of the established core competencies but would not have the necessary experience to achieve full registration (Association for Nutrition 2012).

Table 2.6: Core Competencies and their Descriptions (Association for Nutrition 2012)

Core Competency	Description
Core Competency 1: Science	Knowledge and understanding of the scientific basis of nutrition. Understanding nutritional requirements from the molecular through to the population level – for either human or animal systems.
Core Competency 2: Food Chain	Knowledge and understanding of the food chain and its impact on food choice. Integrating the food supply with dietary intake.
Core Competency 3: Social/Behaviour	Knowledge and understanding of food in a social or behavioural context, at all stages of the life-course.
Core Competency 4: Health/Wellbeing	Understanding how to apply the scientific principles of nutrition for the promotion of health and wellbeing of individuals, groups and populations; recognising benefits and risks.
Core Competency 5: Professional Conduct	Understanding of professional conduct and the Association for Nutrition's Code of Ethics with evidence of good character.

2.5.3.1: Core Competencies

For Higher Education providers to achieve course accreditation from the AfN, the five core competencies required for registration with the UKVRN must be embedded into the degree programmes (Association for Nutrition 2012), using an adapted version of competency framework designed for course accreditation specifically (Association for Nutrition 2012). In the course accreditation document each of the five core

competencies is divided into specific sub-competencies, and the Association for Nutrition (2012) reveal that education providers must directly map each of the competencies (and sub-competencies) into modules and the course curriculum, and demonstrate how the degrees reflect the core areas of knowledge and skills required for associate level of entry to the UKVRN (Association for Nutrition 2012). Cade et al. (2012) revealed that nutritionists in other countries have similarly been defined by core competency models too, revealing that nutritionists in Australia, the USA, and Italy adhere to competency frameworks that reflect the AfN model. Earlier, Hughes (2004) undertook a modified Delphi study where a panel of 20 public health nutrition experts from seven countries from the European Union, USA and Australia were consulted to agree the essential competencies require of public health nutrition practice in the 2000's. The modified Delphi technique used by the authors was an anonymous, organic process where a series of intensive questionnaire rounds were administered to the panel, interspersed with controlled opinion and feedback, to generate data iteratively (Hughes et al. 2004). Results of the study supported the concept of core competencies as underpinning frameworks for knowledge and practice in public health nutrition, and supported the international acceptance of competency models, competency standards, and competency-based training for nutritionists in general.

Later support for the adoption of competency frameworks underpinning public health nutrition workforce development was provided by Jonsdottir et al. (2010), who also undertook a modified Delphi study with a European panel of public health nutrition stakeholders, to determine the competencies required for effective practice. A sample of pan-European academics, practitioners, and employers ($n = 52$) who were recognised as experts in public health nutrition workforce development, participated in the study. Results closely matched the earlier findings of Hughes et al. (2004), and many of the competency units identified reflected the earlier investigation. As before, panellists agreed that many competencies reflect public health out of necessity, but that strong emphasis was placed on the understanding of nutrition science, which was seen as an essential competency requirement by the group. A reported strength of the study by Jonsdottir was their strategic recruitment of employers, which the authors noted improved the authenticity of their findings on the assumption that the employers understood the competencies needed for employment and practice similarly. Interestingly, however, Jonsdottir et al. (2010) noted that the Delphi technique did not

differentiate the findings of the employers and academics, suggesting that both groups shared common opinion about the underpinning competencies required for effective practice. Cade et al. (2012) later revealed that the core competency model adopted by the AfN was verified by the association directly too, and registrants, accredited undergraduate course leaders and academics validated the competency framework using an online survey in 2011, agreeing that the knowledge and areas of application encapsulated by the framework accurately reflected practice requirements of nutritionists in the U.K.

Meeker et al. recently (2013) highlighted how education practices (at Master's degree level) might be insufficient to fully reflect the requirements of working in the field of humanitarian nutrition in the emergencies sector however. Through a detailed review of existing competency frameworks, which were contrasted with data taken from interviews with field experts, feedback from course trainers, and course curriculum and job specifications, Meeker et al. (2013) found large differences between what was delivered in education and the essential criteria of job specifications and interviews. Interestingly, Meeker et al. (2013) found that education accommodated most of the technical requirements of emergency nutrition, but lacked essential criteria that reflected behaviour change, communication, leadership, and management skills. While this work highlights concerns at post-graduate level, parallels in these findings can be drawn with the earlier concerns of the Nutrition Society, who found that when establishing their earlier curriculum framework for undergraduate nutrition, that there was a need to engage with the social sciences and accommodate a wide range of general, transferrable, and interpersonal skills to gain employment and achieve multi-disciplinary working. Interestingly too, results from Meeker's work partially support the claims of Schubert et al. (2012), who suggest that nutrition knowledge only partially engages with social science knowledge; the lack of information about behaviour change identified by Meeker et al. (2013) might reflect some of Schubert's concerns (see 2.5.4.1).

2.5.3.2: Areas of Practice

While the AfN unified the titles of registered nutritionists and public health nutritionists, Cade et al. (2012) documented that the AfN also developed five areas of practice that Nutritionists can register to that reflect the scope of practice in the UK: *'Animal Nutrition', 'Food', 'Nutrition Science', 'Public Health Nutrition,' and 'Sport*

and Exercise Nutrition'. The AfN (2012) reveal that animal nutritionists apply specialist nutritional knowledge to animal domains. Food nutritionists specialise their knowledge of food and work in the food industry, academia or science. Nutrition scientists work within research and academia, generating and disseminating specialist scientific knowledge. Public health nutritionists develop, implement and evaluate nutrition policies and programmes, and sport and exercise nutritionists apply specialist knowledge to the advancement of sport performance and within exercise contexts (Association for Nutrition 2012). The competency framework developed by the AfN defined the knowledge and practice requirements of all nutritionists in terms of the five core competencies.

Nutrition as a professional discipline, however, despite its growth and diversification, has been criticised in every decade since the 1980's for a lack of engagement with social science and for its (alleged) partial appreciation of complex dietary problems (Eide 1982, Crotty 1993, Pelto et al. 2003, Schubert et al. 2012). Schubert et al. (2012) contend, in their critical discussion, that nutrition science largely reflects its development from a biomedical paradigm, which through its positivist underpinnings, naïve realist epistemology, and reductionist approach to investigation, neglects the encompassing social dimensions of eating and food behaviour (Schubert et al. 2011). Schubert's assertion partially validate the earlier concerns of the Nutrition Society, who while developing their earlier iterations of the UKVRN during the 1990's and 2000's, noted that adjustments needed to be made to the competency framework to reflect an understanding of social science (Landman et al. 1998, Landman and Wootton 2007). This adjustment was deemed necessary due to the competency document's apparent weighting towards biomedical knowledge and cognitive skills. Landman et al. (1998) explained however that this was also necessary to reflect the changing landscape of public health nutrition, and to facilitate multi-disciplinary working.

2.5.4: Critiques of Nutrition Science and Nutrition Education and Training

McKenzie (1980) argued as early as 1980 that there was a need for nutritionists to embrace social knowledge and better engage with the social, psychological and economic factors that determine food choices and eating habits. McKenzie's suggestion was also echoed at the time by Rozin (1981), who wrote that in order for nutrition science to more accurately understand the interface between everyday life and nutrition

problems, nutrition scientists needed to strike a balance between the technical concerns of scientific enquiry and the contextual understandings of social research. Similar concerns were later raised by Crotty (1993), who theorised that eating is a diatremic composed of pre and post-swallowing domains that require different approaches to understanding and investigation. Crotty described the pre-swallowing domain as the behaviours, cultures and societal factors that lead to eating, and described the post-swallowing domain as the biological, physiological, biochemical, and pathological disciplines that explain human responses to eating (Crotty 1993). Crotty echoed the opinions of earlier authors, and voiced concerns about a lack of engagement with social knowledge in nutrition science, and alleged that only a limited understanding of the pre-swallowing domain existed, recommending that further work was needed to engage with and understand these important dimensions (Crotty 1993).

Pelto et al. (2003) continued the discussions into the early 2000s and conceptualised and described a hypothetical model for a more holistic nutrition science; one that addresses complex issues such as the social determinants and physical mechanisms of eating, and the social and physical consequences of food and nutrition at the population and individual level. The authors suggested that social science disciplines such as economics, anthropology, sociology, psychology, political science, demography, and epidemiology contain important social constituents that need to be integrated into the nutrition paradigm, in order to better understand the diet-related problems of modern society (Pelto et al. 2003). Pelto et al. (2003) used the growing obesity problem as evidence for their position, suggesting that failure to contain and manage the condition reflects an incomplete approach adopted for its understanding, prevention and treatment. Delormier et al (2009) advanced the discussion further in the late 2000's, describing food and eating as a social practice, in a sociological context, and as a product of structure (the social institutions and construct that influence behaviour), and agency (the capacity to which individuals act of their own free will). Importantly, and recognising a better-engagement with social knowledge since the criticisms posed by earlier authors, Delormier et al. (2009) suggested that behaviour-oriented research might have overemphasized the extent to which rational choice drives eating, undervaluing the role that eating is embedded into everyday life and societal structure.

2.5.4.1: Schubert et al. (2012)

Delormier's contentions were recently reflected, expanded upon, and critiqued by Schubert et al. (2012), who articulate their concerns about the dominant research paradigms and educational practices underpinning modern nutrition science. Schubert et al. (2012) contend that while nutrition has begun to embrace the social sciences, important misconceptions about what is social knowledge, the undervaluing of its role in nutrition, and an imbalance between social, scientific, and technical knowledge, proliferate within the profession. Discussing Delormier's earlier work, Schubert et al. (2012) explain that structure and agency co-exist, and reveal that structure influences human behaviour and human behaviour can influence social structures. Validating their argument, Schubert et al. (2012) describe modern research examples of structural nutritional concerns, such as socio-economic disadvantages and nutritional inequalities, and the conceptualisation of the obesogenic environment as an explanation of modern obesity trends. Importantly, Schubert and colleagues explain that these advances in knowledge, while critical in building important frameworks to understand social structures relevant to nutritional problems, provide only an incomplete picture of these nutritional problems. Schubert and colleagues explain that this knowledge provides information about the social conditions that shape food choice, but neither illustrates the experiences of living within these conditions nor how different people respond to living within these conditions. Specifically, Schubert et al. (2012) warn of the potential to overemphasise structural models within nutrition science, which might overshadow important agency-oriented meaning perspectives, leading to a unidimensional understanding of social knowledge within the field. Interestingly, this contention differs from the earlier thoughts of Delormier et al (2009), who suggested that structural explanations of nutritional problems were undervalued and under-represented in the social strands of nutrition science.

The shift towards a better representation of structural social models within nutrition science might reflect important advancements made in nutrition knowledge in the years since Delormier et al. (2009) published their work. Indeed, Schubert et al. (2012) critiqued an emerging bias towards structural explanation in nutrition, and suggested that structural approaches to social knowledge are far-removed from agential understanding. Schubert et al. (2012) go on to explain that nutritionists trained in the

dominant biomedical model appear to have steered social knowledge in nutrition science towards branches of behavioural epidemiology and quantitative nutritional sociology. Schubert et al. (2012) thus voice concerns about an emerging lack of agential knowledge within nutrition science, and explain that understanding both structural models and agential meaning perspectives is necessary for the complete understanding of diet-related problems. Importantly, Schubert et al. (2012) contend that there is now the need for nutritionists to understand the important narratives behind eating and diets, to construct them as an outcome of a complex set of processes, which the authors contend, would lead to more complete, effective, and tailored nutritional interventions, educational programs, and policies.

Schubert and team finally conceptualise a new model for nutrition, based upon and developed from the previous work of the authors described in this review. Thus Schubert et al. (2012) describe a new '*socially-engaged*' nutrition that centralizes social knowledge as a fundamental constituent that underpins the study of diet-related problems, instead of integrating facets of social knowledge disjointedly at a surface level. A definitive point of Schubert's discussion is their criticism of the education and training of nutritionists, which the authors explain has proliferated and exacerbated many of the issues that they describe. Schubert et al. (2012) contend that until social knowledge is fully integrated into the curriculum models of undergraduate and postgraduate degree programs, and perhaps until specialist social scientists become appointed within the teaching faculty of nutrition programs too, nutrition education will fail to provide student nutritionists with access to social science knowledge, and the skills necessary to engage deeply with social science research, reflecting its bias towards (and development from) biomedical knowledge. Indeed, Schubert et al. (2012) contend that until social knowledge becomes firmly embedded into the education and training of nutritionists, that nutrition science will fail to develop and grow as nutritionists remain underprepared to understand and treat modern society's diet-related challenges.

2.5.5: Summary

This review has documented the development of the UKVRN and the creation of the AfN to oversee the UKVRN, which was also tasked with achieving statutory regulation and continuing the accreditation of nutrition degree programmes by the Nutrition

Society, in an effort to further professionalisation of the field (Cade et al. 2012). This review has also articulated the concerns of several authors who have criticised nutritional science and the education and training of nutritionists (Pelto et al. 2003, Schubert et al. 2012). While these opinions are thought provoking and offer cause for reflection, there appears to be little empirical support for many of these assertions. However, the poor engagement with and understanding of social knowledge within nutrition science is a recurrent criticism articulated by the literature reviewed in this chapter (Crotty 1993, McKenzie 1980, Pelto et al. 2003, Schubert et al. 2012), and appears to have subsisted for over three decades. Partial verification for these concerns can be found in the writing of Landman et al. (1998), who when chronicling the development of the nutrition curricula, discussed how the Nutrition Society recognised the need to engage with a broad range of social science domains, including psychology, culture, education, health promotion, sociology, and politics, and embed them into revised iterations of the curricula, prior to establishing the AfN. However, until empirical support is provided via exploratory investigation, critiques of the knowledge and education of nutritionists, despite their recurrence and homogeneity, are unsubstantiated at this time.

2.6: CONCLUSION

This chapter has highlighted that weight management is a difficult and complex experience that might require lifelong changes to lifestyle and behaviour for it to be sustained. Furthermore, this chapter has highlighted that the skills and competencies required to support people with complex needs might not be well reflected in the nutrition curriculum (Schubert et al. 2012). Specifically, this review has differentiated successful and unsuccessful weight maintainers on the basis that cognitive and behavioural differences exist between the two groups (Chambers and Swanson 2010, Hindle and Carpenter 2011, McKee et al. 2013). Unsuccessful maintainers appear to perceive dieting as necessarily restrictive, and adopt rigidly restrained dietary patterns which are perceived to be separate from their normal eating habits (Epiphaniou and Ogden 2010, Green, Larkin and Sullivan 2009). This restraint creates feelings of deprivation and leads to cheating, which then leads to perceptions of guilt and failure, which might then lead to disengagement with weight-loss behaviours (Chambers and Swanson 2010, Green, Larkin and Sullivan, Hindle and Carpenter 2011, McKee et al. 2013). Unsuccessful maintainers struggle to cope with lifestyle interruptions and use eating to improve mood, however this then creates further guilt and disengagement with weight-loss dieting (Chambers and Swanson 2010, Green, Larkin and Sullivan 2009, McKee et al. 2013). Eventually, once they have the cognitive resources to tackle the regained weight, unsuccessful weight maintainers make behavioural changes and attempt to lose weight once more, but do so again with the familiar, unsustainable, restrictive dietary strategies (Chambers and Swanson 2010, Green, Larkin and Sullivan 2009, McKee et al. 2013).

Successful maintainers however appear to adopt life-long strategies to achieve and maintain their weight loss (Chambers and Swanson 2010, Hindle and Carpenter 2011, McKee et al. 2013). They adopt flexible eating patterns that allow them to avoid deprivation (Chambers and Swanson 2010, Epiphaniou and Ogden 2010, Hindle and Carpenter 2011, McKee et al. 2013). They have positive social-support structures that reinforce their weight-loss efforts too (De Souza et al. 2005, Whale et al. 2014). Importantly, they appear to be robust to lifestyle interruptions and possess coping mechanisms for negative life events which could affect adherence, and are quick to respond to unwanted weight gain with small and simple adjustments to diet and physical

activity (Hindle and Carpenter 2010, McKee et al. 2013). The studies reviewed in this chapter point to a cluster of factors underscoring long-term weight maintenance, indicating that along with necessary changes to eating habits, that successful long-term weight loss is underpinned by changes to lifestyle, behaviour, and cognitions. This research, however, appears to be in its infancy at the time of writing, suffers from methodological problems that compromise the quality of this evidence, and does not explore weight loss specifically or comprehensively. The weight-loss phase of weight management might lead to the development of the behaviours and cognitions that form the foundation of successful weight maintenance in some individuals (Hindle and Carpenter 2011), but this phase might also lead to unsuccessful weight maintenance in others too (Green, Larkin and Sullivan 2009), depending on what (and how) behaviours and cognitions were experienced (Chambers and Swanson 2012, Green, Larkin and Sullivan 2009, McKee et al. 2013). As articulated several times within this review, weight management appears to be a complex problem, but important features such as weight loss might not be fully recognised in the literature at this time.

This review has also documented the development of nutrition in the UK since the early 1980s, highlighting the conceptualisation and development of the UKVRN, the AfN, and the core competency criteria which underpins registered status and undergraduate course accreditation similarly. This review has also discussed an ongoing criticism of nutrition science, which has been alleged to neglect social knowledge (Crotty 2003, Pelto et al. 2003), be biased towards biomedical information (Crotty 2003, Pelto et al. 2003, Schubert et al. 2012), and proliferates an incomplete understanding of complex nutritional problems (Pelto et al. 2003, Schubert et al. 2012). It has been revealed that some authors claim that new knowledge is needed to understand the important narratives behind eating, and further agential understanding of dietary problems, which might be lacking in the literature at this time (Schubert et al. 2012).

These same authors have suggested that nutrition education is continuing to propagate the (alleged) poor recognition of (and engagement with) social science knowledge within nutrition science (Schubert et al. 2012), and is not effectively equipping nutritionists with the knowledge and skills needed to understand, prevent, and treat many diet-related problems (Crotty 1993, Delormier et al. 2009, Pelto et al. 2003, Schubert et al. 2012). Partial support for some of these contentions is perhaps found

within the earlier discussion of weight-management experiences. Weight management was revealed to be multidimensional, with important psycho-social, environmental, and physical constituents (see 2.4). Nutritionists, it was revealed (see 2.5.1), might work with weight-loss clients (Cade et al. 2012), and might therefore require knowledge of the preceding factors to provide effective services. It was revealed that the Nutrition Society recognised the requirement for the nutrition curricula to diversify beyond biomedical knowledge, and include multi-disciplinary information, reflecting the diversification of practice requirements experienced in the 1990s and 2000s (see 2.5.2.3) (Landman et al. 1998). It was also revealed however that postgraduate nutrition education was found to lack important psycho-behavioural knowledge within contexts relevant to the humanitarian nutrition sector (see 2.5.3.1) (Meeker et al. 2013), reflecting the suggestion that nutrition education might be insufficient (Schubert et al. 2012). Indeed, it might be hypothesized, based on the discussions in this review, that nutrition education is not fully representative of the weight-loss needs of individuals, given the complexity of weight management and its deep-rooted, psycho-social constituents (Epiphaniou and Ogden 2010, Green, Larkin and Sullivan 2009, Hindle and Carpenter 2011); the (alleged) poor engagement with social science endemic within nutrition science (Delormier et al. 2009, Meeker et al. 2013, Schubert et al. 2012); and the paucity of explorative weight-loss literature present at this time. However, this chapter has also revealed that empirical support for the claims of authors who criticise nutrition science and nutrition education (as described within this review) is absent at the time of writing, and cannot be found in the literature. Indeed, research into the education and training of nutritionists in general, it was revealed, appears to be lacking at the time that this review was written.

2.7: AIMS AND OBJECTIVES

The aims of this thesis are twofold: firstly to further agential understanding of weight loss and explore the weight-loss experiences of a sample of UK dieters; secondly to contrast the AFN's undergraduate core competency framework with the interview data obtained from study one. To achieve these aims, the experiences of a sample of UK residents will be explored and their weight-loss narratives will be documented in rich detail, at an agential level. This is study one. Secondly, in response to the claims of Schubert et al. (2012) that nutrition education propagates only a partial understanding of complex dietary problems, the AFN's undergraduate core competency framework will be contrasted with the interview data obtained from study one. This is study two. This will be undertaken using Framework Analysis. A detailed explanation of these studies will follow a description of the methods employed within this thesis, which follows this section.

CHAPTER 3: GENERAL METHODS

3.0: Introduction

This chapter will discuss the structure of studies one and two, explain the meta-theoretical positioning of this research and discuss and rationalise the use of Framework Analysis as the chosen methodology for this thesis.

3.01: Sequential Structure of this Thesis

To address the aims of this thesis studies one and two were performed sequentially. Study one was conducted to a) provide deep insight into the weight-loss experience and b) provide experiential data necessary for the successful completion of study two, which contrasted the weight-loss experiences of a group of participants with nutrition education and training competencies. In study one a group of dieters ($n = 8$) were interviewed using a semi-structured interview. This method of inquiry was adopted to facilitate the deep exploration of the weight-loss experiences of these individuals in line with ontologically realist research (see 3.1). In study two the participants' experiences will be contrasted with the AfN's undergraduate course accreditation core competency criteria. The sequential structuring of this thesis aligns with a critical realist approach to research design (Sobh and Perry 2006) and is commensurate with the meta-theoretical positioning of this research; study one would be undertaken first to collect agential data and explore the participants' experiences, but would also assist with the development of the conceptual frameworks of study two, serving as prior work (Sobh and Perry 2006). This is further explained in section 3.1.1.

3.1: Ontological and Epistemological Framework

This thesis was conducted within the theoretical framework of the critical realism meta-theory described by Maxwell (2012), which is an inclusive meta-theoretical perspective that accommodates the strengths of positivism and constructionism while avoiding many of their pitfalls (Owens 2011). Positivism is the philosophy of science, traditionally credited to the works of Descartes, Galileo and Comte, and assumes that there is an objective reality that can be observed, described, and explained, conforming to a naïve realist meta-theoretical position (Owens 2011). Positivist research also conforms to empiricism, which is an epistemological viewpoint positing that knowledge

is gained via sensory experience (McNamee 2005). Positivism typically makes use of the scientific method and relies on experimental and manipulative methods of data collection (McNamee 2005). Positivism therefore forms the basis of quantitative research (Ritchie et al. 2013), which has been critiqued for its rejection of the unobservable, subjective meaning, purpose and perspectives (Guba and Lincoln 1994). Constructionism (a synonym for constructivism) exists in opposition to positivism and assumes that reality is constructed as a product of intersubjective perspectives that have developed socially and experientially (Ritchie et al. 2013). Constructionism conforms to a relativist meta-theoretical position which assumes that reality is relative—local and contextually constructed (Guba and Lincoln 1994). Constructionism is related to interpretivism and forms the basis of qualitative investigation, but has been criticised for its privileging of subjective meaning and inability to recognise competing epistemologies (Calder 2011, Guba and Lincoln 1994). Constructionism exists paradoxically to positivism. Critical realism reflects a post-positivism movement (Guba and Lincoln 1994, Maxwell 2012, Morris 2003) and is theoretically situated between positivism and constructionism in a hypothetical continuum of paradigmatic assumptions—critical realism adopts tenets of both models.

As a meta-theoretical perspective Maxwell's critical realism differentiates ontology and epistemology (Maxwell 2012). Ontology is the philosophical system concerned with the nature of reality (McNamee 2005, Wimsott 2007). Epistemology is the philosophical system concerned with the nature of knowledge (Ritchie et al. 2013, Wimsott 2007). Critical realism recognises realism as its ontological worldview and theorises that the social world exists independently of human understanding (Maxwell, 2012). This differs from the naïve realism of positivism that assumes that reality can be observed (Owens 2011). However, despite true reality being unknowable to mankind, critical realists posit that humans possess unique interpretations of reality that reflect their life experiences and that these many perspectives are equally valid (Morris 2003). Thus, while critical realism is ontologically realist (similar to positivism) it is epistemologically relativist (similar to constructivism), meaning that reality is a true (but unknowable) concept and that knowledge is constructed and contingent on factors such as perception, experience, and convention (Guba and Lincoln 1994, Maxwell 2012). Whilst critical realism was originally conceptualised and developed by Roy Bhaskar as an emancipatory meta-theoretical model that he described as '*dialectical*

critical realism' (Bhaskar 2008), many iterations of realism have been discussed in the literature and include '*experiential*' (Lakoff 1987), '*constructive*' (Madzia 2013), '*emergent*' (Morris 2003), '*natural*' (Hendley 2006), and '*multi-perspectival*' (Wimsatt 2007) realism. Maxwell's interpretation (Maxwell 2012) however departs from Bhaskar's original model and aligns more closely to these latter descriptions, and might be synonymous with the '*subtle*' realism meta-theory (Maxwell 2012, Morris 2003). Subtle realism assumes that all research involves observations and interpretations and that reality can only be understood through subjective interpretation and understanding (Duncan and Nicol 2004), similar to Maxwell's elucidation.

3.1.1: Critical Realism

Realism and constructionism are diametrically opposed meta-theoretical positions (Calder 2011), however the conjoining of ontological realism and epistemological constructionism within critical realism renders research sensitive to both observation and interpretation (Owens 2011). Critical realism is characterised by its epistemological dualism (the perceived/cognitive world vs. the outside/unknowable world), methodological pluralism (the acceptance/legitimacy of divergent research methodologies) and is a meta-theoretical position which often underpins mixed-methods research, and multi-perspective study of phenomena (Olsen 2009). Within realist (qualitative) research language can accurately reflect and describe experiences (Widdicombe and Wooffitt 1995). Within constructionist (qualitative) research language can articulate the constructs and perspectives that the world has been experienced within (Braun and Clarke, 2006). Within this thesis study one required the interviewing of the participants to gain a rich, descriptive account of their experiences. Semantic themes were therefore indexed to capture and describe these experiences in detail, which is typical of epistemologically realist research and similar to the semantic theming of thematic analysis (Braun and Clarke 2006). Study two required the experiential data of study one to be contrasted to the AfN's core competency framework, which provides a curriculum framework for nutrition education in the UK (Association for Nutrition 2012), to investigate if the core competency criteria adequately reflects the experiences and needs of dieting individuals. For these comparisons to be made, study two required the explanation of the participants' experiences using latent themes (in addition to semantic themes) to understand what

concepts these experiences reflected theoretically—an epistemologically constructionist task similar to the latent theming of thematic analysis (Braun and Clarke 2006). The latent theming of study two was necessary to create equivalence between the interview and core competency data, which were heterogonous sources of information.

Performing the thesis under the banner of critical realism would facilitate the concomitant description and explanation of perspectives, experiences, and realities and allow for the cross-referencing of the participants' data with the core competency document without the need to perform the research under the constraints of multiple (and potentially opposing) paradigms (Maxwell, 2012). A tenet of critical realist research, which differentiates it from other qualitative paradigms, is the requirement for researchers to engage with prior theory during the early phases of the research process, so that underlying structures and conceptual models are developed before data analysis begins (Sobh and Perry 2006). This typically means that critical realist research follows a sequential/staged structure so that prior work is undertaken to generate information, identify conceptual frameworks, and explore underlying structures and theory via consultation with literature and/or people with experience of the phenomenon of interest (Sobh and Perry 2006). Study one of the this thesis therefore served multiple purposes: this study would be undertaken first to collect data necessary for the completion of study two (which was the main focus of this thesis), would serve as useful prior work in line with the assumptions of critical realist research design (Sobh and Perry 2006), and would also be a standalone, in-depth exploration of the weight-loss experience, reflecting the requirement for this research as indicated in section 2.4 of chapter 2.

3.2: Methodological Assumptions and Terminology

The trustworthiness of qualitative research has been the subject of concern however (Hammersley 2007, Mays and Pope 2000, Porter 2007), typically because positivist constructs of validity and reliability cannot be ensured nor addressed within qualitative methodology (Shenton 2004). Different methodological approaches to inquiry necessitate different approaches to achieving and ensuring criteria such as objectivity, validity, reliability, generalizability and rigour (Porter 2007, Guba and Lincoln 1994). These differences reflect the underpinning ontology of the research. Recall that qualitative inquiry is differentiated from science and the scientific method (which is underpinned by naïve realism) due to its positioning towards relativism, which rejects

objectivity and celebrates subjectivity (Guba and Lincoln 1994, Mays and Pope 2000). Issues of validity, reliability and generalisability appropriate to naïve realism therefore become redundant within relativist inquiry (Mays and Pope 2000, Porter 2007). This has led to the development of other terminology used to appraise and describe qualitative research: ‘*credibility*’ (internal validity), ‘*transferability*’ (generalisability), ‘*dependability*’ (reliability) and ‘*confirmability*’ (objectivity) (Guba and Lincoln 1994, Hannes 2011). These terms have become the preferred vocabulary of some qualitative researchers (Guba and Lincoln 1994), are all partially analogous to their realist counterparts (Hannes 2011), but are not universally recommended terms (Long and Johnson 2000, Maxwell 1992, Porter 2007). For a detailed explanation of these terms readers are advised to consult Guba and Lincoln (1994) and Hannes (2011) for additional information.

Critical realism adopts a realist ontological worldview and accepts that there is an unknowable reality that can be studied however attempts to understand this reality are fallible, best-representations only (Maxwell 2012). Critical realism reflects a post-positivist meta-theoretical worldview where the importance of concepts such as reliability and validity is relative to the purpose and circumstance of the research context (Guba and Lincoln 1994, Mays and Pope 2000, Maxwell 1992, Porter 2007). Critical realism posits that while true objectivity is impossible (true reality is unknowable in critical realism, Maxwell 2012), research should strive to attain objectivity and rigour as closely as possible (Maxwell 2012). Reliability and validity are concepts used to promote and evaluate objectivity and rigour within research aligned to naïve realism (McNamee 2005). Therefore, on the basis that critical realist research should strive for objectivity and rigour (Maxwell 1992), reflecting its realist ontological worldview (Maxwell 2012), and that credibility and dependability are not universally utilised terms in realist research (Long and Johnson 2000, Maxwell 1992, Porter 2007), reliability and validity will be the preferred terminology of this thesis, reflecting the practices of noted realist authors (Long and Johnson 2000, Maxwell 1992, Porter 2007). The alternative descriptions of dependability and credibility will however be provided in parenthesis to this terminology where appropriate, such as when discussing qualitative research generally or relativist approaches specifically; these terms will not be used when discussing studies one and two. Generalizability (external validity) will not be inferred within this thesis however on the basis that qualitative research does not

infer the generalization of research findings to wider populations (Maxwell 1992, Ritchie et al. 2013, Sobh and Perry 2006). Within quantitative study generalizability is sought via probabilistic sampling, statistical modelling, and statistical inference, to explain an objective reality that can be understood and described (Sobh and Perry 2006). Within realist qualitative research generalizability is analogous to transferability (Guba and Lincoln 1994), therefore research findings should be extended to create new conceptual frameworks, and/or to other settings/contexts, and not to populations outside the context of the research environment in an effort to explain them (Sobh and Perry 2006). Transferability will therefore be discussed within this thesis as a counterpart to generalizability.

3.3: Framework Analysis

Framework Analysis (FA) was chosen as the analytical tool for studies one and two for multiple reasons that will be explained here. Framework analysis sits within the family of qualitative analytical tools such as thematic analysis and qualitative content analysis (Gale et al. 2013). Typically, these methods determine differences and commonalities in data, drawing out relationships, and seeking to provide descriptive and/or explanatory themes (Gale et al. 2013). Framework analysis was originally developed by National Centre for Social Research for use in large scale policy research and is now widely used with health research (Gale et al. 2013). Notably, FA is characterised by the production of matrix outputs which allow for the comparison of cases (rows) and themes (columns), meaning that researchers can compare data across and within cases and themes easily and in detail. Typically, FA is used for the thematic analysis of semi-structured interview data however FA can accommodate other forms of textual information similarly (Gale et al. 2013). While FA can accommodate many forms of data, FA does not accommodate heterogeneous material (Gale et al. 2013). Framework Analysis therefore requires data to reflect comparable topics and concepts in order for data to be indexed within the matrices and for the comparisons to be made effectively. This latter point is an important assumption of FA that necessitated that measures needed to be taken in study two to ensure that the participants' and core competency data could be contrasted effectively.

Study one of this thesis provides a descriptive account of the participants' experiences and so the analysis of study one was performed inductively to characterise the data

(Braun and Clarke 2006). This data was obtained using semi-structured interviews, meaning that FA was an appropriate tool to analyse the data thematically using semantic themes as described earlier (Gale et al. 2013) (see 3.1 and 4.6). In study two, the participants' data however needed to be re-themed to reflect the constructs, theories and tools that explained their experiences (see 5.2.2). This was necessary to create equivalence between the data sources and improve the homogeneity of the dataset in line with the requirements of FA (Gale et al. 2013). Study two was therefore analysed inductively and deductively. Framework analysis allows researchers to address both emergent and *a priori* issues and has no epistemological underpinning (Furber 2010, Gale et al. 2013, Ritchie and Spencer 1994, Ward et al. 2011), meaning that FA could be used effectively to analyse the data inductively and deductively as required and that FA could be used within critical realist research. Whilst studies one and two were themed differently, the original intention of this thesis was to take the theoretical framework of study one and contrast this directly with the core competency model in study two. However, preliminary analyses revealed that the theoretical framework of study one was too dissimilar to the core competency model, necessitating that the data be re-analysed and explained as described above (using latent themes) in order for the comparisons to be made effectively. This is explained in chapter 5/study two (see 5.0).

Fundamental to the research question of this thesis, the creation of framework matrices (that is characteristic of FA) would allow for the participants' data to be contrasted with the core competency model effectively; rows would be used to represent the participants' and core competency data as cases; columns would be used to represent themes that emerged from the dataset (the participants' and core competency data were combined as a new dataset: see 5.2.2). A widely reported benefit of FA is that the technique necessitates the systematic reduction of data (Furber 2010, Gale et al. 2013, Ward et al. 2011), which creates a transparent audit trail of data management and data reduction (Smith and Firth, 2011). This improves the validity and reliability of the method, which have been reported concerns of some qualitative methodologies (Hammersley 2007, Ritchie et al. 2013), and accommodates the issue of poor transparency that was observed in the qualitative weight-management research reviewed in chapter 2. Reliability, validity and rigour are important factors within realist research perspectives and necessary steps need to be taken to ensure that these are achieved and evidenced within realist research studies (Morris 2003). This, along with the matrix

construction and case and theme-based analyses, were underpinning factors in the utilisation of FA within this thesis. Finally, FA was developed as a practical tool to address applied research problems and to inform policy development and practise (Furber 2010, Ritchie and Spencer 1994, Ward et al 2011), and has been used successfully in research with similar aims to this thesis (Staniford et al. 2011).

3.4: Reflexivity

Kuper et al. (2008) highlight the importance of reflexivity in qualitative research and recommend that researchers disclose issues such as the researcher's background and demographic information, the power dynamics between researcher and participants that shape data collection, and how these factors might influence research choices and outcomes. Whilst power dynamics during qualitative research might be shifted towards the researcher during data collection (Kuper et al. 2008), the relationship in this research was one of collaboration, where the researcher sought to adopt a guiding approach and facilitate the participants' discussion through building rapport, facilitating dialogue, and pursuing the interview agenda flexibly, taking into account and exploring the participants' responses actively, which is characteristic of realism (Morris 2003).

During the conceptualisation of the study, the principal researcher, who is a male registered nutritionist educated to MSc-level completing his Professional Doctorate, sought to separate his experiences as a professional from the decisions made during the development, design and undertaking of the study, such that data collected best represented the participants' experiences and that data was collected as objectively as possible, which also reflects realism (Morris 2003). To achieve this and reduce the risk of bias, throughout the research process the researcher sought validation for important decisions. These included decisions that formed the development of the research question, the interview transcript, and the data analysis and interpretation, which were verified with a team of colleagues. This was achieved by liaising with colleagues who whilst being knowledgeable in the research area, were able to offer unbiased, expert advice. Both colleagues were Professors in related disciplines to the field of study and possessed extension research experience and were colleagues of the principal researcher, who works as a lecturer at Sheffield Hallam University. Collected data was also verified with participants to ensure that this accurately represented their experiences, improving validity (Porter 2007). Participants had no relationship with

the principal researcher prior to volunteering to participate in this research however understood that this research was being undertaken to facilitate the successful completion of a Professional Doctorate; all communications between the principal researcher and participants were conducted via email prior to undertaking the interviews. Whilst stringent measures were taken to partition out biases, as is the case with all qualitative research (Kuper et al. 2008), the researcher is firmly embedded into the infrastructure of the investigation (Ritchie et al. 2013). Therefore, a detailed, reflexive narrative of the researcher's background, decisions, perspectives, and the co-construction of knowledge precipitated by the analyses of this thesis are provided in chapter 7 (see 7.1.1 and 7.2), and were developed from a reflexive diary completed during the research process. This reflexive account was completed to enhance the transparency of the research process, improve the validity of the research, and is commensurate with the assumptions and requirements of realist research methods (Maxwell 2012).

3.5: Summary

This thesis was conducted within the meta-theoretical position of Maxwell's description of critical realism (Maxwell 2012). Two studies were completed in sequential order. Study one was conducted first and investigated the experiences of a group of dieters to provide a rich and detailed, descriptive account of their weight-loss experiences. Study two was performed immediately after study one and contrasted the participants' experiences with the core competency framework developed by the AfN to accredit undergraduate nutrition degrees. However, for these comparisons to be made effectively, the participants' data needed to be re-analysed to create equivalence between the two forms of data. Framework Analysis was used in both studies to manage, reduce and analyse the data systematically and transparently. Studies one and two follow this chapter and a reflexive account of the conceptualisation and undertaking of this research can be found in chapter 7.

4.0: Introduction

The aim of study one was to further agential understanding of weight loss, add to the existing qualitative weight-management literature, and explore the weight-loss experiences of a sample of UK dieters. To achieve this aim, this study sought to obtain a sample of UK residents and explore their weight-loss narratives qualitatively, in rich detail.

4.1: Recruitment

Participants provided informed consent and undertook semi-structured interviews between May-August 2013. Ethical approval was granted for the study by Sheffield Hallam University Ethics Committee (appendix 1). In order to provide rich data both male and female participants, who may or may not have been overweight ($\text{BMI} > 25.0 \text{ kg}\cdot\text{m}^2$), or obese ($\text{BMI} \geq 30.0 \text{ kg}\cdot\text{m}^2$), with experience of either successful or unsuccessful weight-loss efforts, and who were or were not currently undertaking a weight-loss diet at the time of the interviews, were invited to participate in the study. Participant eligibility criteria for this study were purposefully broad to obtain a rich account of the weight-loss experience. Potential participants would not be excluded if they were unsuccessful with their weight-loss attempts, nor would potential participants be excluded if they were not actively seeking weight loss at the time of the interviews.

Overweight and obese individuals might be at risk of body-image issues and eating disorders (Schwartz and Brownell 2004). Therefore, neither anthropometric (stature: cm, body-mass: kg) or BMI data ($\text{kg}\cdot\text{m}^2$) was collected in this study due to the potential distress that collecting this data might have caused participants with body image issues (Schwartz and Brownell 2004). The collection of unnecessary, potentially sensitive, or harmful data is considered to be unethical (Ritchie et al. 2013), and the collection of anthropometric data was not necessary for the aims of this study. To safeguard participants in the event that symptoms of eating disorders became apparent during the interviews, participants would be asked to complete the Eating Disorder Examination Questionnaire (EDE-Q 6.0), which is a validated self-reported eating disorder questionnaire (Fairburn and Beglin 2008, Mond et al. 2004), and advised to seek

medical advice about their symptoms if deemed appropriate. No participants, however, were required to complete the EDEQ-6 upon completion of their interviews.

4.1.1: Sampling Strategy

Participants were sampled using purposive sampling methods and data saturation was used as a guiding principal for sample size (Ritchie et al. 2013). Adverts for participants who had experiences of undertaking a weight-loss diet were placed in local slimming clubs, health clubs and gyms, the employee intranet and email lists at Sheffield Hallam University, and by networking with colleagues. All participants communicated to the principal researcher via email and had no relationship with the researcher prior to the study. Guest et al. (2006) demonstrated that samples as few as 6 participants were sufficient to achieve data saturation, meaningful themes and valuable interpretations in their investigation to determine non-probabilistic sample size requirements; a sample of 6 participants was therefore regarded as a likely minimum requirement to achieve data saturation in this study. Participants were interviewed once during the interview period in May-August 2013 and each transcript was analysed immediately after receipt from the transcription company. Data saturation was achieved when no new themes emerged from the transcripts, halting sampling; sample size was therefore determined iteratively and participants were recruited individually up until data saturation was achieved. Prior to undertaking the interviews participants were briefed as to the purpose of the research, that participation was voluntary, that collected data would be treated as confidential and anonymized prior to transcription, and that they had the right to withhold information or withdraw from the interview at any time. No participants refused to participate in the research upon approach by the researcher and no participants withdrew from the study upon commencement. Participants' characteristics can be found in table 4.2 in the results section (see section 4.10).

4.2: Interview Guide

The interviews were facilitated with a semi-structured interview guide, which can be found in the appendices (appendix 4), that was designed to explore weight-loss experiences. The interview questions were constructed from weight-loss literature and were verified by the supervisory team prior to being administered. The following weight loss and qualitative methods literature were consulted to assist with the

development of the interview guide: Elfhag and Rössner (2005), Kvale (1996), Legard, Kegan and Ward (2003), Stubbs et al. (2011, 2012), Stubbs and Lavin (2013), Teixeira et al. (2004, 2005, 2010, 2012). The interview guide consisted of 11 sections containing multiple questions within each, was piloted prior to the study, and was verified by the supervisory team. Reflecting the usage of data saturation and iterative sampling to determine participant numbers, it was not always appropriate to discuss each of the topics with every participant. Therefore, depending on the extent of their experiences, some participants explored some topics of the guide in detail, such as motivations, but did not explore others, such as physical activity, because aspects of the guide were found to be irrelevant to their experiences. However, seeking data saturation via the sampling strategy employed for this research ensured that all topics were addressed upon sampling cessation. The interview questions were open ended and addressed topics such as physical, psychological and social experiences of dieting, and determinants of successful and unsuccessful weight-loss efforts. A list of the interview topics can be found in table 4.1. Probing questions were constructed to supplement the main questions and were used to encourage further, in-depth responses and saturate the data when needed (Legard, Keegan and Ward 2003). Each of the interviews lasted between 60-75 minutes.

Table 4.1: Interview Topics

Section	Purpose/Information
1	Introduction and informed consent
2	Weight-loss history
3	Physical experiences of dieting
4	Motivations
5	Diets and nutrition
6	Physical activity
7	Psychological and social experiences of dieting
8	Obstacles to and enablers of success
9	Roles of others
10	Recommendations to others
11	Summary and respondent validation

4.3: Interview Data Collection

Interview data was collected face-to-face, prompted by the interview guide and recorded using a portable digital recording device (Olympus Digital Voice Recorder, model WS-

321M, Olympus Imaging Corp, China). In all instances the interviews were conducted in a neutral, quiet environment that was mutually agreed upon prior to data collection. In most instances this was the participant's place of work, a coffee shop, or a quiet public space such as a library. Despite the interviews being conducted in public spaces, in all instances only the participant and researcher were present for each interview. The interviews were supplemented with field notes taken to identify important information that could be explored within the interviews and inform the later analysis (Arthur and Nazroo 2003, Braun and Clarke 2006). Respondent validation was sought for each participant after their interview to enhance validity (Hannes 2011, Kvale 1996). To clarify how this was achieved, at the end of each interview and using the notes collected, the principal investigator summarised the key points that the participants discussed, offered each participant the opportunity to agree that the summary reflected their experiences, and informed them that they could offer new or additional information if they felt that it was needed. Upon completion of the interviews the audio files were saved to a password-protected external hard drive (WD My Passport, Western Digital; Irvine, California, USA) under the prefix of participant 1, participant 2, etc., to ensure participant confidentiality and anonymity.

4.4: Data Transcription and Analysis

All interviews were transcribed *verbatim* by a data transcription service (JHTS, Birmingham, UK). All files were received by the transcribers under the anonymised numerical file names, were transcribed using Microsoft Word 2010 (Microsoft, Redmond, WA, USA) and returned to the principal researcher via email. All transcripts were returned to participants for comment/correction; no participant felt the need to provide further information however. Data analysis for both studies was conducted by the principal investigator only, using FA described by Ritchie and Spencer (1994), Ritchie and Lewis (2003), and Ritchie et al. (2013). The explicit data reduction and management of FA, facilitated by the production of the matrix outputs, accommodates many of the methodological issues highlighted about the existing qualitative evidence discussed in chapter 2 (see 2.2.1), enhances the reliability and validity of the analyses undertaken with using the method (Gale et al. 2013), and facilitates the clear and rigorous reporting requirements of realist research. These factors, along with those discussed in section 3.3 of chapter 3, led to the decision to utilise FA in study one over

other methods such as thematic analysis, which achieves similar outcomes but via different means (Braun and Clarke 2006). The data management and analysis process of FA is described below.

4.5: Stage One: Data Familiarisation

The first stage of analysis consisted of data familiarisation. To achieve familiarisation, the principal investigator read each of the transcripts and consulted the field notes that were collected. During this stage the audio-files were replayed multiple times to become reacquainted with the dialogue. Each of the transcripts was analysed repeatedly and in depth to ensure that no information was overlooked. Ritchie and Spencer (1994) recommend that during this stage data must be cross-referenced with the aims and objectives to ensure that the data reflects the research question; the aims and objectives of this study were consulted regularly therefore. Each of the transcripts was then imported into a new Word document file (.docx). Within this new file the raw data was inserted into a table to allow for a detailed line-by-line analysis of the text, which would also assist with preliminary coding and the identification of the thematic framework of stage two.

4.6: Stage Two: Identifying a Thematic Framework

During this stage initial codes were identified inductively on a line-by-line and paragraph-by-paragraph basis using open coding as described by Braun and Clarke (2006). Important text was highlighted and early thoughts and interpretations of the data were annotated in the margins of the documents as memos. At this stage a series of introductory codes were identified as recommended by Braun and Clarke (2006) and Frith and Gleeson (2004). Wherever possible participants' words were used to generate *in-vivo* codes, which was necessary to remain true to the data (Ritchie et al 2013). These words were noted in the column of the table adjoining the text as depicted in figure 4.1.

Figure 4.1: Sample Coding. Data obtained from participant 4.

1.		It's realistic.
2.	'discipline', 'focused my mind' 'for someone else to look at' (self-monitoring as a facilitator to discipline)	<i>Yeah, so I mean <u>I guess when I had the discipline of having to fill in a food diary for somebody else to look at that helped focussed my mind.</u> I definitely was better, you know, because I wasn't prepared to lie on the food diary.</i>

The preliminary codes and notes were then collated into groups of similar concepts and led to the development of a preliminary theoretical framework (see figure 4.2). Due to the depth and complexity of information that the participants shared, several iterations of the theoretical framework were developed. As data saturation (the point within which no new codes emerged, Guest et al. 2006) and data reduction was achieved satisfactorily, the thematic framework materialized. A sample of eight participants was required to achieve the level of data saturation necessary for the framework to be developed, reflecting the earlier findings of Guest et al. (2006), and confirming that data saturation can be achieved with small samples within non-probabilistic, qualitative investigations.

4.6.1: Verification of the Thematic Framework

While all analyses were conducted by the principal investigator, it was necessary to verify the theoretical framework prior to the charting of stage three and the final analysis of stage five (Ritchie and Spencer 1994, Ritchie et al. 2013), to enhance the validity of the study's findings (Hannes, 2011). The principal investigator analysed each transcript and constructed the framework. He then presented the transcripts to two supervisory colleagues who were experts in related fields and were familiar with FA. Meetings were scheduled prior to stage three and after stage five to discuss the codes, themes, theoretical framework and analysis; the colleagues were blind to the theoretical framework and analysis prior to the meetings. During the meetings each individual discussed and provided feedback on their transcripts and interpretations, which were cross-referenced to the aims and objectives of the study. Consensus about the fittingness of the framework was achieved at each meeting and the codes, theoretical framework and analysis were agreed as a collective. Upon completion of the analysis and verification by the research team the theoretical framework was emailed to the participants in order to seek feedback; no participants felt the need to amend the framework and the framework as agreed. A preliminary interpretation of the framework can be found in figure 4.2, overleaf, and the final iteration of the framework can be found in figure 4.7 on page 97.

Figure 4.2: Preliminary Theoretical Framework. Barriers to and facilitators of weight loss appear as main themes; sub-themes emerged for each main theme.

Themes	Sub-themes
1. Barriers to weight loss	<ul style="list-style-type: none"> • 1.01: all or nothing thinking • 1.02: cheating • 1.03: conflicting messages • 1.04: cravings • 1.05: discouragement • 1.06: eating out • 1.07: environment • 1.08: expense • 1.09: lack of structure • 1.10: losing control • 1.11: other people • 1.12: too much structure • 1.13: travel • 1.14: unsustainability • 1.15: work
2. Facilitators of weight loss	<ul style="list-style-type: none"> • 2.01: Being mindful • 2.02: environment • 2.03: exercise • 2.04: feeling in control • 2.05: flexibility • 2.06: goals • 2.07: knowledge and education • 2.08: motivation • 2.09: planning and structure • 2.10: readiness to change • 2.11: self-monitoring • 2.12: self-regulation and restraint • 2.13: social support

4.7: Stage Three: Indexing

To index the data the original transcripts were imported into QSR's NVivo 10 (Qualitative Solutions and Research International, Victoria, Australia), which is a data management tool that has been used in other studies successfully (Azeem and Salfi 2012, Staniford et al. 2011). NVivo houses instruments that assist with the data reduction and management processes of framework analysis, facilitating data management in this study, and was an appropriate tool to complete the data management and analyses of this research. The interview transcripts were imported as

an internal source into NVivo and nodes were created under the titles of *Cases* and *Themes* within the software. The interview transcripts were then imported as nodes into the *Cases* folder (as participant 1, 2, 3 etc.,) to allow the creation of the index and to test the theoretical framework within NVivo directly. The theoretical framework consisted of two main themes (*Barriers to Weight Loss* and *Facilitators of Weight Loss*) and their relevant sub-themes, which are indicated in figure 4.7 (see page 97 in the results section). These were entered into NVivo as individual nodes within the *Themes* folder and raw data was indexed into the relevant theme and sub-theme folder by referring directly to the verbatim text. To index the data in this way, text was transposed from the electronic transcripts housed in the *Cases* folder into the appropriate theme and sub-theme using NVivo's tools. This ensured that the themes and sub-themes directly related to verbatim text, was indicative of the participants' experiences, and reflected the data management and reduction processes of FA (Ritchie et al. 2013) Sample indexes are provided in figures 4.3 below and 4.4 overleaf.

Figure 4.3: Sample Index for Theme 1: *Barriers to Weight Loss*. Data provided from participants 1, 5 and 7 for the *Dichotomous Thinking and Behaviour* and *Social Pressures* sub-themes, highlighting the development of the theme.

Theme 1: Barriers to Weight Loss		
Participant	Sub-theme	Example Quote
1	Dichotomous Thinking and Behaviour	<i>"I spoke to one of my friends and she said, you know, if you're really craving chocolate just have a small square of chocolate or whatever - there's no way I could do that. It's like almost all or nothing"</i>
5	Social Pressures	<i>'you look at the menu you think there's absolutely nothing on this that I can eat without making a fuss and looking different'</i>
7	Social Pressures	<i>'So it's sort of the pressure from other people as well, thinking that you're boring because you're on a diet'</i>

Figure 4.4: Sample Index for Theme 2: *Facilitators of Weight Loss*. Data obtained from participants 3, 2 and 4 for the *Mindfulness*, *Exercise* and *Social Support* sub-themes, highlighting the development of the theme.

Theme 2: Facilitators of Weight Loss		
Participant	Sub-theme	Example Quote
3	Mindfulness	<i>'I'm more aware of what I'm eating and when I'm eating it, which is a huge thing for me especially'</i>
2	Exercise	<i>'if I'm exercising three or four times a week, that punctuates a reminder to stay on track and eat clean or eat healthy and make appropriate choices'</i>
4	Social support	<i>'One thing that helps me is I have a couple of people around me that are generally fit...When I'm in their company and I'm in their company more often I feel like it's more normal behaviour to be committed and motivated to that end'</i>

4.8: Stage Four: Charting

To chart and reduce the data and to assist with mapping and interpretation of stage five (Ritchie and Spencer 1994 Ritchie et al. 2013), the Framework Matrices tool in NVivo was used to create matrices of summarised text. Two framework matrices were created that reflected the two main themes that emerged during the analyses (*Barriers to Weight Loss* and *Facilitators of Weight Loss*) and the relevant subthemes of each main theme. The framework matrices were created in NVivo in such a way so that each row represented a case/participant and each column represented a theme or sub-theme, to facilitate a case-by-case and theme-by-theme analysis (Ritchie and Spencer 1994). Data for each theme and case was then summarised by referring directly to the coded data from stage three, reducing the data further. Once summarised into the matrices, data was then electronically linked to the original coded text, and so if it was necessary to refer back to the original data during the analyses, the functionality of the matrices allowed for this to be done with ease. Sample matrix data is provided in figures 4.5 and 4.6 on the pages overleaf.

Figure 4.5: Sample Matrix 1: Barriers to Weight Loss Theme. Data provided for participants 1, 3, 4, 5 and 7 for sub-themes *Dichotomous Thinking and Behaviour*, *Environmental Difficulties* and *Social Pressures*, demonstrating the matrix structure and development.

Theme 1: Barriers to Weight Loss			
Participant	Sub-theme	Summary	Original Text
1	Dichotomous Thinking and Behaviour	Went out for a meal and it 'flicked a switch'.	<i>'... I just should have thought of that as one meal but instead it almost flicked a switch in my head...oh well I've had that so I'll just forget about the diet for today'</i>
4	Dichotomous Thinking and Behaviour	There are times that he is 'weak willed' and overeat.	<i>'But there are other times where I'm completely weak willed and will consume it as well and think to myself well tomorrow's another day I suppose really'</i>
3	Environmental Difficulties	Keeps treats and snacks in the house for the kids. Sometimes finds this difficult.	<i>'...with two kids in the house you can't deprive them of stuff like that, so we've got to have that stuff in the house. And I don't mind that sometimes, but other times it's really hard'.</i>
7	Environmental Difficulties	Finds that healthy foods are not accessible at work.	<i>'...the healthy foods are the least accessible ones when you're at work and stuff like that'.</i>
5	Social Pressures	Describes tensions that arise between her and her friends because her habits are now different from theirs.	<i>' it's not fitting in to the way I socialise, because you've built an entire lifestyle around it, so it gets difficult and it does cause a bit of tension'</i>
6	Social Pressures	Has to make Business trips and lunches and eat socially with work colleagues. Finds these experiences challenging.	<i>'I'm out with my boss or I'm out with work colleagues and they want to go for two pints and an Indian ...Or we're out at a restaurant and they all want three courses, what do you do'?</i>

Figure 4.6: Sample Matrix 2: *Facilitators of Weight Loss*. Data provided from participants 1, 2, 3, 5, 6 and 8 for sub-themes *Mindfulness*, *Social Support* and *Self-Monitoring*, demonstrating the matrix structure and development.

Theme 2: Facilitators of Weight Loss			
Participant	Sub-theme	Summary	Original Text
2	Mindfulness	When eating out is sometimes 'very particular' about food choices.	<i>'Other times I've eaten out and I've been very particular about the menu choices I've made, and there's certain things I've not considered because of the rules that I've set myself.'</i>
3	Mindfulness	Regulated intake so almost hungry	<i>'So I've been regulating my food intake to am I hungry almost'</i>
5	Social Support	Feels that the slimming club she attends gives her emotional support and strength; recharges her batteries.	<i>'...which is nice to feel that you are supported. It gives you a bit of, I suppose it is emotional support but you go back into the world a little bit stronger because you've been able to charge your batteries up a bit'.</i>
6	Social Support	Feels that it is important that his spouse/partner helps him and supports him	<i>'The person you love and respect is helping you and saying you're doing a great job that's really important'.</i>
1	Self-Monitoring	Uses an app on her phone that as a calorie counter which has allowed her to understand the energy equivalents of foods	<i>'So I've got this app on my phone that like calorie counts but it tells you what's in the food as well... I thought oh yeah I've had quite a healthy breakfast with three slices of toast and two eggs scrambled, you're getting on for like 650 calories...that's like the same as eating a Big Mac'</i>
8	Self-Monitoring	She weighs herself daily and uses an app to calculate her calories every day.	<i>'Yeah, weigh myself every day... just put them into Fitness Pal and it calculates it all for you'.</i>

4.9: Stage Five: Mapping

Once the framework matrices were completed in NVivo they were then exported into Microsoft Excel 2010 (Microsoft Corporation, Redmond, WA) and printed off for interpretation. To interpret the data the themes were cross-referenced repeatedly to the summaries, original text and audio files. Triangulating the information in this way allowed for the data to be conceptualised as a whole (Ward et al. 2013), was necessary to finalise the theoretical framework (Ritchie and Lewis 1994), and reflects realist approaches to qualitative research (Clarke, Lissel and Davies 2008). This process helped to ensure that the themes accurately represented the participants' experiences and that important information was not lost during data reduction (Smith and Firth 2011).

4.10: RESULTS

4.10.1: Participants

Participants were white, adult, British citizens from both genders, of an educated background, and of an average age of 40 ± 10 years ($M \pm SD$). Participants' information can be found in table 4.2, below.

Table 4.2: Participant Information

Participant	Gender	Age	Education Level	Relevant Information	Current Goals	Physically Active
1	Female	29	Post-Graduate	History of weight cycling	Weight loss	Yes
2	Male	35	Post-Graduate	History of weight cycling	Weight maintenance	No (but has been)
3	Male	34	Post-Graduate	History of weight cycling	Weight loss	Yes
4	Male	43	Undergraduate	History of weight cycling	Weight maintenance	Yes
5	Female	56	Undergraduate	Regained weight recently	Weight loss,	No
6	Male	54	Undergraduate	Regained weight recently	Weight loss,	Yes
7	Female	36	Post-Graduate	History of weight cycling	Weight Loss	Yes
8	Female	34	High School	Achieved weight loss on first attempt.	Weight Maintenance	Yes

Three of the participants (4, 5 and 6) had undertaken a commercial weight-loss education programme within two years of undertaking the interviews. Two participants (6 and 7) were also members of a commercial slimming group (Slimming world Ltd, Alfreton, UK). Two participants had previously received consultation services from a registered nutritionist (1 and 2) and one of these participants was a retired nationally-ranked female athlete (1). Two of the participants had received no formal dietary education or consultation services (3 and 8), and embarked on their weight-loss

journeys without professional help or support. Five of the participants were actively trying to lose weight (1, 3, 5-7), and three of the participants were maintaining their weight loss at the time of data collection (2, 4 and 8). Seven of the participants had a history of weight cycling and previous weight loss failures (1-7); one of the participants had achieved weight-loss success at her first weight-loss attempt and was actively maintaining weight loss (8). Two of the participants (5-6) were maintaining weight loss but had regained a portion of their lost weight, which they were now actively attempting to lose. Six of the participants were physically active at the time of the interviews (1, 3, 4, 6-8), and used physical activity to assist weight loss (1, 3, 6-7), or weight-loss maintenance (4 and 8). One of the participants was recuperating from surgery (2) and was not physically active at the time, however recognised that physical activity was an important part of his prior experiences. None of the participants were participating in a weight-loss intervention study at the time of interview or had participated in a weight-loss intervention study prior to interview.

4.10.2: Findings

The analysis captured the participants' ($n=8$) experiences revealing that weight loss could be difficult physically, mentally, and emotionally. The participants described in depth how losing weight requires the careful and consistent management of factors that support weight-loss and enable consistency with those that promote relapse and lead to weight gain. The participants explained that weight loss was rarely linear and is punctuated with problems and relapses if it is not carefully and consistently managed. The factors that promote success and failure were revealed to be complex and multidimensional. Barriers to and facilitators of weight loss emerged as themes, along with sub-themes, which consisted of physical, cognitive, behavioural, social, and practical issues that were either helpful or problematic to the participants' efforts. Barriers included dichotomous thinking and behaviour patterns, environmental difficulties such as work-related constraints, social pressures such as spousal sabotage, and the perception that dieting and weight loss is experienced as an ever-present and pervasive struggle, which was characterised within the weight-centeredness sub-theme. Facilitators included mindfulness, exercise and structure (where participants created routines and organised their lives in such a way to promote consistency and engender a sense of control), knowledge, readiness to change, self-monitoring, and social support.

A schematic representation of the participants' weight-loss experiences is provided in figure 4.7 and a description of the themes follows.

4.11: Barriers to Weight Loss

4.11.1: Dichotomous Thinking and Behaviour

All of the participants (n=8) described dichotomous weight-loss experiences. Three participants characterised themselves as being '*all or nothing*' in personality (1, 4 and 5), which was rationalised by these participants to explain phases of rigid restraint, eating disinhibition, and weight cycling:

'And then the other frame of mind might be, you know, it gets to Sunday and Andrew invites me round for tea and he cooks me something that's wrong. I think well too late now, I'm going to not have lost weight so I might as well just have a cheese sandwich'. (4)

All participants described episodes of dichotomous behaviour where they were either rigidly compliant with their weight-related behaviours or were unable to adhere to them. Three participants (2, 3 and 8) felt that they had begun to moderate this behaviour however and became more flexible with their thinking and behaviours over time, enabling them to become more consistent over the long-term. When describing episodes of dichotomous thinking, one participant (1) suggested that cravings and rigid restraint were key factors that promoted her dichotomous behaviour:

'I spoke to one of my friends and she said, you know, if you're really craving chocolate just have a small square of chocolate or whatever - there's no way I could do that. It's like almost all or nothing.' (1)

The loss of restraint was common ($n = 7$: 1, 3-8), manifesting in scenarios where normal food choices were either not available or when participants found themselves in environments or situations that might promote overeating. The participants provided psychological explanations for this phenomenon, and allegories such as '*switching off*' (1) and '*frames of minds*' (5) were common explanations for the behaviour. While reflecting deeply on her experiences one participant (5) described that for her, dieting was both a psychological and emotional journey that exacerbated dichotomous thinking and behavioural patterns:

'It's just in your head, you know, it's a psychological thing, and sometimes you're in the zone and sometimes you're not... it's as if you've got so much emotional energy to give and when you're stressed out on other things, focusing on the diet's hard, you know.' (5)

4.11.2: Environmental Difficulties

This theme described how the participants' environments challenged their weight-related goals and behaviour. The work environment was revealed by most to create issues, where the availability of inappropriate food or scheduling problems interfered with their weight-loss habits:

'Suddenly you're called away for work to go somewhere else and the food cupboard that you've put together, the larder you've put together is not available to you.' (6)

'At the end of the day the healthy foods are the least accessible ones when you're at work.' (7)

For the participants that had a family or lived with spouses, the home environment was also revealed to be problematic at times (1, 2, 5 and 7), and the presence of forbidden foods and appetite-promoting stimuli often created difficult temptations:

'There were lots of indulgent type treaty foods knocking around the house, whilst I'm not offering up excuses, but that's sort of tough.' (5)

4.11.3: Social Pressures

All of the participants described a broad range of social issues that impacted their weight-loss behaviours, and it became clear that socialising and social eating created problems for the group. Firstly, some participants (1, 4, 5, 6 and 7) suggested that they became self-aware when eating out, and were conscious of the perceptions and judgements of others when eating in public:

'And a big thing for me is like I feel daft if I ask for like a healthier option because I'm convinced that people will be thinking well you obviously don't do that all the time. Do you know what I mean'? (1)

Two participants directly described feeling ‘*pressured*’ and under ‘*tension*’ because of their weight-loss behaviours, which they felt alienated them from their family and social circles (5 and 7):

‘There’s always a tension. I think because you are a fat person and you’ve eaten the way fat people eat and you’ve lived the lifestyle that fat people live, and you’ve got an entire network of people around you that are like that. So when you stop being like that, it’s doubly hard.’ (5)

These participants (5 and 7) also suggested that family members might even act as saboteurs, tempting them with forbidden foods, despite being aware of their weight-loss goals and habits:

‘You know, and then she’ll say afterwards shall I defrost you a bit of cake? You know I can’t. You know, or she’ll say shall we go to the chippy? You know I can’t. And little things like that. Well another one won’t hurt you.’ (5)

4.11.4: Weight Centeredness

Participants (1-4, 6-7) described weight loss as an ongoing and enduring task that was often at the forefront of their thinking, creating the perception of a weight-centred existence.

‘At the moment it’s (weight loss) an ongoing process and has been for six months.’ (2)

‘It’s (weight loss) just constantly something that’s on your mind.’ (7)

Weight centeredness could be both positive and negative to the participants' weight-loss goals, and positive experiences are depicted in the mindfulness theme below (see 4.12.1). For some participants (1, 3-6), however, the development of weight-loss behaviours such as calorie counting and self-monitoring activities lead to obsessiveness, which became a negative experience:

‘I was weighing myself several times a day, it became an obsession.’ (4)

For one participant (3), activities like regular weighing became demotivating if weight loss was not experienced as quickly as he would have liked, despite achieving notable weight changes:

'I often get demotivated if it doesn't come down at the rate that I want it to or if for example I might lose two kilos one week and a kilo the week after. For me that becomes slightly de-motivational and I know that it's a strange thing to say, because that's still good weight loss.' (3)

The participants articulated the need to reduce obsessive thinking and behaviours, recognising that the development of obsessive habits might be unsustainable, or even abnormal behaviour:

'I think for me being more aware of it (calories) but not obsessing about it is the key.' (1)

'This is where the not going so far that I become obsessive about it (dieting) comes in.' (3)

Maintaining weight-loss behaviours and dietary compliance required consistent, focused attention and emotional resources; participants explained that maintaining focus was sometimes difficult, especially when faced with unfortunate life circumstances:

'You've got so much emotional energy to give and when you're stressed out on other things, focusing on the diets hard.' (5)

Participants revealed that they needed to recommit to their weight-loss goals consistently, despite unfortunate events or a lack of progress, highlighting that weight loss requires persistence and dedication, and that successful weight loss might be experienced as an ongoing, enduring challenge:

'The hardest thing is that you have to recommit to doing it every day, and that's hard when you fall off the wagon or you don't see progress. The ability to stay focused and have the goal in mind becomes that little bit tougher.' (6)

4.12: Facilitators of Weight Loss

4.12.1: Mindfulness

All of the participants described cognitive factors that facilitated their weight-loss efforts. For all of the participants, weight loss, through success and failure, facilitated or required the development of meta-cognitive processing:

'It's probably a little bit more conscious, in the forefront of my mind of paying attention to where I am, what I'm doing and how I'm managing my diet and behaviour.' (2)

For all participants, mindfulness introspection and expanded self-awareness were clearly articulated within their interviews, as they reflected on their experiences and behaviours deeply; becoming mindful and self-aware allowed participants to make conscious eating and behaviour decisions, facilitating the achievement of their weight-loss goals. For some participants however, mindfulness was something that needed to be maintained constantly, in order to make important decisions:

'But a lot of the time it is just, it's one of those things that's always on your mind, (making good eating decisions) because you've done it for so long (snacking) where you've just not even thought about it, yeah well I'll just have another biscuit or whatever.' (7)

And while being reflective and thoughtful was a facilitator of weight loss, one of the participants (5) recognised that having to be consistently mindful of her behaviour and thinking was also a challenge, reflecting and existing antagonistically to the earlier weight-centeredness sub-theme:

'And even though you recognise these behaviour patterns, it still don't stop your brain going into that cycle. So you have to be mindful, you have to consciously choose not to do it. That takes emotional energy, the conscious choice.' (5)

4.12.2: Knowledge

Seven of the participants stated that increasing their knowledge had been beneficial to their weight-loss efforts, for reasons such as informed decision making and engendering autonomous motivation (2-8). The participants improved their knowledge and

understanding of food and nutrition through various sources; knowledge was gained via contact with health professionals, attending slimming clubs or weight-loss programmes (1, 3, 4, 5 and 6), and through their own research (1, 5). Apart from one participant (1), participants explained that knowledge gained through these channels was beneficial. One participant suggested that knowledge increased his motivation to eat well (5). One participant explained that increasing her knowledge allowed her to make informed choices (1). For another participant, increasing his knowledge fostered a new interest in health and fitness that then reinforced his weight-loss behaviours (4). Increasing knowledge included understanding science and physiology, and food and nutrients (4 and 6):

'I started to learn about what we needed as fuel and why we needed it.' (6)

Practical information such as knowledge of recipes and food choices was also described as being beneficial, particularly by those participants who undertook the weight-loss programme or were members of a slimming club (1, 5, 7 and 8):

'One of the reasons that Slimming World helps because the people there who'll give you ideas for things to cook.' (5)

For those participants who took part in the weight-loss education programme (4, 5 and 6), the experience proved to be transformative, and challenged their understanding of their pre-existing behaviours and eating habits, which then promoted new, conscious eating and lifestyle decisions:

'It was about education, because he and Anna and the others were educating us and making us think about what we were putting in our bodies, when we were putting it in our bodies, whether it was good, bad, ugly.' (6)

4.12.3: Exercise

Another theme that was important for 7 of the participants (1, 2, 3, 4, 6 - 8) was the role of exercise. Six of the participants (1, 3, 4, 6-8) exercised regularly. One participant (2) was recovering from injury and was not exercising at the time of interview however exercise was an important part of this participant's prior experience. One participant explained that she was not physically active (5) and that exercise was not a component of her weight-loss efforts. The role of exercise in the participants' weight-loss

experiences was varied and many ($n = 5$) participants expressed that they felt that exercise had to be a fundamental component of their weight-loss strategy:

'So it's like I can't, I find it really hard to diet without exercising.' (1)

For those participants that exercised regularly, undertaking regular exercise reinforced dietary behaviours and either prompted them to eat according to their goals or was an underlying factor that made them eat for weight-loss and health-related purposes:

'For me I think if I'm exercising three or four times a week, that punctuates a reminder to stay on track and eat clean or eat healthy and make appropriate choices.' (2)

'But if I exercise I eat better. If I don't exercise I eat worse.' (3)

While reflecting on how and why exercise was important, one participant described that eating according to his goals reinforced the productivity of exercising regularly, and that if he did not eat well he felt that the exercise was not productive:

'My thinking is if I go out for a run, which I enjoy doing, and I eat badly, I've ruined that hour that I've spent going out for a run. You know, I've wasted that hour, whereas if I go out for a run and eat properly that hour of going out and running has been productive.' (3)

Other participants felt that undertaking exercise would allow them to be flexible elsewhere in their diets, and would use exercise as a compensatory mechanism for overeating/drinking:

'Friday morning I made myself get up and go and have a run first before I went, and that was kind of like cancelled it out, like for me in my head I could drink.' (7)

While motives for exercising were different for the participants, for those that undertook exercise as part of their journeys, exercise appeared to add structure and re-affirmed weight-loss behaviours. One participant in particular also described how exercise prompted feelings of positivity and productiveness, even when experiencing negative emotions as part of her weight-loss efforts:

'Even times where you're not feeling great because you've eaten too much or you're not too happy with the way your weight is... if the gym's going well at least that's something that you're able to do'. (8)

For one participant (6) however, exercise, while perceived to be beneficial and important to his weight-loss endeavours, appeared to increase his appetite noticeably:

You know, the more exercise I do the hungrier I become.' (6)

4.12.4: Organisation and Structure

Six of the participants stated that structure was a key component of their weight-loss efforts, where organisation and routine allowed them to remain in control of their eating habits and behaviours (2, 3, 4, 6, 7 and 8):

'Being in control is something I'm enjoying, and having structure is important too' (2)

'So making sure that we plan out a lot more the meals that we're having... literally sitting down on a weekend going right, what are we going to have to eat this week and making sure that I've got the veg in that you need, the food.' (7)

Being organised allowed the participants to manage their behaviours in the context of their environments, so that appropriate food was available when required and that meal plans were pre-determined and adherent to their objectives. Becoming organised fostered the sensation of control. For some participants, organisation was a clearly defined and tangible behaviour (2, 3, 5, 6, 7 and 8):

'I try to be organised and have food with me that I have prepared in advance around the rules.' (2)

Other participants (1, 3 and 4) suggested that they had a less tangible structure to their eating habits and behaviours, but that they recognised that having routine was important to their successes however:

'I have a loose plan in place definitely. It's a plan that I've fallen into I suppose through routine. I definitely know when I'm out of that routine.' (3)

4.12.5: Readiness to Change

Six (3, 4, 5, 6, 7 and 8) of the participants explained that in order to succeed with their weight-loss efforts they needed to feel ready to change. For some, this came as a clear realisation at a point in time where they felt that they needed to take action:

'So it's almost that realisation of yeah I want to lose weight.' (3)

'Well I think that there came a point at which I decided I needed to do something about it.' (6)

When asked to provide recommendations to others who may wish to lose weight, some of the participants (2, 4 and 5) explained that readiness to change was central to their weight-loss efforts, and recognised their readiness as a cognitive transformation:

'You know, I think that my view about being ready to lose weight is the same about giving up smoking, and I gave up for two years. Before I gave up for two years I was absolutely ready psychologically to give up.' (4)

'I'm the reason why I'm the size that I am and the weight that I am, and the only way I can change that is being in control of the food element'. (7)

4.12.6: Social Support

An important theme that was articulated by each participant was the role of social support, which could come from a variety of sources such as spouses and work colleagues, to friends and slimming clubs:

'One thing that helps me is I have a couple of people around me that are generally fit, into fitness and talk the same sort of language.' (4)

'And you can't do a diet I don't believe of any type unless you've got the support of those who live around you, the very close ones.' (6)

'Yeah, because if we're out on a family occasion together, then we support each other.' (7)

When asked how they would advise others to lose weight, several participants (3, 4 and 6) suggested that dieters should make their weight-loss intentions public, and to not try to lose weight on their own:

'So you have to be you have to tell people that you're doing it.' (3)

'I'd tell them not to do it on their own if they can avoid it, to definitely have a buddy that they can do it with.' (6)

Having supportive others provided the participants with stability and reassurance, and one participant (7) explained that she needed her friends and family to help her when she was craving foods:

'And like you say, her texting me the other day going I need chocolate, I need a pep talk, so it's sort of like give each other a bit more encouragement.' (7)

While discussing the benefit of attending a slimming club, one participant (5) explained that for her, eating to lose weight isolated her from family and friends and that being part of a peer-group was comforting and leant emotional support, providing her with a sense of belonging and solidarity:

'Which is nice to feel that you are supported...You're not the outcast. You're not the odd one. You know, you're part of a sort of team of people who are facing the same challenges together.' (5)

4.12.7: Self-Monitoring

All of the participants undertook self-monitoring activities to track their dietary intakes, body-weight, or body-size changes. The use of mobile technology and gadgets was common:

'I use an app on my phone...I might track every meal that I have for four or five days. You know, I might just do a short food diary in effect just to see where I'm at and what I'm doing.' (3)

'I have my Fitbit bug tracker, whatever, what it is to track my steps on a daily basis and when I get on my bicycle I have my Scosche armband and it tracks where I've, what my heartbeat is and it does a GPS positioning and shows me as I was going uphill I was breathing at this rate and, you know. So it's all sort of tracked and the food diary is done as part of My Fitness Pal.' (6)

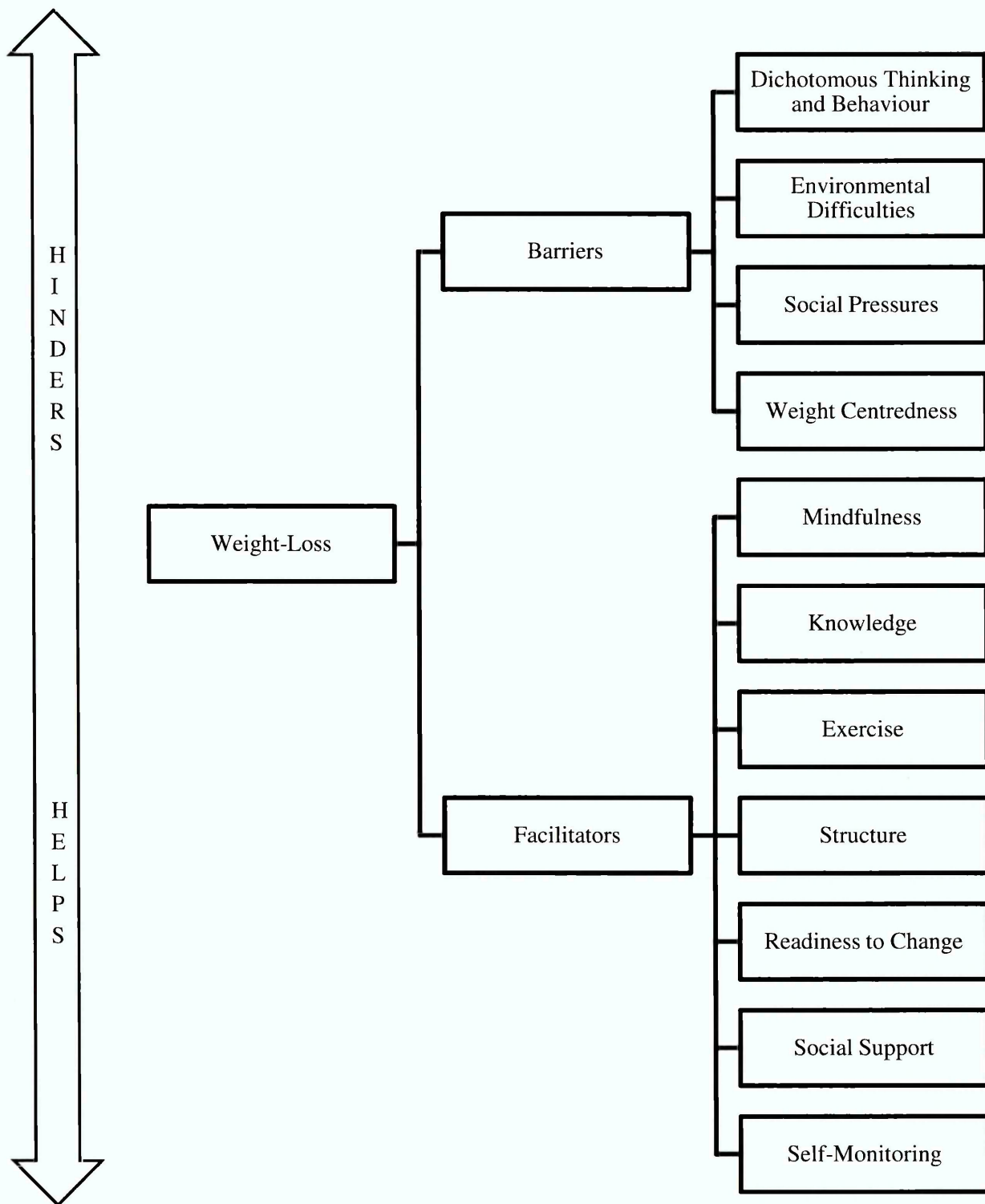
While the use of such tools was important for some (1, 2, 3, 5, 7 and 8), others relied on qualitative indicators such as the fit of clothing, feelings of energy and wellness, and the

comments and affirmation of others as indicators of successes. Interestingly, four of the participants (1- 4) cautioned against excessive monitoring activities however, suggesting that this could lead to obsessive behaviour, reflecting the earlier weight-centeredness sub-theme:

'I'd weigh myself before I went to the toilet, after I went to the toilet. You know, I was weighing myself several times a day, it became a little bit of an obsession.'

(4).

Figure 4.7: Theoretical Weight Loss Framework



Thematic, theoretical framework depicting participants' experiences; the arrow represents the dichotomy experienced between barriers and facilitators, demonstrating how barriers hindered the participants' weight-loss efforts and facilitators helped them.

4.13: DISCUSSION

The aim of study one was to further agential understanding of weight loss, add to the existing qualitative weight-management literature, and explore the weight-loss experiences of a sample of UK dieters. The participants described weight loss as a complex, ongoing challenge punctuated with successes and failures, where often temptations, problems and difficulties are balanced and combated with behaviours and strategies that foster adherence. Difficulties and obstacles to achieving weight loss were indexed into the barriers theme; factors that were helpful were indexed into the facilitators theme. The analysis revealed that the participants' weight-loss journeys were experienced as a disjuncture of disruptive and facilitative factors, and that weight loss was rarely straightforward. The thematic framework (see figure 4.7) demonstrates that the issues identified: dichotomous thinking and behaviour, environmental challenges, social pressures, and weight centeredness, were experienced as barriers to the participants' weight-loss efforts, which at times stunted progress and even prompted relapse. By contrast, the facilitators: mindfulness, knowledge, exercise, structure, readiness to change, social support, and self-monitoring all assisted the participants' weight-loss efforts. Some of these facilitators were meta-cognitive strategies (mindfulness), cognitive behaviour techniques (self-monitoring), motivational states (readiness to change), and environmental (social support), and educational (knowledge) strategies that participants experienced, developed or adapted to achieve their goals. According to the health belief model of behaviour change, if the balance between perceived barriers and facilitators of a behaviour change is biased towards facilitators, then the probability that a lasting behaviour change will occur is larger than if more barriers are perceived than facilitators (Daddario 2007). Participants in this study identified more facilitators of weight loss than barriers to weight loss, possibly because four of the participants were in a weight-maintenance phase having already achieved preliminary weight-loss goals, and that the rest of the participants had experienced weight loss at the time of the interviews. Participants in this research appeared to be successful dieters.

According to social cognitive theory, the participants' successes might have enhanced their perceived weight-loss self-efficacy (Bandura 1989, Sniehotta 2009), and within social cognitive theory a person with high self-efficacy for lifestyle change is more

likely to identify facilitators of change than barriers to change (Bandura 1989, Sniehotta 2009). Social cognitive theory is a psychological learning theory popularised by Alfred Bandura which posits that human learning occurs through social contexts, associated with the observation of '*models*' (Bandura 1989), but is also a seminal theory that reveals and explains the agency of human behaviour (Bandura 2001). Social cognitive theory (SCT) advanced understanding of human functioning in the 1980s to conceptualise individuals as being self-organising, reflective, self-regulatory agents who have the ability to influence their thoughts, actions and emotions (Bandura 1989). Within SCT an individual's function is the product of the triadic reciprocity of personal (cognitive, affective, biological), behavioural, and environmental factors (Bandura 1989, 2001).

An important tenet of SCT is the concept of self-efficacy, which reflects an individual's belief that they can achieve a given task successfully (Bandura 2001, Elfhag and Rössner 2005, Sniehotta 2009). Self-efficacy appears to be strongly associated with successful weight loss and might be an important and underpinning factor in successful weight-loss maintenance (Elfhag and Rössner 2005, Stubbs and Lavin 2013). Research by Nakade et al. (2012) provides empirical support for this suggestion. Nakade et al. (2012) examined factors related to successful weight loss and weight-loss maintenance in a group of 90 middle-aged participants that undertook an obesity intervention, and found that high self-efficacy underpinned the accomplishments of the successful losers and maintainers similarly. Nakade's findings are not unique, and have been observed elsewhere (Vogels et al. 2005, Teixeira et al. 2010), highlighting the role that self-efficacy appears to play in successful weight-loss efforts. High self-efficacy for achieving weight-loss outcomes might explain the perceived successes of the participants here and the apparent weighting towards facilitators of weight loss observed during the analysis. While it was beyond the scope of this study to explore success vs. failure in weight loss, it is likely that the participants' experiences in this study are skewed towards successful efforts, offering new insight into the experiences of those who experience success in their weight-loss endeavours. Further research might be necessary however to gain further insight into the experiences of people who were not successful at achieving weight-loss goals.

4.13.1: Contrasting Research

The results of this study contrast those of Burke et al. (2009) and Hammarström et al. (2014), who explored the experiences of dieters who participated in weight-loss intervention studies. Burke et al. (2009) and Hammarström et al. (2014) found that participants reported a host of barriers in their research, and suggested that because their participants had failed in previous weight-loss attempts that this lead to poor self-efficacy to achieve their weight-loss goals. Self-efficacy is the product of the interaction of an individual's past experiences of a task, the observation of others, and the individual's given biological state (Bandura 1989). All of these factors are evaluated and measured via cognitive appraisal (Bandura 2001). Unsuccessful previous experiences of a task can therefore lead to poor self-efficacy for that task if these experiences are believed to be important by the individual (Bandura 2001), explaining the findings of Burke (Burke et al. 2009) and Hammarström (Hammarström et al. 2014). However, according to SCT, behaviours can be learnt by observational learning and by modelling behaviours (Bandura 1989). Self-efficacy therefore can be enhanced by helping individuals learn and model new behaviours, or, by modifying unwanted behaviours by changing the reinforcements of that behaviour (Bandura 1989). This is important, if indeed self-efficacy is an underpinning factor in successful weight loss (Elfhag and Rössner 2005, Stubbs and Lavin 2013, Teixeira et al. 2010), and that a lack of self-efficacy might be an underpinning factor in unsuccessful weight loss (Burke et al. 2009, Hammarström et al 2014), practitioners might look to enhance weight-loss self-efficacy with clients by modelling new or by modifying existing behaviours. Other strategies that foster self-efficacy such as verbal persuasion are also key elements of the behaviour-change taxonomy recently developed by Michie et al. (2013), which was created to provide international consensus for efficacious behaviour-change interventions. Research elsewhere validates the findings of Burke et al (2009) and Hammarström et al. (2014), indicating that poor self-efficacy might be linked to a history of weight cycling (Aherne et al. 2013, Elfhag and Rössner 2005, Teixeira et al. 2004, Thomas et al. 2008). An individual's weight-loss history might therefore need to be considered prior to treatment (Aherne et al. 2013). Further research might be necessary to determine how an individual's weight-loss history impacts their ability to make lifelong weight changes and if self-efficacy promoting interventions are useful weight-loss treatments for these individuals.

4.13.2: Dichotomous Thinking

Dichotomous thinking and behaviour patterns were an important experience encountered by each participant in this research. The literature describes polarized / dichotomous thinking as a cognitive distortion where individuals view stark contrasts that contain no middle ground (Shafran, Cooper and Fairborn 2002) and is considered to be a generalised thinking style rather than a dichotomous attitude towards specific factors (Byrne, Cooper and Fairburn 2004). Dichotomous thinking is linked to perfectionism (Lethbridge et al. 2011), depression and anxiety (Egan et al. 2013), eating disorders such as bulimia and anorexia (Lethbridge et al. 2011), stress (Mraz and Runco 1994), suicidal ideation (Litinsky and Haslam 1998), and interpersonal problems (Linehan et al. 1986). Dichotomous thinking has been hypothetically associated in the development of eating disorders, interceding dietary restraint and disinhibited eating, and perpetuating cycles of restriction, binge eating and purging (Lethbridge et al. 2011). Dichotomous thinking might promote weight and shape overvaluation, where feelings of self-esteem and personal worth are hinged upon a hypothetical weight ideal, prompting body dissatisfaction (Lethbridge et al. 2011). Body dissatisfaction has been strongly linked to obesity (Schwartz and Brownell 2004), and obese females are more likely to experience depression, have suicidal thoughts and attempt suicide more than non-obese females (Swencionis et al. 2012), due to body-image ideals impacting self-esteem (Schwartz and Brownell, 2004, Swencionis et al. 2012). Research points to dichotomous thinking as being an important factor in unsuccessful weight management (Teixeira et al. 2012), and dichotomous thinking was shown to be the strongest weight regain predictor in obese patients (Byrne, Cooper and Fairburn 2004). The relationship between mental health disorders and obesity appears to be complex and multifactorial (National Obesity Observatory 2011), however body dissatisfaction might be an underpinning factor in issues such as depression and anxiety in the obese (National Obesity Observatory 2011, Schwartz and Brownell 2004, Swencionis et al. 2012), and appears to be associated with dichotomous thinking concurrently (Lethbridge et al. 2011).

Participants in this study described incidences of how they were either fully compliant or completely disengaged with their diets and weight-loss behaviours, similar to the participants in the research by Green, Larkin and Sullivan (2009), Chambers and

Swanson (2012) and McKee et al. (2013), demonstrating cycles of rigid restraint and eating disinhibition. Rigid restraint is the concept that individuals construct unrealistic limitations on their eating patterns and is an example of dichotomous thinking that has been linked to poor weight control in the literature (Epiphaniou and Ogden 2010, Green, Larkin and Sullivan 2009, Teixeira et al. 2012). Rigid restraint, when compromised, leads to patterns of disinhibited eating, perceptions of failure and negative emotions (Byrne et al. 2004, Elfhag and Rössner 2005, Teixeira et al. 2012). Participants experiences in this research reflected those in experiential research elsewhere (Chambers and Swanson 2012, Green, Larkin and Sullivan 2009, McKee et al 2013), and perhaps indicates that this is a common experience for some dieting individuals. Participants, however, suggested that relaxing this rigidity and becoming more flexible with behaviours, which was underscored by developing mindfulness and self-awareness, reduced disinhibited eating episodes and promoted greater consistency, similar to the maintainers in the research by Hindle and Carpenter (2011). This finding also appears to be consistent with empirical research elsewhere (Sairanen et al. 2014). Achieving flexibility with weight-loss behaviours might therefore be an important factor for long-term adherence, and perhaps also indicates that successful weight loss is a transformative experience for some, reflecting Epiphaniou and Ogden's research (Epiphaniou and Ogden 2010) (see 2.4.4 for a detailed description of their findings).

4.13.3: Stringent Outcome Evaluation

Dichotomous thinking has also been linked to stringent outcome evaluation and unrealistic goal setting in dieters, which are strongly linked to weight-loss failure in the literature (Byrne et al. 2004, Green, Larkin and Sullivan 2009, Teixeira et al. 2004). Individuals with a dichotomous thinking style will typically perceive not achieving a specific weight-loss goal as evidence of outright failure, and are less likely to maintain weight-loss behaviours due to their perceived lack of success (Byrne et al. 2004, Chambers and Swanson 2012, Green, Larkin and Sullivan 2009). Indeed, Byrne et al. (2004) found that dichotomous thinking was the strongest weight-regain predictor in a group of 53 women who failed to maintain a 10% weight-loss goal. Dichotomous thinking was also revealed by Chambers and Swanson (2012) and McKee et al. (2013) to be an important factor that underpinned the failure of long-term weight-maintainers in their research. One participant in this study (7) explained that adjusting her goals and

her evaluation of her goals by working towards and accepting a realistic body image eliminated her dichotomous thinking, enhancing feelings of positivity and success. Another participant (3) explained that adjusting his goals away from weight-specific goals towards exercise goals minimised his dichotomous thinking too. For this participant, adjusting from an outcome-oriented goal (weight) towards process-oriented goal (exercise) reduced weight centeredness, anxiety, and led to better self-control and adherence.

Goal setting is an effective and widely-reported behaviour-change technique (Michie et al. 2011, Michie et al. 2013) and successful goal attainment might aid the development of self-efficacy (Byrne, Cooper and Fairburn 2003, Michie et al. 2008). Research indicates that goals focussed on the achievement of behaviours, such as dietary changes and physical activity, appear to be more effective for weight loss than goals that are focussed on achieving weight outcomes specifically (Notwehr and Yang 2007). For some, the adjustment of goals away from outcome goals towards process goals might therefore be an important cognitive transformation (Hindle and Carpenter 2011). Two participants in this research (3 and 7) clearly articulated that being flexible and transitioning their goals away from weight-loss outcomes towards supportive activities were formative experiences. This shift might also reflect the conceptualised transition described by Epiphaniou and Ogden, who found that successful dieters transitioned away from rigidity towards flexible and sustainable attitudes over time (Epiphaniou and Ogden 2010). Dieting individuals seeking professional treatment might therefore need to be screened for dichotomous thinking, and treatment strategies might need to be administered to accommodate the behaviour if this is an underpinning factor in dietary failure (Byrne et al. 2004, Thomas et al. 2008). This is particularly important if long-term weight control is predicated on a transition away from this cognition (Byrne et al 2004, Epiphaniou and Ogden 2010, Hindle and Carpenter 2011). Cognitive-behavioural therapy (Grilo et al. 2011) and mindfulness-based interventions (Alberts, Thewissen and Raes 2013) have both been shown to be useful techniques for similar purposes.

4.13.4: Environments

Environmental issues created challenges for the group, and these ranged from lifestyle and work constraints, to travel commitments, and to the presence of appetite-promoting stimuli in the home. This was reflected in the environmental difficulties theme.

Environmental stability appears to be an important factor for long-term weight-control (Elfhag and Rössner 2005, Sciamanna et al. 2011), and lifestyle issues and interruptions have been widely reported to be problematic in the existing qualitative evidence (Chambers and Swanson 2012, Hinde and Carpenter 2011, McKee et al. 2013). Participants in this research suggested that when environmental stability was compromised, consistency and adherence to weight-loss behaviours became difficult, reflecting research elsewhere (Green, Larkin and Sullivan 2009). Work-related factors such as unpredictable working hours, travel expectations, poor food availability, and business lunches were often cited by the group, along with time and lifestyle constraints outside of work and appetite promoting stimuli in the home. Stressful life events created additional challenges for some, and participants 6 and 7 described in depth that stressful life-events provoked stress-related and emotional eating episodes, reflecting the earlier work of Green, Larkin and Sullivan (2009), Chambers and Swanson (2012) and McKee et al. (2013), who found that emotional eating, eating to regulate mood, stressful life events and lifestyle problems were factors widely reported by participants in their studies. Illnesses, bereavements, family, personal stress, and busy schedules are all factors that appear to be associated with poor weight management in the literature (Chambers and Swanson 2012, Elfhag and Rössner, 2005), and data points to successful dieters developing effective coping strategies to accommodate difficult life events (Hindle and Carpenter 2011). Dieters might therefore experience environmental challenges which threaten consistency and consequently need to develop mechanisms to enhance their robustness to environmental and life-related difficulties, to assist weight loss and long-term weight maintenance.

4.13.5: Social Problems and Pressures

Social pressures and social issues were described in depth by the group, and the development of their weight-loss behaviours meant that eating in public, socialising, and eating out resulted in feelings of marginalisation, anxiety, self-consciousness, and the perception of stigma. This was reflected in the social pressures theme. Losing weight fostered alienation for some, reflecting Whale's recent study which found that dieting females experienced isolation from friendship groups due to their newfound weight-loss behaviours (Whale et al 2014). This theme existed antagonistically to social support, which appears to provide dieters with moral support, friendships, and

solidarity (Bakx et al. 2005, Hindle and Carpenter 2011). Social activities, eating out and family meals appear to be common issues for dieters (Epiphaniou and Ogden 2010, Hindle and Carpenter 2011). Social activities exposed participants in this study with appetite promoting stimuli, high Calorie food choices, and difficult eating decisions which either alienated participants from their peer groups, or resulted in participants eating foods that were not compliant with their weight-loss objectives. Implementation intentions, however, are self-regulatory, if-then plans that can be used to achieve automated action control in response to situational prompts (Gollwitzer and Oettingen 2011), are effective tools for achieving predetermined objectives (Gollwitzer and Sheeran 2006), and might be effective at enabling dieters to cope with situational difficulties experienced as a result of their newfound behaviour changes (Luszczynska et al. 2007). Implementation intentions can therefore be used to create automated responses to cues that promote overeating, such as exposure to appetite-promoting stimuli, by creating responses and counter-behaviours that are compliant with objectives without the need for cognitive appraisal (Gollwitzer and Oettingen 2011). Evidence indicates that implementation intentions might help dieters achieve weight loss (Luszczynska et al. 2007). However, further research is needed to investigate the utility of implementation intentions within weight-loss contexts similar to those described in this study, to determine if this technique could provide dieters with a valuable tool to accommodate difficult, negative experiences of weight-loss dieting, such as the social difficulties described here.

Participants reported that they experienced stigma while eating out and believed that they might be judged negatively by others while in public. This perception also mirrored those reported by participants in Epiphaniou and Ogden's work, where the '*Restrictive Self*' conceptualised by the authors to explain participants' perceived social and physical restrictions resulted in participants perceiving negative stigma about their weight, leading to self-imposed isolation (Epiphaniou and Ogden 2010). This perception was also reported in Whale's study (Whale et al. 2014), and was reflected here similarly. Indeed, the perceptions of public stigma and alienation from friendship groups prompted some participants' self-removal from social occasions, fostering isolation as a consequence of their dieting. Participants, however, explained that being open with friends and family about their weight loss was important and necessary to obtain support, and were vocal of the need to avoid isolation and alienation wherever

possible, despite experiencing it themselves. Future research might be needed to further investigate social isolation in the weight-loss experiences of dieting individuals.

4.13.6: Spouses and Family as Destructive Forces

Spouses and family members were also revealed to create problems for the group, similar to De Souza et al. (2005) and Hindle and Carpenter (2011), who found that a lack of spousal support challenged weight-maintainers. Participants in this research explained that spouses and family members were sometimes unsupportive, and in some instances even destructive. Andrews (1997) and Hindle and Carpenter (2011) suggested that a lack of spousal support might be associated with jealousy, or if significant weight loss is achieved by the dieting spouse, that a shared lifestyle becomes no longer shared, affecting the foundation of the relationship. Research has indicated however that training spouses to assist their partners by monitoring and reinforcing behaviours improves their partner's weight loss (McLean et al. 2003, Pearce, Lebow and Orchard 1981, Powers et al. 2008). Research also indicates that training a spouse to promote the autonomous motivation of their dieting partner enhances weight loss similarly (McLean et al. 2003, Pearce, Lebow and Orchard 1981, Powers et al. 2008). Autonomous motivation is where an individual engages with an activity out of choice and appears to be associated with successful weight loss (Elfhag and Rössner 2005). Interestingly, research has also demonstrated that weight loss is similar for dieters when their spouse is instructed to not sabotage their weight loss as it is when their spouse is trained to assist with their weight loss (Pearce, Lebow and Orchard 1981). Spousal effects might be an important experience for dieters in relationships.

For some participants in this research, family members and spouses acted as saboteurs, by buying forbidden foods for them to eat, or by eating forbidden foods in their presence with little consideration to their goals and challenges (1, 5 and 7). This finding is consistent with the experiences of the participants in Hindle and Carpenter's earlier work (Hindle and Carpenter 2011), and might be an important experience or some dieting individuals. Interestingly, also similar to Hindle and Carpenter's study, participants felt that these behaviours were performed without malice, unintentionally, and were not undertaken to purposefully sabotage the participants' weight-loss efforts. Collectively, results of this research highlight that friends, family, and significant others might play an important role in the experiences of dieting individuals, and that in some

instances these roles might be counterproductive to the dieting individual's motivations. Future research might therefore be needed to corroborate these preliminary findings and investigate the motives and mechanisms of spousal sabotage and identify strategies to minimise its effects, if present.

4.13.7: Mindfulness

The results of this study revealed that the development of mindfulness was a key facilitator of the participants' weight loss, which was a meta-cognitive change that engendered greater self-awareness, reflection, thoughtful decision making, flexible restraint, and ultimately better self-regulation. The concept of mindfulness in this research is somewhat analogous the heightened vigilance articulated by the participants in the studies by Green, Larkin and Sullivan (2009), Chambers and Swanson (2012), Hindle and Carpenter (2011), and McKee et al. (2013). In these studies this heightened state was broadly described as a deepened attentiveness towards weight-related behaviours. Participants in the study by Hindle and Carpenter (2011) reported that being mindful of their thoughts and behaviours allowed them to maintain self-control and remain adherent. Chambers and Swanson (2012) revealed that the heightened vigilance to thoughts, behaviours and stimuli was a discerning factor that differentiated successful dieters from re-gainers in their study. Both studies underscored the importance of an expanded consciousness. It was revealed here that the need to be mindful was born from the perception that destructive influences are experienced frequently. To remain adherent, it was therefore necessary to become mindful of these influences and the internalised responses to them. Mindfulness, discussed by O'Reilly et al. (2014) and Caldwell, Baime and Wolever (2012), is described as a state of being nonjudgmentally attentive to the present while monitoring personal reactivity to stimuli. This definition broadly reflected the descriptions provided by participants here and is partially analogous to the cognitive-behavioural technique, stimulus control (Foster, Makris and Bailer 2005). Dieting increases somatic cues associated with hunger (Sumithran et al. 2011). Dieters must therefore learn to recognise and cope with internal and external appetite-promoting cues, and their responses to them, to lose weight and maintain lost weight (Caldwell, Baime and Wolever 2012). Implementation intentions, as described earlier, might also assist with efforts to combat

difficult appetite-promoting cues and do so without the need for cognitive processing and conscious decision making (Gollwitzer and Oettingen 2011).

The recognition of mindfulness in this study reflects Newman's health as expanding consciousness theory (Newman 1991; 1997, Pharris 2011), and the work of Berry (2004), who proposed that lifestyle transformations occur through critical self-reflection and self-discovery, leading to an expanded consciousness, increased self-awareness, and eventually greater self-control. Participants explained that becoming mindful allowed them to recognise cues (and their responses to cues) and allowed them to make thoughtful and effective decisions that support their goals, rather than being reactive to stimuli. In this way, mindfulness reflected an important meta-cognitive change for the participants (Fresco et al 2010). Mindfulness prompted self-awareness and self-regulation (Anessi and Whittaker 2010). Being mindful was often a necessity to manage internalised factors such as cravings and temptations, which were sometimes experienced as a consequence of external factors such as appetite promoting stimuli and environmental challenges. Hunger, cravings and temptations appear to be common problems for dieters (Hindle and Carpenter 2011, McKee et al. 2013). Avoiding deprivation (McKee et al. 2013), flexible restraint (Teixeira et al. 2010), and eating to satiation (Stubbs et al. 2012) are behavioural strategies that appear to mediate appetite and might accommodate some of these issues also. Mindfulness-based weight-loss interventions are now appearing in the literature, appear to be effective treatments (O'Reilly et al. 2014), and might be a useful alternative to cognitive behavioural therapy (Caldwell, Baime and Wolever 2012). However, issues with sampling homogeneity necessitates that further research is needed to validate the efficacy of mindfulness-based interventions before generalizations about its efficacy outside of samples of white adult groups can be made (O'Reilly et al. 2014).

4.13.8: Weight Centeredness

While mindfulness was described as a positive by participants, attentiveness to weight and weight-loss behaviours was also experienced negatively, where careful decisions about eating and lifestyle had to be made and evaluated constantly, leading to preoccupations with weight and weight-loss behaviours. This led to the perception of a weight-centred existence, and was also analogous to Epiphaniou and Ogden's earlier characterisation of the '*Restricted Self*' (Epiphaniou and Ogden 2010). Recall that in

their research, Epiphaniou and Ogden (2010) characterised a transition from a '*Restricted Self*' that experienced abnormal weight centeredness, rigid restraint, stringent outcome evaluation and self-criticism, to a '*Liberated Self*' that was characterised by flexibility, a loss of reservation and positive self-image. Green, Larkin and Sullivan (2009) revealed that participants in their research found that perceived failure at calorie counting prompted disengagement; one participant in this study (3) reported similar experiences with regular weighing. For this participant, engaging with weight loss fostered a preoccupation with weighing himself regularly, which then led to obsessiveness about weighing and weight loss, and ultimately led to a perceived failure to achieve unrealistic weight-loss goals that he had set. These perceived failures might reflect the dichotomous thinking patterns and stringent outcome evaluations described earlier, but are perhaps also underscored by the development of weight centeredness experienced as a product of a difficult outcome-oriented goal (Byrne et al. 2004, Epiphaniou and Ogden 2010). Other participants also experienced obsessive tendencies, but similarly recognised a need to distance themselves from behaviours that provoked its development, in order to remove pressure, improve feelings of positivity, and maintain consistency. For participants in this research, weight centeredness reflected the ongoing and emotive challenge that weight loss presented; managing weight requires an ongoing recommitment to task, which was explicitly articulated by one participant (6), but experienced by all. The need to be constantly mindful and recommit to weight loss was revealed to be emotionally challenging by three participants (5 - 7), especially in the presence of negative life events and difficult circumstances. Indeed, the weight-loss experience was characterised by all participants as enduring and difficult, punctuated with successes and failures. Weight centeredness reflected, and was the consequence of, an all-encompassing and difficult weight-loss journey.

4.13.9: Value of Knowledge

Increasing knowledge was revealed by participants in this research to be another important facilitator of their efforts and was reflected in the knowledge subtheme. A lack of nutritional knowledge has been reported to be a barrier to weight loss by males in one published abstract (Zinn and Schofield 2010), and that increasing nutrition knowledge engendered a sense of autonomy in male participants in another study,

which explored the effects of a weight-loss intervention (Morgan et al. 2011). Participants here reported similar benefits, and in some instances gaining knowledge reinforced behaviours, fostered new interests (typically in exercise or health), and enhanced autonomous motivation. For some, these interests replaced weight loss as their motivator for lifestyle change. Zinn and Schofield (2010) reported that male dieters prefer rigid knowledge and specific instruction about eating and exercise, and that females appear to prefer knowledge that promotes variety, flexibility, and social support to assist their goals. Interestingly, this study contained four female (1, 5, 7-8) and four male participants (2-4, 8), and whilst it was not an aim of the study to identify gender issues, gender-related differences in the role of knowledge were observed in this research, and partially reflected Zinn and Schofield's findings.

Male participants suggested that learning theoretical information about food, nutrition, exercise and health, allowed them to make better decisions and become autonomous. For some of these participants the increased knowledge engendered behaviours that reinforced their weight-loss goals indirectly. Female participants however discussed benefits of practical knowledge, such as recipes and menu options, and suggested that this information improved flexibility, choice and adherence, reflecting Zinn and Schofield's work (Zinn and Schofield 2010). Interestingly, one female participant (1) even explained that overcomplicating her eating habits with theoretical knowledge became a barrier to adherence, and took away from the enjoyment and personalisation of eating, which contrasted the perceptions of the males who articulated preferences for theoretical information. While the context for improving knowledge was different between the genders, and perhaps reinforces a suggestion that weight-loss interventions might need to be individualised (Aherne et al. 2013, Burke et al. 2009, Stubbs et al. 2011), enhancing knowledge of theoretical and practical factors implicit to weight loss was a key component of the participants' journeys.

Shaping knowledge is another important behaviour change technique described by Michie et al. (2013) in their behaviour-change taxonomy, and might be an important factor in the achievement of long-lasting behaviour change. Indeed, improving knowledge might improve informed decision making, autonomy, and perceptions of competence, reflecting self-determination theory (SDT), which is a macro-theory of human motivation (Deci and Ryan 2008, Ryan and Deci 2000). Within SDT autonomy

and competence are two psychological needs (Ryan and Deci 2000); autonomy represents the need to be the causal agent within one's life; competence represents the need to seek mastery (Ryan and Deci 2000). Autonomy and competence are inter-related and enhance intrinsic motivation, which is the self-desire for a given behaviour driven by internalised rewards (Deci and Ryan 2008, Ryan and Deci 2000), and might be associated with successful weight management (Teixeria et al. 2012). Intrinsic motivation exists in opposition to external motivation, which is the willingness to perform an activity to obtain externalised rewards or outcomes (Deci and Ryan 2008, Ryan and Deci 2000). Enhancing autonomy, competence, and intrinsic motivation might improve long-lasting behaviour change within weight-loss contexts (Teixeria et al. 2012). Further research might be required to investigate gender-related differences in the role of dietary counselling and nutrition education, and if the development of an individual's nutritional knowledge improves autonomous motivation for diet and lifestyle change, reflecting SDT.

4.13.10: Exercise

Exercise was revealed to play an important and additive role by participants in this research. Exercise provided an additional mechanism for achieving flexible restraint, and was used as a coping strategy for social occasions and unplanned digressions, supporting the findings of Martins (2007), De Laney et al. (2014), and Andrade et al. (2013), who found empirical support for the benefits of exercise in this context. De Laney et al. (2014) and Andrade et al. (2013) found that supplementing diet with exercise increased compliance to dietary interventions; participants here suggested that regular exercise reinforced their behaviours similarly. Annesi and Whittaker (2010) provided an explanation for this effect, and suggested that regular exercise enhances self-regulatory behaviours that reinforce weight loss. It has also been suggested that exercise increases feelings of psychological wellbeing and positivity towards weight-loss behaviours (Edmunds et al. 2007). This was supported by one participant here (8), who explained that for her, exercise promoted feelings of positivity and productiveness and enhanced her mood, even when she was feeling negative or discouraged by a lack of restraint. Exercise, therefore, appeared to be an important modifier of mood and enhancer of self-esteem for some, which might be an important benefit within weight-loss contexts, which can be challenging psychologically (Edmunds et al. 2007).

Exercise might also promote self-efficacy to achieve weight-loss in dieting individuals by reinforcing behaviours that are perceived to be conducive to the weight-loss goal (Bandura 1989, Edmunds 2007, Gallagher et al. 2006). Indeed, results of this research indicate that exercise might play a multifaceted, beneficial role in weight management. However, one participant here reported that regular exercise increased his appetite, offering an interesting counterargument to the benefits of exercise within weight-loss contexts. The appetite-promoting effect of exercise might be individual-specific however, and does not appear to be a universal trend (Stensel 2010). Indeed, of the six participants who were exercising at the time that the interviews were undertaken, only one experienced this effect. Additional, agential research exploring exercise within weight-loss contexts might be warranted to further understand the roles and effects of exercise as described within this study.

4.13.11: Structure: Control and Empowerment

Structure was discussed by participants as a mechanism by which they gained control of their environments, which was necessary to counteract the damaging effects of lifestyle interruptions and significant life-events. This was reflected in the organisation and structure theme. Participants in the studies by Hindle and Carpenter (2011) and McKee et al. (2013) reported that control was an underpinning factor in their successful experiences too. The perception of being in control in this research was described as being a by-product of organisation and structures developed by the participants, and also as a consequence of the meta-cognitive changes (mindfulness), cognitive-behavioural techniques (stimulus control, goal setting), and increased self-efficacy experienced as result of their development and implementation (Bandura 1989, Fresco et al. 2010, McKee et al 2013, O'Reilly et al. 2014). Participants explained that losing control lead to inconsistency, relapses, and feelings of negativity, antagonistically. Becoming organised was a formative experience that led to the perception of a greater internal locus of control, which was explicitly articulated by some participants (2 and 7). An internal locus of control has been linked to successful weight loss in the literature (Abusabha and Achterberg 1997, Adolfsson et al. 2005, Elfhag and Rössner 2005, Stubbs et al. 2011, Stubbs and Lavin 2013), and is the perception that the outcome of one's actions are under one's control (Adolfsson et al. 2005). An external locus of control, which is defined as the perception that outcomes are influenced by

external factors not under one's control (Adolfsson et al. 2005), is associated with poor weight loss antagonistically (Adolfsson et al. 2005, Elfhag and Rössner 2005, Stubbs and Lavin 2013).

For some participants (2, 3 7-8), becoming organised and creating structures reinforced an internal locus of control by engendering a sense of empowerment. This developed robustness to challenges such as difficult cravings and poor food availability at work (Abusabha and Achterberg. 1997, Adolfsson et al. 2005). For some (2, 3 and 7), organisation became an important process goal (one that participants could control) underscoring their successes (Notwehr and Yang 2007). Participants also explained that feeling ready to change was fundamental too, and that previous failures were experienced because they were not ready to commit to change. This realisation mirrored the reflections of the weight-maintainers in Hindle and Carpenter's study, who articulated that their previous failures occurred because they were not ready to change (Hindle and Carpenter 2011). Participants in this research explained that realising and accepting the need for change was a prelude to action, reinforcing autonomous motivation (Elfhag and Rössner, 2005), and hastened and strengthened their weight-loss efforts. This was reflected in the development of the readiness to change sub-theme.

4.13.12: Social Support

Social support was an important factor that helped to ensure that participants felt supported and were robust to difficulties and challenges, and appears to be an important and recurring factor in empirical and experiential weight-management research (Bakx et al. 2005, Chambers and Swanson 2012, De Souza and Ciclitira 2005, Kiernan et al. 2014). Participants explained that social support was obtained from a variety of sources, such as work colleagues, friends and spouses, to support groups and slimming clubs. Social support was discussed by both the male and female participants however the manner in which the participants explained that social support was perceived to be beneficial differed between the genders, interestingly. The males (2-4, 6) explained that having health-conscious friends, personal trainers and supportive partners reaffirmed and normalised their weight-loss behaviours. For some of these participants exercise partners and personal trainers created accountability, and having friends and family with interests in health and fitness heightened their interests in healthful behaviours, which indirectly assisted weight loss. By contrast, the female participants (1, 5, 7-8) explained

that weight loss could be an emotive challenge that fostered alienation, and that social support provided mechanisms to deal with difficulties that adjusting to their new lifestyles presented, reducing feelings of isolation, and prompting feelings of solidarity and connectedness.

Aherne et al. (2013), Burke et al. (2009) Hammarström et al. (2014) and Zinn and Schofield (2010) found that dieting females valued social support in such a way to provide stability and feelings of togetherness, supporting the findings of this research. The female slimming club members of this study explained that the groups provided them with moral support and introduced them to peers with similar challenges, who eventually became friends. While social support was clearly important for both genders in this study, the manner in which it was used and valued by participants differed. The different ways in which social support can be experienced and utilised is reflected in the behaviour-change taxonomy developed by Michie et al. (2013), who highlight the efficacy of practical, general, and emotional social-support, behaviour-change interventions. Indeed, while the behaviour-change taxonomy provides important consensus about behaviour-change interventions (Michie et al. 2013), it similarly highlights that social support can take different forms. The utility of social support in weight-loss efforts can be explained through SDT. Relatedness, the feeling of connectedness to others, is an important psychological need that along with competence and autonomy (Deci and Ryan 2008), forms a triumvirate of innate needs that lead to optimal function and personal growth (Deci and Ryan 2008, Ryan and Deci 2000, Teixeira et al. 2012). Social and environmental factors that foster the feeling of security and relatedness might therefore positively influence intrinsic motivation (Deci and Ryan 2008, Ryan and Deci 2000), and help individuals achieve their weight-loss goals (Teixeira et al. 2012). The findings of this research indicate that dieters might require tailored social-support interventions. Future research is therefore necessary to explore these preliminary findings and further investigate gender-related differences related to social support within weight-loss contexts.

4.13.13: Self-Monitoring Behaviours

Self-monitoring appears to be widely associated with successful weight loss and weight-loss maintenance (Burke et al. 2009, Chambers and Swanson 2012, Elfhag and Rössner 2005, Hindle and Carpenter 2011, McKee et al. 2013, Wing and Phelan 2005) and was

reported to be a facilitator by participants here similarly. Self-monitoring took many forms in this study. Participants tracked their diets using apps and electronic tools and devices. Participants also monitored exercise data and valued qualitative assessments of wellbeing. Electronic tools and mobile devices were used by both males and females to varying degrees in this research. Participants explained that they used smart phone apps to complete food and exercise diaries, to collect and tabulate data that they could use to monitor and assess their progress. Monitoring and feedback appear to be important behaviour-change techniques (Michie et al. 2013), and participants in this research made use of mobile technology and online tools to assist them with these behaviours. Research investigating the role of technology-supported weight-loss interventions now appear in the literature (Turner-McGrievy et al. 2011; 2013), and eHealth interventions appear to be effective obesity treatments (Hutchesson et al. 2015), however the efficacy of such tools for weight-maintenance and/or weight-gain-prevention purposes is unclear at this time (Hutchesson et al. 2015). Based on the findings of this study, future research should look to further investigate the use of technology to assist monitoring and adherence as part of complex interventions for weight-management purposes.

Similar to Chambers and Swanson (2012) and Reyes et al. (2012) weight maintainers in this study reduced their self-monitoring activities over time, but suggested that activities such as weighing and food diaries were an important component of their initial weight-loss efforts. Also similar to Chambers and Swanson (2012) and Reyes et al. (2012), the females in this study suggested that they used clothing as a feedback tool, and that the fit and feel of clothing was an important motivator of further weight loss. While both genders made use of technology to collect and monitor data, the males in this study demonstrated a preference for collecting and monitoring exercise data; female participants made use of tools to monitor energy intake and dietary data mostly. These findings might also indicate the presence of gender-related differences in the use of self-monitoring activities. Further research is perhaps required to corroborate or refute this finding however. An important point that should be considered when evaluating this discussion is that participants in this research were all middle-class, educated adults with access to and experience of using mobile devices and the internet; participants of different educational and socio-economic demographics might not have the same access to electronic devices or the same preference for computation. Indeed, Burke et al. (2009) found large discrepancies in how participants integrated and responded to self-

monitoring activities as part of a weight-loss intervention, which reflected the participants' experiences of and affinity for technology and computation. Burke et al. (2009) suggested that self-monitoring activities, while important, might therefore need to be tailored in order to improve adherence. Indeed, individuals with little prior experience of technology might require additional support or alternatives to electronic devices if self-monitoring is to be a component of their weight-loss efforts.

4.14: Study Limitations

While weight loss was revealed to be a complex problem where physical, environmental, social, and behavioural factors disrupt and assist efforts by participants, the homogeneity of the sample and meta-theoretical positioning of critical realism dictate that the generalizability of these research findings cannot be inferred (Guba and Lincoln 1994). Further research that explores the experiences of multiple socio-economic groups and ethnicities, sampled using probabilistic sampling techniques and conducted within a naïve realist paradigm will provide generalisable information. Additional research aligned to a critical realist meta-theoretical model might be required to determine if the results of this study are transferable and that the findings, theories and concepts discussed can be developed, adapted and applied to broader contexts (Guba and Lincoln 1994, Hannes 2011); some of these are explained below and in the following section (4.15). This study recruited four participants who were actively seeking to lose weight and four participants who were in a weight-maintenance phase after achieving earlier weight-loss goals, but did not explore differences between the groups. This might be considered to be a limitation however this was not an aim of this investigation, which sought to obtain an in-depth exploration of weight loss only. Whilst it was beyond the scope of this study, future research might therefore look to contrast the experiences of weight-losers and weight-maintainers, in a bid to explain factors that might lead to long-term weight management (or disrupt it) from the lived experiences of dieting individuals. Nevertheless, this research adds new and important information about the weight-loss experiences of a sample of white, educated adults in the United Kingdom.

4.15: Study Strengths

This study provides detailed, in-depth information about the weight-loss experience, adding to the existing qualitative weight-management research. A benefit of this research was that the participants sampled, while homogenous, were not participating in intervention studies elsewhere. The experiences of these participants might therefore better represent those of the general public who seek weight loss outside of the context of research intervention. Another benefit of this study is that both male and female participants were sampled during recruitment. Male participants are underrepresented in weight-loss research, which is biased towards white, middle-class females (Stubbs and Lavin 2013). This research therefore might reveal new information about male dieting experiences. Whilst it was not within the remit of this research to explore gender-related differences in weight-loss experience, this research provides useful preliminary information in this area, highlighting differences in how males and females experience and accommodated weight-loss goals. Future research is perhaps necessary to explore this in more detail.

4.16: CONCLUSION

The results of this study have highlighted that for participants in this research, weight loss was experienced as a dichotomy of forces that assist or disrupt weight-loss behaviours. Weight loss was assisted by mindfulness, knowledge, exercise, structure, readiness to change, social support, and self-monitoring. Weight loss was challenged by dichotomous thinking and behaviour, environmental challenges, social pressures, and weight centeredness. Weight loss therefore appeared to be a complex experience with physical, cognitive, behavioural, social, and environmental dimensions. The balance between barriers and facilitators of weight-loss goals was skewed towards facilitators in this study, indicating that participants had or were experiencing positive weight-loss changes at the time of data collection. High self-efficacy for lifestyle change, it was suggested, might explain this observation (Nakade et al. 2012, Teixeira et al. 2010). Cognitive-behavioural techniques used by participants to assist their weight-loss efforts included self-monitoring activities, such as weight and body-measurement, food diaries, and exercise and training logs. Mobile technology and web tools assisted the group with the formation and consistency of these habits. Flexible, restrained eating and exercise habits were revealed to be paramount. Diets, it was revealed, needed to be flexible enough to allow for digressions, social eating and unplanned mistakes, but remain rigid enough to ensure negative energy balance. Mindfulness prompted the development of self-awareness and self-regulation, which underpinned many of the facilitators experience by the group. Weight loss could be transformative, engendering new and expanded consciousness and meta-cognition (Fresco et al 2010, Newman 1991; 1997). This enhanced attentiveness and improved self-awareness, however, this could be detrimental also, and heightened attentiveness to weight and weight loss fostered negative and ever-present weight centeredness; weight loss could become all-consuming.

It was revealed that exercise could be used as a tool for flexible restraint, as a coping strategy for planned and unplanned deviations, but was also revealed to reinforce dietary habits, modify mood, and improve self-esteem, reflecting research elsewhere (Andrade et al. 2013). Environmental difficulties, socialising, and the experience of social pressures appeared to be problematic. Becoming organised, developing meal plans, menus and flexible restraint accommodated many of these issues and enabled

participants to cope with challenges. The ability to cope was revealed to be an important factor underpinning success. Becoming organised and developing structure engendered a sense of control and empowerment to remain robust to lifestyle interruptions and dietary difficulties. Having supportive social structures was revealed to be imperative. Supportive friends, family, spouses, and attending slimming clubs reinforced behaviours, provided emotional stability, and fostered a sense of togetherness, eliminating feelings of isolation and alienation, reflecting research elsewhere (Stubbs et al. 2012). In many instances the techniques and strategies used by the group reflected the interventions described in the behaviour-change taxonomy developed by Michie et al. (2013), and perhaps indicates that successful weight loss might be predicated on a cluster of important cognitive-behavioural changes. If this is the case, then researchers and practitioners might need to be cognisant of these techniques in order to investigate and achieve effective and long-lasting behaviour changes in dieters.

A final point that should be understood was that the participants in this research described their weight-loss experiences with deep and thoughtful introspection, emotively, passionately, and at times with remorse and regret. For these participants their weight-loss journeys and weight-related life experiences appeared to be difficult, but could also be rewarding and transformative. For all participants, their attentiveness to their weight-loss goals and behaviours was omnipresent, and sometimes overwhelming. These participants, however, persisted with their weight-loss journeys, despite their many failed attempts, discouragements, and unfortunate life-events; each with varying degrees of success. So, an apt note to reflect upon at the conclusion of this study is that while weight loss is simple—eat less and move more—for those that took part in this research, weight loss was not easy.

CHAPTER 5: STUDY TWO

5.0: Introduction

The aim of study two was to contrast the AfN's undergraduate core competency framework with the interview data obtained from study one. Study two was conducted using FA described by Ritchie and Spencer (1994), Ritchie and Lewis (2003) and Ritchie et al. (2013), and was completed immediately after study one. The goal of this study was to chart the participants' data obtained from study one against the AFN's core competency criteria for undergraduate nutrition degrees using FA's framework matrices. This necessitated however that the interview data be re-interpreted, re-coded, and re-themed to allow for the comparisons to be made effectively. In study one the interview data was coded and themed using *in vivo* codes to remain true to the participants' language, providing rich and descriptive accounts of experience and perception. This differed from the core competency data which described theories, concepts and skills common to nutrition science. To achieve homogeneity between data sources, which was necessary for FA to facilitate the comparisons of this study effectively (Gale et al. 2013), the participants' data was re-interpreted to reflect theories, knowledge and skills using both explanatory and descriptive themes, as described by Gale et al. (2013), to better reflect the core competency framework.

5.1: Course Accreditation Document

The AFN's core competency document (appendix 12) was provided by the AFN prior to data collection and can be found online. Briefly, the AFN document recognises 5 core competencies (and their relevant sub-components) that accredited nutrition courses need to evidence prior to gaining accredited status. The first of the core competencies is 'Science' (CC1), which contains 17 core competencies (CC1a-CC1q) that describe the scientific basis of nutrition and nutritional requirements. The second core competency is 'Food Chain' (CC2), which contains 5 core competencies (CC2a-CC2e) that discuss knowledge and understanding of the food chain and how it impacts dietary choice. The third core competency is 'Social/Behaviour' (CC3), which contains 9 core competencies (CC3a – CC3i) that discuss knowledge and understanding of food, in social or behavioural contexts. The fourth, 'Health/ Wellbeing', contains 8 core competencies (CC4a-CC4h) that describe the application of nutrition science for the promotion of

health and wellbeing. Core competency 5, '*Professional Conduct*' (CC5), contains 7 core competencies (CC5a – CCg) that discuss professional conduct and the nutritionists' code of ethics. Successful weight management is predicated on long term changes to diet, physical activity and behaviours that support their implementation and maintenance (Stubbs and Lavin 2013). Dietary counselling and nutrition education are fundamental components of weight management interventions and programmes (Dansinger et al. 2007), and public health nutritionists and sport and exercise nutritionists registered to the AFN might work within the community or with individuals to provide nutritional services that support weight management needs (Cade et al. 2012, Morton et al. 2010). It might be expected therefore that the AFN's core competency framework provides guidance to course providers about the application of nutrition science to weight management contexts, and was used in this research to understand the required content of accredited nutrition degrees.

5.2: Framework Analysis

Framework analysis was used to manage and facilitate data analysis, allowing for the deductive analysis of concepts highlighted via the prior work of study one and for elements of the core competency criteria to serve as a framework. Framework analysis would allow for cases and themes to be contrasted concurrently; the systematic and transparent management, reduction and reporting of data facilitated by FA led to its utilisation in this study over other qualitative methods such as thematic analysis or contents analysis. A detailed breakdown of the five stages of FA was provided in study one (see section 4.5) and so an abbreviated breakdown of the FA stages will be provided below for study two.

5.2.1: Stage one: Data Familiarisation

Studies one and two were performed sequentially and so much of the data familiarisation necessary to become immersed in the interview data was expedited via the completion of study one. However, to become fully immersed into the core competency data and to re-conceptualise the interview data as needed in study two, the principal investigator reviewed the audio files, read and re-read the accreditation document, interview data, and annotated notes obtained during study one. Due to the

reconceptualization of the interview data, it was necessary to revisit and re-read each of the transcripts after reviewing the aims of study two in detail (Ritchie et al. 2013).

5.2.2: Stage two: Identifying the Thematic Framework

The accreditation documents and interview transcripts were combined to create a new raw dataset and handled in Microsoft Word 2010 (Microsoft Corporation, Redmond, WA). Initial codes were identified on a line-by-line and paragraph-by-paragraph basis. Themes were identified inductively and deductively using both semantic and latent theming techniques as described by Braun and Clarke (Braun and Clarke 2006). Inductive themes were identified using open coding and participants' language was used to generate *in-vivo* codes to remain true to the data (Ritchie et al. 2013), where appropriate. Deductive themes (theme 4: *Psychological Constructs and Behaviour-Change Techniques*) were preselected from literature which details the psychological complexity of weight loss and behaviour change (Elfhag and Rössner 2005, Michie et al. 2011, Stubbs et al. 2011, Stubbs and Lavin 2013, Teixeira et al. 2010; 2012), and were identified via the successful completion of study one.

The use of prior work in this manner is typical of critical realism, where such work is used to develop theoretical frameworks that are applied to the research (Sobh and Perry 2005). In this way, the deductive themes developed by the prior work served as a framework within which the analyses could be conducted. Semantic themes were developed where the participants' language reflected an area of knowledge, such as goal setting. Latent themes were developed to explain the participants' experiences within the context of theories and knowledge, and were contextualised and triangulated using literature definitions and examples. To highlight, if participants explained that feeling in control (or not feeling in control) of their eating behaviour was an important part of their experiences, this data was coded as *Locus of Control*, which is a psychological concept known to impact dieters (Adolfsson et al. 2005). Triangulating data and theoretical concepts in this way is also characteristic of critical realist research (Sobh and Perry 2006), and literature used to interpret meanings and theme the data in this way is indicated in the results section (see section 5.4). Figure 5.1, below, depicts the thematic framework developed at the completion of this stage.

Figure 5.1: Preliminary Thematic Framework. The framework's themes emerged from participants' and accreditation document data, which were combined; themes developed via semantic and latent theming techniques inductively and deductively.

Key Theme	Sub-Themes
1. Knowledge and Education	None
2. Exercise	None
3. Planning	3.1. Diet Design 3.2. Self-Management
4. Psychological Constructs and Behaviour-Change Techniques	4.1. Dietary Restraint 4.2. Locus of Control 4.3. Self-Efficacy 4.4. Self-Monitoring 4.5. Goal Setting 4.6. Coping Strategies
5. Determinants of Eating	5.1. Environmental determinants 5.2. Socio-cultural determinants
6. Social Support	None

5.2.3: Stage Three: Indexing

Data was imported into NVivo 10 (QSR International, Victoria, Australia) to be indexed in stage three of the FA. A new node was created for the thematic framework which was entitled *Themes II* (to differentiate it from study one) and each of the themes were entered into the node, similar to the processes outlines in study one (see 4.7). As before, the data was transposed from the original sources into the relevant themes and sub-theme, and each theme and sub-theme was created as a separate node folder in NVivo, unless it was a sub-theme contained within a theme, such as *Self-Efficacy* (theme 4.3), which was a sub-theme of the *Psychological Constructs and Behaviour-Change Techniques* theme (theme 4). At this stage, the themes within the nodes had been indexed such that they contained only the raw data from the relevant sources, which was either verbatim text from the interview transcript or accreditation document. A sample of the indexed data is provided in figure 5.2, which can be found overleaf.

Figure 5.2: Indexed Data Sample. Data from the accreditation document and participants 1 and 3 presented from *Knowledge and Education* and *Environmental Determinants* themes, highlighting the development of the themes.

Source	Theme/Sub-Theme	Example Text
Accreditation Document	1: Knowledge and Education	<i>'Theories of nutrition health education and nutrition health promotion'</i>
Participant 1	1: Knowledge and Education	<i>'Because I've said before like I want to be informed and make the informed decision'</i>
Accreditation Document	5.1: Environmental Determinants	<i>'Consideration of financial/social and environmental circumstances on diet and nutritional intake'</i>
Participant 3	5.1: Environmental Determinants	<i>'The things that led to my success right now have been environment changes, so going away, working on specific projects in a very well contained environment.'</i>

5.2.4: Stage Four: Charting

The framework matrices tool in NVivo was used to chart and reduce the data and facilitate the contrasting of the participants' data and core competency document. Data from the participants and core competency document were treated as different cases to facilitate the comparisons. The matrices were created so that each row represented a case (participants or accreditation document) and each column represented a theme or sub-theme, which were developed from stage three (see figure 5.1). The text was then summarised within the matrices while referring back to the original coded data using NVivo's tools. The framework matrices therefore tabulated each theme's data and source (participants vs. core competency document). Sample framework matrix data can be found in figures 5.3 and 5.4. In addition to the framework matrices created using NVivo, a separate numerical matrix was created to identify where the majority of data resided for each case and theme numerically. This was created using Microsoft Word 2010 (Microsoft Corporation, Redmond, WA, USA) and was similar to central labels chart that was used to determine associations between data in the study by Spencer and Whelan (1988). This additional matrix was created to identify data clustering for each

case and theme and provided useful supplementary information, assisting data triangulation (Sobh and Perry 2006). The framework matrices were created to determine the quality of association between the themes and cases and were the primary mechanism of the analysis however. The numerical matrix (figure 5.5) can be found within the results section (see section 5.4).

5.2.5: Stage Five: Mapping

The framework matrices were imported into Microsoft Excel 2010 (Microsoft Corporation, Redmond, WA, USA) and printed off for the mapping and interpretation of stage five, where rows (cases: participants vs. core competency document) and columns (themes and sub-themes) were compared qualitatively to determine areas of association and dissociation. Comparisons were therefore made between the participants and the core competency criteria for each theme and sub-theme. Mapping was also facilitated at this stage with the numerical matrix (figure 5.5).

5.3: Verification

As with study one, it was also necessary to verify the coding, theoretical framework and analyses of study two to enhance the validity of the study's findings (Porter, 2007). The same process of verification was undertaken for study two as was conducted in study one, therefore the coding, theoretical framework and interpretation of study two was independently verified and collectively agreed by the principal investigator and supervisory colleagues prior to stage three and after stage five, using the meetings process described earlier (see 4.6.1). Readers are advised to consult study one for further details of how this was achieved.

Figure 5.3: Sample Framework Matrix: *Exercise*. Data are presented from the accreditation document and participants for theme 2: *Exercise*, demonstrating the development and structure of the matrix using summarised and original text examples; bracketed numbers indicate the participant making the quote.

Key theme 2: Exercise		
Case	Summary Text	Original Text Examples
Course Accreditation	Need to understand principles of measuring energy balance, expenditure, body-composition, fitness and physical activity and understand theory and methods of investigating diet, nutrient and activity patterns	<i>'CC4a - Principles and methods of measurement and estimation of energy balance; energy expenditure physical activity and fitness; body mass; body composition; how body mass and energy balance are controlled'</i>
Participants	Participants explain that exercise and diet are complementary to their goals by 'punctuating a reminder' to eat well and that the 'discipline' of physical activity is beneficial. Exercise provides a calorie safety net and allow for flexibility with eating. Exercise can be used to set goals and provide feelings of positivity.	<p><i>'I think it's just the two go well together in my head and I just think like you're almost like double attacking it then' (1),</i></p> <p><i>'if I'm exercising three or four times a week, that punctuates a reminder to stay on track and eat clean or eat healthy' (2),</i></p> <p><i>'But if I exercise I eat better'(3),</i></p> <p><i>'Helping the progress is the discipline of the physical activity.' (5).</i></p> <p><i>'...having the gym there gives you more structure...if exercise plays a part you can set yourself other goals, so you are not focusing so much on food... you would want to give up and feel negative about yourself, if the gym's going well at least that's something that you're able to do' (8)</i></p>

Figure 5.4: Sample Framework Matrix: *Locus of Control*. Data are presented from accreditation document and participants for theme 5.2: *Locus of Control*, demonstrating the development and structure of the matrix using summarised and original text examples; bracketed numbers indicate the participant making the quote.

Sub theme 5.2: Locus of Control		
Case	Summary Text	Original Text Examples
Course Accreditation	Must contain theories and application of methods of improving health, behaviour and change.	<i>CC3f - Theories and application of methods of improving health, behaviour and change</i>
Participants	<p>Participants describe that an internal locus of control enables successes and describe that the sensation of 'being in control' allows them to make eating decisions, makes them feel 'focussed' and promotes flexible restraint so that they have a 'flexible', 'relaxed' and 'balanced outlook'. Internal locus of control can be challenged due to external influences and 'slip ups' do occur. However the Internal locus of control allows participants to regain control when relapses occur</p> <p>Participants describe where the feeling of an external locus of control leads to disinhibited eating or where they are unable to control their behaviours due to external factors.</p>	<p><i>'So it feels good to be in control and it feels good to be healthy and know that I'm doing the right things in accordance with how I want to behave' (2),</i></p> <p><i>'So yes, there are external influences, you know, everybody else having a drink, it's just about making a choice and committing to that choice as well, committing to that decision' (3),</i></p> <p><i>'There is this like feeling of control and sometimes when you have the control, you're quite focused' (7)</i></p> <p><i>'It (weight gain) can spiral a bit but I think you'll only let it go so far. I would only let it go so far' (8).</i></p> <p><i>'And then life distracts you. It's as if you've got so much emotional energy to give and when you're stressed out on other things, focusing on the diet's hard, you know, but it is psychological.' (6)</i></p>

5.4: RESULTS

Core competencies one (*Science*), three (*Social/Behaviour*) and four (*Health and Wellbeing*) were indexed most frequently during the data management processes, highlighting that these three core competencies were most reflective of the interview data. Preliminary analyses revealed that the AFN competency criteria did not specify any core competencies that directly reflected weight loss however one core competency (CC1j) stipulated the requirement for an understanding of conditions that might require dietary manipulation or affect physical activity, such as obesity and chronic disease states.

Figure 5.5: Numerical matrix. The matrix depicts data clustering for each theme and sub-theme from the participants' and accreditation document data; numbers represent the amount of references made for each theme and sub-theme in the appropriate column; numbers in parenthesis indicate which participant make to the reference to the appropriate theme.

Key Theme	Sub-Themes	Participants References	AfN Document References	Total References
Knowledge and Education	None	26 (1-8)	23	49
Exercise	None	35 (1-4, 6-8)	5	40
3. Planning	3.1. Diet Design 3.2. Self-Management	20 (1-4, 6-8) 9 (2,3,6-8)	14 3	34 12
Psychological Constructs and Behaviour-Change Techniques	4.1. Dietary Restraint 4.2. Locus of Control 4.3. Self-Efficacy 4.4. Self-Monitoring 4.5. Goal Setting 4.6. Coping Strategies	53 (1-5,7-8) 56 (1-8) 64 (1-8) 38 (1-8) 23 (1,3-4, 6-8) 36 (1, 3-8)	2 2 2 2 2 2	55 58 66 40 25 38
Determinants of Eating	5.1. Environmental Determinants 5.2. Social Determinants	38 (1-7) 60 (1-7)	3 3	41 63
Social Support	None	39 (1-8)	3	42

5.4.1: Theme 1: Nutrition Knowledge and Education

Indexed Core Competencies:

CC1a: The human body and its functions, especially digestion, absorption, excretion, respiration, fluid and electrolyte balance, cardiovascular, neuro-endocrine, musculoskeletal and haematological systems, immunity and thermoregulation, energy balance and physical activity

CC1b: Mechanisms for the integration of metabolism, at molecular, cellular and whole body levels

CC1c: What nutrients are (including water & oxygen)

CC1d: Nature and extent of metabolic demand for nutrients

CC1e: How nutrients are used by the body, consequences of deficiency and assessment of nutritional status

CC1f: Non-nutrient components of foods and drinks that affect diet and health including alcohol

CC1g: Nutrient analysis: calculating nutrient contents of foods and diets of an individual or group of individuals, justifying choice of a method of dietary assessment for a specific stated purpose

CC1h: Digestion, absorption, transportation and storage of nutrients and non-nutrient components of foods

CC1i: Nutrition in health and disease, consequences of an unbalanced diet

CC1j: Nature of common conditions that require dietary manipulation or can affect physical activity, such as obesity, diabetes, hypertension, cardiovascular disease, cancer etc.

CC1k: How nutritional needs change with age, gender, physical activity, lifestyle etc.

CC1m: Ability to carry out sample selection and to ensure validity, accuracy, calibration, precision, replicability and highlight uncertainty during collection in accordance with the basic principles of good clinical practice

CC1n: Ability to obtain, record, collate, analyse, interpret and report nutrition-related data using appropriate qualitative and quantitative research and statistical methods in the field and/or laboratory and/or intervention studies, working individually or in a group, as is most appropriate for the discipline under study

CC1o: Prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually

CC1p: Health research methods, dietary nutrition methodologies and nutritional epidemiology

CC1q: Theories of and development of practical skills in communication and learning

CC2a: Food commodities (staple foods, main sources of key nutrients, novel foods etc.) within UK and/or internationally

CC2b: Effect on chemical composition and nutritional quality of food and diet of: methods of food production, preparation, preservation, fortification and format, sources of food supply, methods of cooking & storage

CC2c: Familiarity with and/or development of practical skills involved in the methods to analyse the composition of foods

CC2d: Ability to formulate ideas and opinions concerning food, nutrients, non-nutrient components of food and nutrition effectively and appropriately

CC2e: Understanding of issues associated with food sustainability

CC3h: Theories of nutrition health education and nutrition health promotion

Summary:

The participants (1-8) made 26 references to nutrition knowledge and education and suggested that increasing knowledge improved their eating habits. Knowledge was gained from studying, slimming groups and via contact with health professionals. Participants explained that understanding how food affects the body, the energy contents of food, the provenance of food, and recipes and food choices meant that they were better able to make informed decisions, facilitating their weight-loss efforts:

'Just as an education thing as much as anything, you know. So I sat there with a meal in front of me thinking I wonder what this contains, wonder what this is, well I can find out, I can work out how many calories are in that, the proportions of carbs, proteins, whatever the breakdown of that food is'. (3)

'I started to learn about what we needed as fuel and why we needed it'. (6)

The competency document provided 23 criteria from core competencies 1-3 that reflected the participants' explanations. Core competency 1 (*Science*) contained 17 competencies (CC1a-CC1q) in areas such as nutrition science, human physiology, metabolism, and dietary analysis, and related mostly to this theme. Competency 3h: *'theories of nutrition health education and nutrition health promotion'*, recognised the need to understand educational theories specifically, equipping nutritionists with educational knowledge to educate client-groups with nutritional information.

5.4.2: Theme 2: Exercise

Indexed Core Competencies:

CC1a: The human body and its functions, especially digestion, absorption, excretion, respiration, fluid and electrolyte balance, cardiovascular, neuro-endocrine, musculoskeletal and haematological systems, immunity and thermoregulation, energy balance and physical activity

CC1b: Mechanisms for the integration of metabolism, at molecular, cellular and whole body levels

CC1c: What nutrients are (including water & oxygen)

CC1d: Nature and extent of metabolic demand for nutrients

CC1e: How nutrients are used by the body, consequences of deficiency and assessment of nutritional status

CC1f: Non-nutrient components of foods and drinks that affect diet and health including alcohol

CC1g: Nutrient analysis: calculating nutrient contents of foods and diets of an individual or group of individuals, justifying choice of a method of dietary assessment for a specific stated purpose

CC1h: Digestion, absorption, transportation and storage of nutrients and non-nutrient components of foods

CC1i: Nutrition in health and disease, consequences of an unbalanced diet

CC1j: Nature of common conditions that require dietary manipulation or can affect physical activity, such as obesity, diabetes, hypertension, cardiovascular disease, cancer etc.

CC1k: How nutritional needs change with age, gender, physical activity, lifestyle etc.

CC3f: Theories and application of methods of improving health, behaviour and change

CC4a: Principles and methods of measurement and estimation of energy balance; energy expenditure physical activity and fitness; body mass; body composition; how body mass and energy balance are controlled

Summary:

The participants (1-4, 6-8) explained that exercise complemented their eating behaviours:

'I can exercise without dieting but I can't do dieting without exercising.' (3)

Participants explained that exercise provided structure and discipline, that exercising punctuated reminders to eat well, that deviating from dieting would create the perception that exercise was wasted, and that exercise provided goals and reinforced positive behaviours:

'If I go out for a run, which I enjoy doing, and I eat badly, I've ruined that hour that I've spent going out for a run' (3)

Exercise was also articulated to provide an energy-expenditure safety net and was used as a mechanism for promoting flexible restraint for some. One participant in particular explained that exercise increased his appetite and that he had to manage his eating

habits based on his exercise volume, highlighting linkages between exercise and appetite for this participant:

'You know, the more exercise I do the hungrier I become' (6)

The course accreditation document recognises the requirement to understand, measure, and estimate energy balance and physical activity (CC1a, CC4a), the nature of conditions that affect physical activity (CC1j), and how dietary needs change with physical activity levels (CC1k). However, these criteria did not specify the need to understand the behavioural effects of exercise in weight loss, nor the effects of exercise on appetite. Competency CC3f: *'theories and applications of improving health, behaviour and change'*, might have some relevance to the behavioural dimensions of exercise however an understanding of this is not made explicit within the criteria.

5.4.3: Theme 3: Planning:

This theme emerged to represent factors that prompt organised and structured weight-loss efforts and consisted of the sub-themes *'Diet Design'* and *'Self-Management'*.

5.4.3.1: Theme 3.1: Diet Design

Indexed Core Competencies:

CC1c: What nutrients are (including water & oxygen)

CC1d: Nature and extent of metabolic demand for nutrients

CC1e: How nutrients are used by the body, consequences of deficiency and assessment of nutritional status

CC1f: Non-nutrient components of foods and drinks that affect diet and health including alcohol

CC1g: Nutrient analysis: calculating nutrient contents of foods and diets of an individual or group of individuals, justifying choice of a method of dietary assessment for a specific stated purpose

CC1i: Nutrition in health and disease, consequences of an unbalanced diet

CC1j: Nature of common conditions that require dietary manipulation or can affect physical activity, such as obesity, diabetes, hypertension, cardiovascular disease, cancer etc.

CC1k: How nutritional needs change with age, gender, physical activity, lifestyle etc.

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3d: Religious and cultural beliefs and practices that impact on food, nutrition and health

CC3e: Consideration of financial/social and environmental circumstances on diet and nutritional intake

CC3g: Design and implementation of intervention projects and programmes, methods for monitoring and evaluating effectiveness and efficiency

CC3i: Ability to design/formulate a diet to meet a specification appropriate for a stated situation for an individual, human or animal, or group of humans or animals.

CC4b: Theory and methods of investigating the dietary, nutrient and activity patterns of the general population, sub groups and the individual

CC4h: Ability to integrate knowledge and understanding from a variety of sources to identify or propose solutions in one of the following areas: Improvement of human health or improvement of the welfare and/or productivity of animals or improvement of food production and sustainability

Summary:

The participants (1-8) manipulated their eating habits to accommodate their weight-loss goals (20 references). Participants described that through trial and error, and as a product of gaining new knowledge, that they made adjustments to their diets such as calorie counting, carbohydrate manipulation, eliminating foodstuffs, and reducing portion sizes to achieve their weight-loss goals:

'Just trying to eat relatively healthy but keep under sort of 1,800 calories' (1)

'I've picked up a few key things I'm trying to do. I try and eat reasonably frequently. I battle over my carbs. I try and eat a reasonably large breakfast, normally protein based, probably egg based, try and include some sort of vegetable with each feeding'. (2)

Fourteen references from core competencies one (*Science*), three (*Social/Behaviour*), and four (*Health/Wellbeing*) were interpreted to reflect relevant knowledge and skills required of nutritionists in this area. These criteria were detailed and focussed towards knowledge of nutritional requirements (CC1k, CC3c and CC4d), and reflected the participants' experiences well. This knowledge was specific, and based on variables such as age, gender and activity (CC1k), and included knowledge of dietary, activity, and nutritional status assessment methods (CC1e, CC1g and CC4e). The ability to design diets that meet a client's needs was explicitly articulated within criterion CC3i.

5.4.3.2: Theme 3.2: Self-Management

Indexed Core Competencies:

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3e: Consideration of financial/social and environmental circumstances on diet and nutritional intake

CC3f: Theories and application of methods of improving health, behaviour and change

Summary:

The participants (2-8) suggested that organising and structuring their lives was important to ensure adherence (9 references), and that when their structure was challenged adherence became difficult. A lack of structure, organisation and effective time-management led to previous failures for some:

'The difference between now and perhaps in the past is that I was less organised'. (2)

Participants devised weekly and monthly shopping lists and had set-meals/menus; they planned and cooked and prepared their food ahead of time; they stocked larders with foods and prioritised, planned, and structured exercise to achieve their weight-loss goals. The participants explained that their behaviours needed to be purposefully

flexible however, to allow for situations that might require digression, facilitating consistency:

'My structure is flexible enough to say that's all right, that's fine. I'm not going to deprive myself of anything just because it's not perfect'. (3)

The competency document makes no references to self-management knowledge and skills however CC3c, CC3e, and CC3f of core competency three (*Social/Behaviour*) might reflect the requirement to understand needs, practices, lifestyle circumstances, and mechanisms to accommodate these factors, however this was not clearly articulated within any criterion. Self-management did not appear to be clearly reflected within the core competency criteria.

5.4.4: Theme 4: Psychological Constructs and Behaviour-Change Techniques:

This theme captured the psycho-behavioural knowledge contained within the data (participants and core competency document) and consisted of psychological concepts associated with weight loss: *'Dietary Restraint'*, *'Locus of Control'* and *'Self-Efficacy'*, and behaviour-change techniques used to facilitate weight loss: *'Self-Monitoring'*, *'Goal Setting'* and *'Coping Strategies'*.

5.4.4.1: Theme 4.1: Dietary Restraint

Indexed Core Competencies:

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3f: Theories and application of methods of improving health, behaviour and change

Summary:

This theme was created using Johnson and Wardle (2005) Polivy, Heatherton and Herman (1988), Ruderman (1986), and Teixeira et al. (2012), who describe dietary restraint as the dichotomy of rigid restraint and flexible restraint. The participants made 53 references to flexible and rigid restraint and warned that rigidity (for some) could lead to obsessiveness, was unsustainable, and might lead to disinhibited eating (1-7). The participants explained that flexible restraint allowed them to remain in control by affording them opportunities for digressing from their diets when needed:

'I suppose this is where the not going so far that I become obsessive about it comes in, but going far enough so that if I do have a bit of a blowout of a weekend that actually I can rationalise that ' (3)

The accreditation document contained two references that might reflect this theme and CC3f of core competency three (*Social/Behaviour*) might relate mostly dietary restraint within the criteria. While this competency recognises the importance of knowledge of health behaviour and change, this competency did not stipulate the requirement to understand dietary restraint, how it impacts weight-related behaviours, or how to promote flexible restraint in others. Dietary restraint was not clearly reflected within the core competency criteria.

5.4.4.2: Theme 4.2: Locus of Control

Indexed Core Competencies:

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3f: Theories and application of methods of improving health, behaviour and change

Summary:

This theme was created using Abusabha and Achterberg (1997), Adolfsson et al. (2005), and Balch and Ross (1975), who describe locus of control as the extent to which an individual perceives that they can control the factors in their lives that affect them. The participants (1-8) provided 56 references to locus of control, and suggested that an internal locus of control was important for autonomous motivation, adherence and was a precursor to success:

'Being in control is something I'm enjoying' (2)

'And normally when I've done diets before; I haven't necessarily felt that in control' (7)

The participants explained that an external locus of control prompted previous failures, and that the sensation of control allowed them to make choices and decisions about their eating and exercise behaviours that reflected their wants and needs. Control could be challenged by environmental and circumstantial factors if sufficient coping mechanisms were not present however:

'You know, there's been chocolates in the house and it's whenever there's any kind of social thing going on that I find it really difficult to stick to an eating plan'. (1)

The course accreditation document provided two criteria that might reflect locus of control within the 'Social/Behaviour' theme (CC3c and 33Cf), however knowledge of an external or internal locus of control, and how to develop an internal locus of control within dieting groups, was not clearly indicated within any criteria in the document.

5.4.4.3: Theme 4.3: Self-Efficacy

Indexed Core Competencies:

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3f: Theories and application of methods of improving health, behaviour and change

Summary:

This theme was created using information from Abusabha and Achterberg (1997), Bandura (2001), and Zokolsky (2009), to define self-efficacy within weight loss as an individual's belief in their ability to achieve their weight-loss goals. The participants explained that self-efficacy was connected to their eating (1, 2, 6-8), weight-loss (1, 4), and exercise goals (3, 5 and 8), and behaviours. Self-efficacy was therefore revealed to be complex and situational. High self-efficacy was related to successful completion or adherence to behaviours, low self-efficacy was not, and 64 references were made to self-efficacy within the interviews:

'And feeling like you're achieving something as well and that you can do it and it makes me feel more positive' (1)

The perception of self-efficacy enhanced motivation and improved consistency; efficacy within one area, such as exercise, prompted efficacy to achieve eating and weight-related goals elsewhere, in a reciprocal fashion. However, some participants revealed that a lack of self-efficacy was linked to previous failures and suggested that this might prevent further weight-loss success, antagonistically:

'I pretty much if I put my mind to something I can do it, and the only thing that I feel that I don't have that much success with is probably dieting and things that are related to that' (1).

The accreditation document contains two criteria that might be relevant to the self-efficacy theme within core competency three (CC3c and CC3f). However, knowledge of self-efficacy, the critical concepts that Bandura (1989) highlights that influence self-efficacy: 'mastery', 'vicarious experience', 'verbal persuasion' and 'affective states', and strategies to enhance self-efficacy within others, were not clearly articulated within any criteria within the competency document.

5.4.4.4: Theme 4.4: Self-Monitoring

Indexed Core Competencies:

CC3f: Theories and application of methods of improving health, behaviour and change

CC3h: Theories of nutrition health education and nutrition health promotion

Summary

The participants provided 38 references to self-monitoring activities. Participants explained that they used food diaries and calorie counters to monitor their diets (1-8). This was facilitated with smart phone apps and mobile technology for some:

'I have my Fitbit bug tracker, whatever, what it is to track my steps on a daily basis and when I get on my bicycle I have my Scosche armband...So it's all sort of tracked and the food diary is done as part of My Fitness Pal.' (6)

Participants explained that self-monitoring was used for self-regulation and educational purposes, that they weighed themselves, took measurements, assessed how clothes fit, used subjective feelings of health and wellness, and monitored exercise performance as indications of their progress. Self-monitoring activities appeared to be an important weight-loss habit however antagonistically participants 1 and 4 explained that regular weighing could be discouraging if weight loss plateaued, or was not as quick as desired:

'My weight actually hasn't changed anything meaningful since last December, which is discouraging' (4)

Competencies CC3f and CC3h of core competency three (*Social/Behaviour*) might be relevant to this theme however these criteria provided no explicit information about how to develop self-monitoring behaviours in others. Seven competencies from ‘*Science*’ (core competency one) and ‘*Health/Wellbeing*’ (core competency four) specified that courses must include knowledge of the assessment and evaluation of diet, body-composition and nutritional status (CC1e, CC1g, CC1n, CC1o, CC3g, CC4a and CC4e), which might reflect this theme. However, these criteria did not appear to be directed towards developing any of these activities in others, be for educational and/or weight-loss or weight-management purposes, and were therefore not indexed into this theme.

5.4.4.5: Theme 4.5: Goal Setting

Indexed Core Competencies:

CC3f: Theories and application of methods of improving health, behaviour and change

CC3h: Theories of nutrition health education and nutrition health promotion

Summary:

This theme was created using information from Sniehotta (2009) to define goal setting as internalised representations of desired outcomes. The participants explained that creating and achieving goals improved motivation and self-efficacy, and suggested that goals drove their weight-loss behaviours (1-4, 6-8):

‘I’m keen to make sure I have some definite goals for continuing my progress’ (3)

The participants described outcome-oriented goals such as weight ideals, health goals and life events, and process-oriented goals such as exercise goals and knowledge goals, as important motivators for their behaviours:

‘Whereas if exercise plays a part then you can set yourself other goals as well’ (8)

The competency criteria provided one criterion that might directly relate to goal setting (CC3f) and one that might have indirect relevance (CC3h) to assisting with the development and counselling of weight-related goals. Both criteria appear within core competency three (*Social/Behaviour*). However, no explicit guidance about goal-setting

theories, methods, techniques, and how to implement them with weight-management client-groups, was provided in any criteria of the core competency document.

5.4.4.6: Theme 4.6: Coping Strategies

Indexed Core Competencies

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3f: Theories and application of methods of improving health, behaviour and change

Summary:

This theme was created using information provided by Elfhag and Rössner (2005) and Stubbs et al. (2012) that describe coping as cognitive and behavioural factors used to manage internal and external demands. The participants described situations that threatened their compliance and described coping strategies that allowed them to remain adherent given challenging circumstances (36 references). Some participants revealed that stressful life events lead to binge-eating in the absence of sufficient coping mechanisms. Comfort eating was revealed to be a problem for some participants, particularly in response to difficult circumstances. Social situations were revealed unanimously to threaten consistency (1-8), and the following examples were described as coping mechanisms for social occasions: driving instead of drinking, limiting food choices, flexible restraint, and increased exercise volume:

'Because I knew I was going away and food would be awful, Friday morning I made myself get up and go and have a run' (7)

The course accreditation criteria provided two criteria that might relate to coping from core competency three (CC3c and CC3f), which stipulate the requirement for knowledge of environments and applications of methods of improving behaviour, however, these criteria provided no information about coping strategies, factors that might require them within weight-management contexts, or how to develop coping strategies with clients. Coping strategies were not clearly reflected within the core competency criteria.

5.4.5: Theme 5: Determinants of Eating:

This theme consisted of two sub-themes which describe external factors that influence food choice and eating behaviour (*Environmental Determinants* and *Social Determinants*). These sub-themes broadly reflected sociological and structural explanations of eating (Delormier et al. 2009), and emerged from the participants' and core competency data similarly.

5.4.5.1: Theme 5.1: Environmental Determinants

Indexed Core Competencies:

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3d: Religious and cultural beliefs and practices that impact on food, nutrition and health

CC3e: Consideration of financial/social and environmental circumstances on diet and nutritional intake

Summary:

This theme was created using Delormier et al. (2009) and Gustaffson and Draper (2009) who describe environmental determinants as physical and perceived environmental factors that influence dietary choice. The participants explained how their environments impacted their food choices and behaviours, providing 38 references that described how their environments challenged or benefitted their weight-loss goals. Common environmental challenges included the home (1-7), work (1, 5 and 7), and travel (5 and 6). Environments impacted the participants by affecting the availability of food choices, creating temptations and time constraints. The home presented a number of challenges for participants, and the presence of non-diet foods and appetite stimulating cues in the house created temptations and issues that were described by some:

'There were lots of indulgent type treaty foods knocking around the house, whilst I'm not offering up excuses, but that's sort of tough' (4)

Participants 1 and 2 revealed that their work and home environments were beneficial however, and for both participants the structure of these environments facilitated or reinforced their weight-loss behaviours positively:

'The things that led to my success right now have been environment changes' (2)

The course accreditation document provided 3 criteria from core competency three (CC3c, CC3d and CC3e) that reflect an understanding of environmental determinants of food choice and eating, which might reflect the participants' experiences within this theme. Environmental determinants appeared to be well reflected in the core competency criteria.

5.4.5.2: Theme 5.2: Social Determinants

Indexed Core Competencies:

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3d: Religious and cultural beliefs and practices that impact on food, nutrition and health

CC3e: Consideration of financial/social and environmental circumstances on diet and nutritional intake

Summary:

This theme was created using Delormier et al. (2009) and Gustaffson and Draper (2009), who detail social and sociocultural factors that influence dietary choice. The social determinants theme described incidences where social influences, social environments, and social situations impacted food choices and behaviours. Participants (1-8) described in detail how social influences could be either positive or negative to their weight-related goals. Social eating, drinking, family life, spouses and family members were revealed to impact eating and weight-related choices, either beneficially or destructively:

'I'm out with work colleagues and they want to go for two pints and an Indian or they want a fish and chip supper or they want to, you know. Or we're out at a restaurant and they all want three courses, what do you do' (6)

The course accreditation document provided 3 criteria (CC3c, CC3d and CC3e) from core competency three that related to the social determinants theme. These criteria specified an understanding of religious, cultural and social eating determinants that shape food choice and behaviour, reflecting participants' data. Social determinants appeared to be well-reflected within the criteria.

5.4.6: Theme 6: Social Support

Indexed Core Competencies:

CC3c: Factors that affect an individual's, communities' and population groups' nutritional needs and practices

CC3e: Consideration of financial/social and environmental circumstances on diet and nutritional intake

CC3f: Theories and application of methods of improving health, behaviour and change

Summary:

This theme was created using information from Bakz et al. (2005), who describe social support as the physical and perceived availability of supportive significant others. The participants (1-7) revealed that social support was an important contributor to their successes, provided 39 references to social support, and suggested that weight loss would be difficult without it:

'You can't do a diet I don't believe of any type unless you've got the support of those who live around you' (6)

The participants described that having supportive partners, friends, families, and work colleagues benefited them by providing support and guidance. One participant in particular revealed that becoming part of slimming club provided her with moral support, which had been lacking in her previous attempts, and was finding this new experience beneficial (5). Participants explained however that weight loss could foster isolation and described how family members and spouses could be destructive and act as saboteurs to their weight-loss efforts, through actions such as buying/offering forbidden foods, and/or eating forbidden foods in their company. A lack of support was

revealed to create difficulties for participants, and could make weight-loss dieting a negative experience:

'If you don't have that structure or that support I suppose within the family environment, whatever environment that you're in, then it's a lot, it is just something that just consumes you' (7)

Competencies CC3c, CC3e and CC3f were indexed into this theme from core competency three (*Social/Behaviour*). While it is possible that CC3f might reflect knowledge of social support, no explicit information about social support in the context of weight loss or weight management, or how to engender or enhance social support in others, was specified within any criteria within the course accreditation document.

5.5: DISCUSSION

The aim of this study was to contrast the AfN's undergraduate core competency framework with the interview data obtained from study one. One initial finding from this study was that the competency criteria contained no explicit references to weight loss, weight maintenance or weight management, and so it was not clear if the competency criteria reflected or addressed weight-related issues specifically. One of the competency criteria (CC1j) reflected the requirement for courses to include information about conditions that might require dietary manipulation, such as obesity or chronic disease (the competency criteria specified obesity and chronic disease within its phrasing) however this was the only criterion within the document to make any reference to a weight-related issue. This initial finding was surprising considering that weight loss and obesity are important, well-researched, diet-related issues (Stubbs and Lavin, 2013, Swinburn et al. 2011), and that dietary counselling and nutrition education are implicit components of weight-management programmes (Dansinger et al. 2007). Importantly, it should be noted that there are five core competencies and 46 sub-competencies contained within the accreditation document, and that core competency four (Health and Wellbeing) is focused towards the application of nutrition science to the health and wellbeing of individuals, groups, and communities (Association for Nutrition 2012). However, despite the range of competencies and sub-competencies contained within the document, and the explicit focus towards understanding health and wellbeing articulated in core competency four, weight-management (weight loss or weight maintenance) was not addressed in any of the criteria.

Registered public health and sport and exercise nutritionists might work with individuals, groups, or communities with weight-loss needs to provide education, support and consultancy services (Cade et al. 2012, Morton et al. 2010). Registered nutritionists might therefore require specialist knowledge and skills in weight loss and weight management. The lack of recognition for obesity and weight management is of particular importance in light of the substantive, recent, projected population increases in obesity. Indeed, it has been forecasted that by 2030 more than 50% of the UK population will become obese, which carries important health and economic consequences to society (Wang et al. 2011). This rapid growth underscores the need to develop effective weight-loss interventions (Shan 2008). Future revisions of the

competency model might therefore need to address the growing obesity problem in better depth and look to embed detailed knowledge about obesity, its underpinning, consequences, prevalence, and treatment. Importantly, the competency model might need to be updated to stipulate that evidence-based, weight loss and weight-loss maintenance intervention strategies are appropriately appraised within undergraduate nutrition education, on the basis that there are no explicit criteria which indicate that this needs to be achieved, and that diet-induced weight loss is an implicit obesity treatment.

5.5.1: Areas of Congruence

The numerical matrix (figure 5.5) highlighted that the course accreditation criteria contained more references to the *Nutrition Knowledge and Education* (theme 1) and *Diet Design* themes (theme 3.1) than any of the other themes in this study. These themes were also well populated by the participants' data and multiple references to the roles of knowledge, education, and diet design were made during the interviews. Indeed, the framework matrices revealed that *Nutrition knowledge and Education* (theme 1) and *Diet Design* (theme 3.1) demonstrated parity between the participants' data and competency criteria, suggesting that the participants' experiences of these themes might be well reflected in the education and training of nutritionists. Practical knowledge including recipes, menus, and methods to improve eating options and dietary choices were articulated by participants to be valuable. Theoretical knowledge, including the underpinning theories of energy balance, the energy contents of foods, the effects of foods on the body, and the psychology of eating were reported to be of equal importance too. The participants explained that improving knowledge informed decision making, facilitating perceptions of autonomy, reflecting self-determination theory (Ryan and Deci 2000). The participants (4-7) who were exposed to professional help or support services (through consultations with health professionals or as members of slimming groups) also described that the knowledge and skills gained from these experiences had been beneficial. Increased knowledge was an important weight-loss experience.

The competency criteria contained clear guidance about underpinning scientific knowledge within core competencies 1-4, which included sub-competencies about nutrition science, physiology, metabolism, the food chain, and theories of nutrition, health and behaviour change, reflecting the participants' data. Of note, and relevant to

those clients that discussed the benefits of dietary education within their journeys, the competency document also specified that degree programmes must embed theories of nutrition and health education into their curricula (core competency CC3h). Dietary counselling and nutrition education appear to be beneficial for weight-loss (Spahn et al. 2010), and the inclusion of criterion CC3h might indicate that student nutritionists develop knowledge of the underpinning theories of health education in their studies.

5.5.2: Diet Design

Diet Design, which was a sub-theme of the planning theme, contained multiple references from the participants and the accreditation document. The participants made 20 references to diet, food, and nutrition; the competency document contained 13 references from core competencies one (*Science*), three (*Social/Behaviour*) and four (*Health and Wellbeing*) that were indexed into the theme. Participants described dietary adjustments, which ranged from portion control and calorie counting, to low carbohydrate diets and fasting, however, little commonality was found with the strategies that the group employed. This lack of consensus reflects research which indicates that many dietary strategies will lead to weight loss as long as a negative energy balance can be achieved (Korczak and Kister 2013, Sacks et al. 2009). The long-term efficacy of a dietary manipulation (for weight-loss purposes) might therefore reflect its sustainability and agreeableness (Thomas et al. 2008). Research indicates that increased hunger, diminished satiety and cravings are common problems that dieters experience when losing weight (Sumithran et al. 2011). Managing the diet in such a way to avoid deprivation and optimise satiation might therefore be important to achieve and maintain weight loss (Hindle and Carpenter 2011, McKee et al. 2013, Stubbs et al. 2012). The competency document detailed a wide range of criteria that reflected dietary and nutritional assessment, nutritional recommendations, and diet design for tailored needs within core competencies one (*Science*), three (*Social/Behaviour*) and four (*Health and Wellbeing*). Perhaps unsurprisingly, it might be expected that accredited courses develop learners with the scientific knowledge and practitioner skills necessary to design a client-specific diet. Indeed, dieters appear to prefer and value tailored weight-loss materials over generic guidelines and frameworks (Kreuter et al. 1999), validating the value of developing these skills in practitioners.

5.5.3: Determinants of Eating

The competency criteria made multiple references to cultural, religious, environmental, and social determinants of eating, and it is likely that the environmental and social determinants discussed by participants reflected those encompassed by the criteria. The competency document contained three criteria that were indexed against both of these themes: criteria CC3c, CC3d and CC3e of core competency three (*Social/Behaviour*), which described knowledge of individual's, group's, community's, and population's needs, religious and cultural beliefs, and the consideration of financial, social, and environmental circumstances that impact diet and eating. While only three references from the competency document populated the matrices compared to the 38 (environmental) and 60 (social) made by the participants for these themes, associations were evident between data, and participants described issues that reflected cultural, financial, social and environmental circumstances. It should be noted however that the criteria were broad and generic, and did not specify an understanding of any specific circumstances. Delormier et al. (2009) describe how eating is a social practise influenced by social and physical environments but is also a behaviour within the control of the individual. Discussing the influence of environments on dietary choice, Delormier et al. (2009) discuss how an individual's eating patterns form in relation to other people and alongside the influences and constraints of everyday life, such as family and work commitments, and suggest that the isolated choice of the individual is conditioned by the context within which the choice occurs. Interestingly, participants in this research suggested that their environmental and social situations influenced their eating habits, reflecting Delormier's hypotheses, and suggested that these influences could be either problematic or beneficial to their weight-loss endeavours.

5.5.4: Social Determinants of Eating

Participants described how their upbringing, social circles and family life influenced their eating and exercise habits. Participants also described how adjusting behaviours to reflect their weight-loss goals altered their social contexts, creating the perception of isolation and alienation from friends and family, as the newfound habits differentiated them from their social circles. Criticising the weight-management literature for a lack of engagement with and an understanding of social context, Delormier et al. (2009) also suggested that behaviour-focused research undervalues the role that social structures

play in dietary choice, and described eating as a symbiosis of structure (rules and resources), and agency (voluntary action), within the model Giddens's structuration theory (Giddens 1985). Schubert et al. (2012) later argued however that structural concepts and explanations of dietary choice have become firmly embedded into the modern nutrition paradigm, using the concepts of '*Socio-Economic Nutritional Inequalities*' and the '*Obesogenic Environment*' hypotheses as examples of how this knowledge features in the literature. While it was clear that the participants in this study voiced the effects of their environmental and social contexts on their weight-loss efforts, the identification of socio-cultural and environmental determinants highlighted within the core competency criteria partially supports Schubert's suggestion that nutrition science is now embracing structural determinants of eating. Given the frequency and strength of the participants' discussion of these factors, nutritionists might need to have a clear understanding of how physical and social environments impact food choice. Because it appears that these factors are embedded within the competency framework, it might be expected that UK nutrition programmes are informing learners of such factors.

5.5.5: Areas of Dissociation

Participants suggested that exercise was a vehicle that reinforced positive behaviours, where exercising regularly improved food choices and dietary adherence (35 references). This finding is reflected in research elsewhere (Annesi and Whittaker 2010, Andrade et al. 2010). Participants suggested that beyond energy expenditure (which was articulated as a perceived benefit), exercise provided structure and could be used as a mechanism to compensate for planned deviances. Indeed, research elsewhere indicates that exercise might be used as a tool to improve flexible restraint (Andrade et al. (2010)—participants here articulated this similarly. It appeared that exercise played a complex and supportive role, where exercising provided behavioural and psychological benefits, some of which might be explained within the contexts of SDT and self-efficacy (Bandura 1989; 2001, Deci and Ryan 2008) (see 4.13.1 for details of these theories). Participants explained that exercise could be used as a tool to modify mood and enhance psychological wellbeing, interestingly. This finding features elsewhere in the literature (Edmunds et al. 2007), and might indicate that this is an important benefit of exercise for physically-active dieters.

Exercise was also revealed to influence appetite negatively however. While this was a unique experience for one participant in this research, exercise might possess appetite-stimulating and/or appetite-suppressing effects that are individual-specific and mode-dependent (Stensel 2010). Indeed, evidence indicates that some modes of exercise, such as high-intensity interval exercise (Martins et al. 2015), and resistance training (Broom et al. 2009), appear to have appetite-reducing effects which are mediated in part by alterations to satiety-promoting, gut peptide hormones (Broom et al. 2009, Stensel et al. 2010). The conjoining of high-intensity exercise and dietary manipulation for weight-loss purposes might therefore be an ideal weight-loss strategy for some individuals (Stensel et al. 2010). While an understanding of exercise and physical activity was recognised by the competency criteria, this recognition reflected its mechanistic function in energy expenditure and metabolism only; there appeared to be no criteria that reflected its psychological and behavioural dimensions, or its effects on appetite. While an understanding of energy expenditure is vital to understanding energy balance and weight regulation (Eckmekcioglu and Touitou 2011), the behavioural roles of exercise within weight loss contexts have been highlighted in the literature (Annesi and Whitaker 2010, Andrade et al. 2010, Chambers and Swanson 2012, Hindle and Carpenter 2011), were readily articulated by participants here, but were not indicated in the competency criteria.

5.5.6: Self-Management and Control

Self-Management (theme 3.2) was discussed by participants as a mechanism to engender control over their environments and behaviours, and was partially analogous to the structure theme of study one. In study one (see 4.12.4 and 4.13.11) the role of structure was discussed as a mechanism to enhance an internal locus of control (Adolffson et al. 2005). Participants planned shopping, made lists, and planned meals and exercise based on their schedules. This included social eating and travel arrangements. Participants structured meal timings and made sure that the home and work environments were conducive to their goals by having food available when needed. While core competency one (*Science*) references an understanding of how nutritional requirements might change with lifestyle, it appeared that no criteria within any of the core competencies reflected an understanding of the theories underpinning self-management, or the development of self-management skills in clients/patients, such

as SCT (Bandura 1989, Sniehotta 2009), or SDT (Ryan and Deci 2008, Deci and Ryan 2000). Readers are advised to refer to section 4.13 of chapter 4 for details of these theories. Given the strength that the participants voiced of the benefits of organising and maintaining control of their environments and lifestyles, which promoted stability and consistency and reflected experiential research elsewhere (Chambers and Swanson 2012, Hindle and Carpenter 2011, McKee et al. 2013), future revisions of the competency criteria might need to explore how such factors influence food choice and behaviour (Janke et al. 2014).

5.5.7: Psychological Constructs and Behaviour Change

Of all of the themes from study two psychological constructs and behaviour-change techniques was referenced most by the participants but referenced fewest by the competency criteria. Participants demonstrated or described psychological theories and behaviour-change techniques that explained and/or assisted their efforts. Dietary restraint, locus of control and self-efficacy, which are all factors that have been identified in the literature to be associated with weight loss and weight maintenance (Elfhag and Rössner, Nakade et al. 2012, Teixeira et al. 2004; 2010; 2012, Stubbs et al. 2011, Stubbs and Lavin, 2013), were either discussed or demonstrated by participants in this research. Self-monitoring, goal-setting and coping strategies, which have also been identified as being important components of effective weight management elsewhere (Barnes et al. 2007, Burke et al. 2009, Hindle and Carpenter 2011, Stubbs et al. 2011), were also identified and discussed by the group too. Core competency three (*Social/Behaviour*) was most reflective of these concepts, and specified that courses must include knowledge and understanding of food in social and behavioural contexts. Within the sub-components of this core competency perhaps the only guidance to reflect these issues was criterion CC3F: *'theories and applications of methods of improving health, behaviour and change'*, and criterion CC3G: *'design and implementation of intervention projects and programmes'*. While CC3F specifies that theories and applications of methods of improving health, behaviour and change should be included in course curricula, there is no guidance to suggest what theories or applications of these theories this should entail. It should also be noted that there is no guidance within competency CC3G about the types of interventions this criterion reflects too, and so it is not clear if this competency reflects dietary or behavioural interventions (or both).

No explicit references to any of the theories, constructs or tools discussed by the participants were provided in any of the criteria within the accreditation document. Whilst it is plausible that the competency framework is purposefully brief, the weighting of the document appeared to be shifted towards the scientific understanding of food and nutrition, and lacked similar inclusiveness and detail about the psycho-social characteristics of food, nutrition, weight loss, weight maintenance, or any weight-related or dietary issue. The lack of detail about psychological and behavioural concepts within the framework contrasts markedly from core competency one (*Science*), and core competency four (*Health and Wellbeing*), which provide comprehensive and detailed criteria that describe scientific knowledge and skills that are to be embedded into curricula. Further evaluation via a larger explorative study is perhaps required to verify this finding in detail however. Such research might facilitate the revision of the competency framework to provide a more comprehensive account of the psychological and behavioural dimensions of nutrition and weight loss.

5.5.8: Behaviour-Change Literature

While the lack of specificity regarding psycho-social knowledge within the competency criteria might also be purposeful to allow higher education providers to introduce a wide range of psycho-social theories and cognitive-behavioural tools within their curricula, issues with the behaviour-change research might necessitate that more explicit guidance is provided however. Behaviour-change studies are often complex, and consist of multiple interventions and variables that interact to achieve change (Michie et al. 2011). It is not always clear therefore which of these strategies have led to change (Michie et al. 2011). Reporting practises within the behaviour-change research are also sometimes inconsistent, and it has been suggested that interventions and behaviour-change techniques utilised are often only partially reported or not reported at all by some authors (Abraham and Michie 2008, Michie et al. 2011). Michie et al. (2011) suggest that findings from these studies are often unpredictable, and that much of the behaviour-change literature is equivocal and lacking replicability (Abraham and Michie 2008, Michie et al. 2011). In many instances, it seems that ambiguity within the research has been the product of methodological problems and poor reporting practices (Michie et al. 2011). Indeed, Michie et al. (2011) constructed the CALO-RE taxonomy to accommodate for many of these inconsistencies. It also appears that important linkages

between behaviour-change techniques and their theoretical underpinning might also be unclear (Abraham and Michie 2008, Michie et al. 2011, Sniehotta 2009). Michie et al. (2011) and Sniehotta (2009) suggest that many behaviour theories do not specify which behaviour-change techniques lead to behaviour changes and that there is similar uncertainty about how to match techniques onto their underpinning mode of action (Michie et al. 2011). Considering the controversy and ambiguity surrounding behaviour-change research, and the seemingly important role that it plays within weight management (Burke and Wang 2011), there is an obvious need to identify the most optimal, efficacious interventions and link them to their appropriate theoretical underpinning. The lack of specificity within the core competency criteria might indicate that these tools and theories are not identified nor appraised appropriately within education programmes, if left to the interpretations of the higher education provider only. Education providers might therefore require additional, specific guidance from the AfN about which theoretical behaviour models and behaviour-change techniques to embed within their curricula.

5.5.9: Social Support

Social Support (theme 6) is a widely-reported factor that appears to assist weight management (Kiernan et al. 2012), and its formative role within weight loss was articulated clearly by participants in this research too. Three competency criteria were indexed to create the *Social Support* theme (CC3c-CC3f), however no clear references to social support were made in any of the criteria. One of the key findings from this research, which was reflected in the findings of Hindle and Carpenter (2011), was that weight loss can lead to the perception of isolation and that social support lends moral, emotional, and practical support to dieters. Bakx et al. (2005) discussed the role of social support within weight-loss contexts, and differentiate structural support, which is the availability of significant others (such as a spouse or family), from functional support (the perception of being supported by others), and revealed that the dieter's perception of being supported is perhaps more important than the mode of support experienced. Bakx's findings highlight the importance of relatedness (as conceptualised within SDT, Ryan and Deci 2008) within weight management as a mechanism to engender motivation, which was discussed in detail in study one (see 4.13.12 for more information). Participants in this research discussed how they sought and valued

functional support in order to accommodate alienation and reinforce productive behaviours.

The relevance of social support also draws parallels to Delormier's hypotheses that food and eating are a form of social practice (Delormier et al. 2009), and that social structures and meaning appear to be linked to food choice and eating behaviours (Crotty 1993). The alienation experienced by some participants in this research might indicate that dieters perceive that weight loss removes them from peer-groups that share habituated (food-related) practises and identity. The success of some slimming club programmes might therefore reflect the normalisation of food choice and eating behaviour through the development of new peer groups who share similar goals and identities (Delormier et al. 2009, Stubbs et al. 2012). It is interesting to note however that it is structural support that is most often provided in weight-loss interventions and slimming groups, typically in the form of group and/or one-to-one support and counselling (Butryn et al. 2011). It is not clear if and how increasing structural support increases the perception of functional support however (Bakx et al. 2005), which appears to be the most valued mode of support experienced by dieters (Bakx et al. 2005). Future research might be required to investigate methods that promote functional support optimally in weight-loss groups.

5.5.10: Nutrition Science: Biases

Authors such as Murcott (2000), Pelto et al. (2003) and Schubert et al. (2012) have argued that nutrition research has been biased towards quantitative, scientific investigation, and has lacked sufficient engagement with social science. Schubert et al. (2012) suggest that social understanding within nutrition has been biased towards structural sociological concepts, lacking agential understanding. The authors claim that this is further propagated by education programmes, which continue to develop learners with insufficient knowledge and skills within social science disciplines. Within this study the clearest guidance relating to social knowledge for accredited courses was demonstrated within core competencies CC3c, CC3d and CC3e, which were mapped against the environmental and social determinants themes. Recall that these criteria reflect religious, cultural, financial, social, environmental, and community and population-based determinants and needs, which are all structural factors that shape food choice and eating behaviour (Delormier et al. 2009, Giddens, 1985). While the

competency criteria appeared to embrace structural concepts in the form of social and environmental determinants of eating, this study indicates that knowledge and understanding of weight-loss behaviour, and the behavioural dimensions of exercise and self-management, appears to be lacking, partially supporting the assertions of Schubert and team (Schubert et al. 2012). A more holistic understanding of diet-related issues is perhaps necessary for the effective treatment and prevention of many modern dietary challenges (Crotty 1993, Schubert et al. 2012). While weight loss is only one small aspect of nutrition science, overweight and obesity are becoming increasingly important societal issues that are impacted by food choice and eating behaviour (Burke and Wang 2011, Stubbs and Lavin 2013). Eating, it has been revealed, possesses behavioural and social dimensions that affect the antecedents and outcomes of its action that nutrition science might need to better engage with (Delormier et al. 2000, Nakade et al. 2011, Schubert et al. 2012, Stubbs and Lavin 2013). While it is clear that the core competency criteria engages with and reflects a broad range of disciplines and knowledge domains, the ambiguity of some criteria might indicate that nutrition courses might not adequately address weight loss in sufficient detail to provide student nutritionists with an appreciation of its complexity.

It should be recognised that the responsibility to embed and evidence the AfN's core competency framework rests with education provider delivering the undergraduate degree (Association for Nutrition 2012). The goal of this research was to provide a constructive evaluation of the existing AfN criteria as the foundation for weight-loss education within undergraduate nutrition courses in the UK. If nutritionists are to fully understand weight loss, based on the competency framework appraised within this research, then it is possible that the higher education providers might be providing learners with incomplete information. It should be recognised however that the possession of an undergraduate degree from an accredited course entitles graduates to register as an associate nutritionist only; full registration to the UKVRN requires the evidencing of three years' professional experience (Associate for Nutrition 2012). It is therefore also possible that registered nutritionists might obtain deeper knowledge of weight loss after graduation, during the years prior to achieving full registration.

5.6: Study Limitations

Limitations of this study are that a small sample of white, middle-class, UK adults was obtained to provide the comparator for the accreditation document, meaning that the experiences described might not fully reflect the weight-loss needs and experiences of all dieting groups. Future research might therefore look to employ larger, more diverse samples from a range of social and ethnic backgrounds in an effort to describe and explain their experiences in rich detail, to provide a more diverse account of weight-loss experience. An additional limitation of this study is that the AfN's core competency model was the only estimate of undergraduate nutrition knowledge used for comparison. Future research might therefore be needed to determine if the findings of this study are transferable to broader contexts, and within course curricula directly (Sobh and Perry 2006). Future studies might therefore look to evaluate accredited and non-accredited course curricula, to determine if and how weight loss is being addressed within undergraduate course provision, or, contrast the weight-loss practices of accredited nutritionists with the needs and experiences of dieting individuals, to evaluate the weight-loss practices of professionals directly.

5.7: Study Strengths

At the time of writing this appears to be the first study that provides an in-depth comparison of lived experiences of weight loss with an educational model, and is the first of its kind which has sought to investigate the education and training of nutritionists in the United Kingdom. This research should serve as a catalyst for further investigation, evaluation, and perhaps modification, reflecting the demand for new strands in nutrition education (Schubert et al. 2012), and nutrition research similarly (Pelto et al. 2003, Schubert et al. 2012).

5.8: CONCLUSION

This study contrasted the weight-loss experiences of a group of dieters with the core competency framework developed by the AfN to accredit undergraduate nutrition degrees, which provides an estimate of the education and training of student nutritionists in the United Kingdom (Association for Nutrition 2012). This study has revealed that the following themes, which emerged inductively and deductively from the dataset (participants and core competency model), using FA, shared congruence between cases (participants and core competency criteria): *Knowledge and Education, Planning: Diet Design, Determinants of Eating: Social Determinants and Environmental Determinants*. The following themes were found to be discordant, missing, or lacking parity when contrasting the participants' and core competency data: *Exercise, Planning: Self-Management, Psychological Constructs and Behaviour-Change Techniques: Dietary Restraint, Locus of Control, Self-Efficacy, Self-Monitoring, Goal Setting, Coping Strategies, and Social Support*. The results of this study offer partial validation for the critiques of Schubert et al. (2012), who suggest that nutrition education propagates an incomplete understanding of complex dietary problems, which often contain important physical, environmental, and psycho-social constituents that might not be fully elucidated within nutrition science. This study also appears to be the first of its kind to investigate the education and training of nutritionists in the UK, and should serve as impetus for further discussion and future investigation.

6.1: Key Findings

This thesis had two aims. The first aim of this thesis was to further agential understanding of weight loss, add to the existing qualitative weight-management literature, and explore the weight-loss experiences of a sample of UK dieters. The second aim of this thesis was to contrast the AfN's undergraduate core competency framework with the interview data obtained from study one. This second aim was undertaken to investigate the claim that nutrition education propagates only a partial understanding of dietary problems (Schubert et al. 2012), which appear to have important physical, environmental and psycho-social elements that might not be fully recognised within nutrition science (Crotty 1993, Delormier et al. 2009, Pelto et al. 2003, Schubert et al. 2012). Through the successful completion of studies one and two this thesis has revealed the following. Firstly, it was revealed that weight loss is a difficult, encompassing, and transformative journey that requires individuals to be robust to physical, psychological, behavioural, social, environmental, and practical challenges that threaten adherence and consistency. This adds to existing weight-management research (Abildso et al. 2014, Sairanen et al. 2014, Teixeira et al. 2010, Vogels et al. 2005), and offers new insight into the weight-loss experience.

It was revealed that little consensus was found in the dietary strategies taken by participants in this research (see 4.13), reflecting evidence which indicates that many dietary approaches will lead to weight loss on the provision that a negative energy balance is met and sustained (Korczak and Kister 2013, Sacks et al. 2009). It was also discussed that dieting is known to result in adaptations that disrupt satiety, increase appetite, and reduce energy expenditure once clinically significant weight losses have been achieved (Sumithran et al. 2011). Managing the diet to mitigate the effects of these adaptations while achieving a negative energy balance, or an energy neutral state if maintaining weight loss, might therefore be an optimal strategy for those individuals seeking weight loss or weight maintenance (McKee et al. 2013, Stubbs et al. 2012). Higher protein diets, which appear to have satiating effects (Leidy et al. 2010), might be useful for this purpose; low glycaemic diets high in fibre and rich in plant-based foods might also be useful similarly (Du et al. 2010). Composite diets that are high in fibre and protein, whilst being rich in plant-based foods and of reduced glycaemic index,

might therefore be a preferred dietary strategy for weight-management purposes (Larson et al. 2010). Dieters, therefore, might need to understand the satiating effects of these manipulations in order to accommodate some of the negative adaptations to weight loss articulated in this thesis.

This thesis has also revealed that the weight-loss journey necessitates the development of purposeful and flexible strategies to remain adherent, including behaviour-change strategies such as self-monitoring, flexible goal-setting, mindfulness, and coping mechanisms and flexible restraint. It was also discussed in studies one and two (see 4.13 and 5.5) that success might rest with an individual's ability to develop, maintain and adjust these weight-loss behaviours over time, and on the provision that supportive social structures normalise and reinforce these behaviours are available also. These findings appear to be consistent with research on weight-maintainers, who appear to sustain, adapt and modify their weight-loss behaviours indefinitely, to ensure that weight is not regained, and who also possess the social support structures needed to support their weight-loss behaviours and newfound lifestyle choices (Hammarström et al 2013; 2014, Hindle and Carpenter 2011, Stubbs and Lavin 2013). Successful weight loss was revealed to be a complex achievement.

This thesis has also revealed that the AfN's core competency criteria for undergraduate nutrition degree programmes might not reflect a deep understanding of weight loss, and that the core competency model could be improved to provide a more comprehensive account of the various dimensions of weight loss discussed in this thesis. It was revealed that the core competency framework appeared to be focused towards scientific knowledge and did not appear to adequately address the behavioural dimensions of weight loss that participants described (see 5.4). This latter finding is important, reflecting the suggestions of authors who propose that social and agential knowledge is lacking in nutrition science (Pelto et al. 2003, Schubert et al. 2012), and that this is then reflected in nutrition-education programmes (Schubert et al. 2012), which fail to foster the holistic understanding of complex dietary problems.

On the basis of these findings, it is possible that student nutritionists in the UK might not obtain a complete understanding of the complex nature of weight loss (as described within this thesis) if the core competency criteria (as it is presented in the guidance document) is the underpinning framework for undergraduate nutrition degrees. It

should be recognised however that higher education institutes need to evidence how the core competencies and the sub-components of the core competencies are mapped against relevant modules (Association for Nutrition 2014), and that the interpretation and application of the core competency framework rests firmly with the higher education institute. Although the AfN's core competency framework can only serve as a guiding document that needs to be interpreted, applied, and evidenced appropriately by the higher education provider, it is important for it to represent a wide range of diet-related issues. Overweight and obesity are a multifaceted, complex dietary problem that are predicated on dietary, physical, behavioural, and psychological and environmental antecedents (Giskes et al. 2011, Myers et al. 2012, Swinburn et al. 2011). Non-surgical and non-pharmacological conservative weight-loss treatments are also often predicated on dietary, physical, environmental, psychological, or behavioural adjustments (or adjustments to all) to achieve weight reduction and improve health concomitantly (Stubbs and Lavin 2013). The findings of this thesis reflect this latter point, and elucidate the difficulty that individuals experience to achieve weight loss. The core competency model therefore needs to better engage with complex dietary problems such as weight loss, and explore these issues in depth, in order to confirm and maximise its relevance in this time of health-care dilemma, resulting as a consequence of dietary excess, prolonged weight gain, and its resultant economic ramifications (Shan et al. 2008, Swinburn et al. 2011).

6.1.1: Weight-Loss Experiences and Additional Training Requirements

This thesis has revealed that issues such as dichotomous thinking patterns, environmental constraints, and social problems and pressures threaten the achievement and maintenance of weight-loss behaviours (see 4.10). Strategies that develop self-awareness, self-management, and self-regulation might assist behaviour management whilst losing weight (McKee et al. 2013). Intuitive eating, mindfulness-based interventions (Alberts, Thewissen and Raes 2013), and cognitive-behavioural techniques (Grilo et al. 2011) might be effective tools to accommodate the weight-loss needs of individuals. Practitioners, therefore, might need to understand these interventions to provide effective services. Participants in this research articulated the benefits (and pitfalls) of becoming mindful and self-aware. Improving practical knowledge of recipes, food options, and menu choices, as well as theoretical knowledge

of food, energy balance, and physical activity, through education and counselling, might improve informed decision making, autonomy, and perceptions of competence (Deci and Ryan 2008, Ryan and Deci 2000). Fostering autonomy and competence, which are innate psychological needs discussed within SDT, improves intrinsic motivation (Deci and Ryan 2008), which is important for long-lasting behaviour change to occur (Teixeira et al. 2012) (see 4.13.9). Participants in this research reported that developing knowledge was an important contributor to their successes.

An important finding of this research was that participants' experiences appeared to be skewed towards a successful weight-loss experience, which was explained within the contexts of social cognitive theory (SCT) and self-efficacy (see 4.13 and 4.13.1). Recall that SCT is a psychological theory of human learning that explicates the agency of human behaviour (Bandura 1989). Within SCT humans are self-organising, self-evaluative, self-directed, and self-regulatory (Bandura 2001), and are the product of personal (cognitive, affective and biological), behavioural and environmental (contextual) factors (Bandura 2001). Self-efficacy is a theoretical concept within SCT that reflects an individual's belief that they have the ability to complete a desired task successfully (Bandura 1989; 2001, Elfhag and Rössner 2005, Sniehotta 2009), appears to be linked to successful weight management (Nakade et al. 2012, Teixeira et al. 2010, Vogels et al. 2005), and can be developed with the use of behaviour-change techniques such as goal-setting, verbal persuasion, and observational modelling (Michie et al. 2013). Low self-efficacy appears to be associated with poor weight management and a history of weight cycling (Burke et al. 2009, Hammarström et al. 2014). A history of failure might lead to low self-efficacy to achieve weight-loss goals (Nakade et al. 2012). Self-efficacy is therefore believed to be an important concept within weight loss and weight maintenance (Elfhag and Rössner 2005, Nakade et al. 2012), and participants in this research substantiated much of the existing self-efficacy evidence: participants' successful experiences were underpinned by perceived self-efficacy to achieve the weight-loss (and related) tasks (see 4.13 and 5.4.4.3). Nutritionists might therefore require knowledge of SCT, self-efficacy, and behaviour-change techniques such as verbal persuasion and observation modelling (which promote self-efficacy, Michie et al. 2013) for effective practice. The behaviour-change taxonomy recently developed by Michie et al. (2013) details these techniques.

Weight loss appeared to have complex social dimensions, some of which created difficulties such as the perceptions of isolation, alienation, and spousal sabotage (see 4.11.3 and 5.4.5.2). This finding was commensurate with research on weight losers and weight maintainers elsewhere (Hindle and Carpenter 2011, Whale et al. 2014), and might be an important experience for individuals who seek to manage weight. However, the development of social-support structures appeared to be an important factor that assisted weight loss, accommodated some of these negative social experiences, and appears to be a recurrent factor in weight-management research (Bakx et al. 2005, Chambers and Swanson 2012, De Souza and Ciclitera 2005, Kiernan et al. 2014). Within SDT, relatedness (the feeling of connection to others) is an innate psychological need (along with competence and autonomy), which in an environment that promotes a sense of security and contextual support, fosters autonomy, competence, and intrinsic motivation (Deci and Ryan 2008; Ryan and Deci 2000). Recall that intrinsic motivation is the self-desire to undertake behaviour (see 4.13.12 of study one), is driven by internalised reward mechanisms, and might be important for long-lasting weight loss (Teixeira et al. 2012). Nutritionists might therefore need to understand the complex effects of stigma, alienation, spousal sabotage, and social support, which were all described in depth by participants in this research. Nutritionists might therefore look to promote or facilitate mechanisms of obtaining structural and functional social support, to improve relatedness and intrinsic motivation in dieting individuals (Bakx et al. 2005, Deci and Ryan 2008), to accommodate some of the previously-described social issues.

This thesis has also revealed that an organised life engenders a sense of structure and control over the environment, which could be problematic for dieters, where appetite promoting stimuli and difficult food choices meant that dieters needed to accommodate environmental issues regularly (see 4.11.2). Becoming organised and developing structures were revealed to promote an internal locus of control by participants (see 4.13.11 of study one and 5.4.4.2 of study two), which appears to be an underpinning factor in successful weight loss (Adolffson et al. 2005), and helped to accommodate the environmental difficulties described. Nutritionists might need to understand how to develop self-management skills in others and prompt the perception of an internalised locus of control for weight loss to be successful (Adolffson et al. 2005, Elfhag and Rössner 2005, Stubbs and Lavin 2013). Self-management therapies might assist with

the development of these qualities (Janke et al. 2014). Coupling dietary changes with exercise was revealed here to have important additive and complementary behavioural effects (see 4.12.3 of study one and 5.4.2 of study two), where the adherence to structured exercise programmes reinforced dietary strategies and prompted feelings of positivity and self-efficacy, reflecting weight-loss research elsewhere (Andrade et al. 2010, Chaput et al. 2007). Exercise was revealed to effect appetite negatively by one participant in this research however (see 4.12.3 and 5.4.2), which was revealed to be alleviated by encouraging active individuals to undertake high intensity exercise, such as interval training or resistance exercise (Broom et al. 2009, Martins et al. 2015), in a post-prandial state for optimum anorectic effects (Stensel 2010). The coupling of these behaviour changes might be an effective strategy for those seeking to lose weight (Curioni and Lourenco 2005, Dansinger, 2007). Practitioners might therefore need to understand the behavioural, beneficial, and problematic effects of exercise and diet within weight-loss contexts.

It was revealed that dieters need to recognise their readiness to change and develop autonomous motivation to undertake and maintain their weight-loss goals (see 4.12.5). Motivational interviewing is a technique that can be used to enhance autonomous motivation to attempt lifestyle, dietary, and physical-activity changes in this way and can be used as an adjunct to cognitive-behavioural therapy (Van Dorsten 2007). Motivational interviewing might therefore be an important skill for practitioners to develop. Self-monitoring appears to assist with weight loss and weight maintenance, preceding self-evaluation, and the self-reinforcement of weight-loss progression (Burke et al. 2011). Self-monitoring might therefore lead to self-regulation (Burke et al. 2011) and promote the maintenance of important weight-loss behaviours. The consistent self-monitoring of dietary intake, body-weight, physical-activity and other important weight and health-related behaviours to ensure vigilance and attentiveness to goals, progression and maintenance, might therefore assist weight loss and maintenance efforts too (Burke et al. 2009). Self-monitoring activities were an important component of successful weight management for participants in this research (see 4.12.7 of study one and 5.4.4.4 of study two) and prompted accountability and consistency. Mobile devices, gadgets and online tools might all assist with this behaviour, and were revealed to be useful tools by the participants. Research confirms this finding, and points to the benefits of similar tools elsewhere in certain circumstances (Carter et al. 2013, Hutchesson et al.

2015). Nutritionists might therefore need to understand how to develop self-monitoring activities in others, and identify what tools might be most appropriate to assist with the development and maintenance of the behaviour.

6.1.2: Gender-related Differences

An unexpected outcome of this thesis was that male and female participants articulated differences in how they experienced and accommodated their weight-loss journeys (see 4.13.9 and 4.13.13). It appeared in this research that males and females adopted different approaches to improving knowledge, obtaining social support, and developing and maintaining self-monitoring activities, which were revealed unanimously to be important factors in successful weight loss. Male participants articulated preferences for theoretical knowledge, which led to the perception of informed decision making and autonomy. Female participants expressed preferences for practical knowledge that could improve eating decisions and offer variety. Whilst this finding was unexpected (determining gender-related differences was not an aim of this thesis), research has indicated that male dieters appear to prefer rigid knowledge and instruction, and that female dieters report preferences for knowledge that promotes variety and flexibility (Zinn and Schofield 2010). This thesis appears to support this observation. Gender-related differences in the role of social support were observed here too, and male participants explained that social support increased perceptions of accountability when supportive others shared behaviours, which for some also led to the development of shared interests in exercise and health. These interests became new motivators for some, replacing weight-loss goals, and signified a transition from outcome-oriented, weight-related goals to process-oriented, behavioural goals. Interestingly, research indicates that process goals might be more effective for weight loss than outcome goals (Notwehr and Yang 2007). Participants who made this transition articulated similar findings (see 5.4.4 5).

Female participants, however, revealed that social support offered emotional stability and reduced perceptions of isolation, which reflected existing experiential weight-management literature (Aherne et al. 2013, Burke et al. 2009, Hammarström et al. 2014 and Zinn and Schofield 2010). Male participants in this research discussed preferences for self-monitoring exercise performance; female participants appeared to self-monitor dietary data and body-mass (kg); differences in how the genders monitored progress

were clearly apparent. The observation of gender-related differences in this research reflects the suggestions of authors who argue that weight-loss interventions might need to be individualised (Aherne et al. 2013, Burke et al. 2009, Stubbs et al. 2011), but might also reflect differences in the participants' motivations and goals. Nutritionists, therefore, might need to be cognisant of individual motivations for the development of weight-loss behaviours, and their experiences of them similarly.

6.1.3: Changes to the Core Competency Framework

This thesis has revealed that if nutritionists are to work with weight-loss clients then more comprehensive and explicit weight-management-focused criteria might need to be developed and evidenced within the AfN's core competency model. These criteria might need to reflect the scientific, social, and behavioural dimensions of weight loss discussed within this thesis (and weight maintenance), and include information about improving client's knowledge, dietary counselling, educational techniques, and the social and behavioural benefits of exercise within weight-loss contexts (Andrade et al. 2010, Chaput et al. 2011). These criteria might also need to include knowledge of flexible and rigid restraint, and understand how diet can be adjusted to accommodate issues such as cravings, hunger and diminished satiety (Hindle and Carpenter 2011, Sumithran et al. 2011). In addition, an understanding of behavioural theories such as self-efficacy (Bandura 1989), social cognitive theory (Bandura 2001), self-determination theory (Deci and Ryan 2000, 2008), health as expanding consciousness theory (Newman 1997), the trans-theoretical model of behaviour change (Prochaska 2008), and locus of control (Adolfsson et al. 2005), as well as techniques such as self-monitoring (Burke et al. 2009), goal-setting (Elfhag and Rössner, 2005), implementation intentions (Gollwitzer and Sheeran 2006, Gollwitzer and Oettingen 2011), and stress and coping strategies (Elfhag and Rössner 2005), which have discussed and described throughout this thesis, might be necessary to better understand the behavioural dimensions of weight loss. In tandem, nutrition courses might need to identify and evaluate the most efficacious and theoretically underpinned behaviour-change techniques, to gain a deeper understanding of their utility as a complement to dietary manipulation (Michie et al. 2011, Michie et al. 2013). The use of the CALO-RE taxonomy might assist with this task (Michie et al. 2011). The AfN specifies that at least two fully-registered Full Time Equivalent (FTE) nutritionists must be part of the

teaching team of an accredited nutrition course (Association for Nutrition 2012). In order to achieve the recommendations made within this thesis, social scientists with specialist knowledge, who can lend their knowledge, expertise and guidance to the development and delivery of undergraduate nutrition courses, could be specified as being mandatory to the FTE teaching staff of accredited nutrition degrees similarly. Indeed, this latter recommendation reflects a similar suggestion that has been articulated in research elsewhere (Schubert et al. 2012).

6.1.4: Alternative CPD Activities and Interdisciplinary Nutrition Science

If it is not possible to revise the core competency model to reflect the complexity of weight loss as highlighted in this research, education providers might look to develop specific Continuing Professional Development (CPD) activities that better-reflect the multidimensionality of weight loss. These activities might then equip nutritionists with the knowledge and skills needed to accommodate weight-loss needs. It should be recognised when reflecting on this recommendation that this thesis has synthesized and evaluated information from such diverse fields as economics, epidemiology, nutrition, physiology, psychology, sociology, and possibly more. This thesis, therefore, highlights that the knowledge requirement for a comprehensive understanding of weight loss transcends singular subject specialism. An interdisciplinary approach to understanding weight loss is perhaps now required to accommodate the multiplicity and interaction of its many treatment strategies, and to understand the underlying causes and consequences of overweight and obesity similarly. Nutrition science has been criticised for a lack of engagement with social science since the early 1980's (Rozin 1981, Crotty 1993, Pelto et al. 2003, Schubert et al 2012); the Nutrition Society recognised the need for nutritionists to diversify knowledge and expertise beyond subject-specialism throughout the 1990's (Landman et al. 1998); recommendations have been made for three decades for nutrition science to diversify and develop an interdisciplinary working model, encompassing a spectrum of social, scientific and broader health-related disciplines (Crotty 1993, Pelto et al. 2003, Schubert et al. 2012). The development of a more comprehensive and inclusive core competency model for undergraduate nutrition education, or the development of additional CPD activities to further weight-loss knowledge at post-graduate level, might then begin to reflect the interdisciplinary

nutrition science paradigm proposed in the literature (Crotty 1993, Pelto et al. 2003, Schubert et al. 2012).

6.2: Limitations of this Thesis

There are several limitations which need to be considered when interpreting the findings of this thesis. Firstly, this thesis contained a small volunteer sample of eight adult participants, and therefore the experiences described herein might not reflect the breadth of weight-loss needs and experiences of all dieting individuals. Indeed, the experiences of Black and Minority Ethnic (BME) groups, individuals from deprived communities, and individuals of different sexual orientation were not explored in this research. This limitation was articulated in studies one and two (see 4.15 and 5.6), was also observed in the research appraised in chapter 2 (see 2.4), and might be an important limitation of the existing qualitative evidence. Indeed, data from the Department of Health's 2011 equality analysis highlights important linkages between obesity status and demographic information: lower socio-economic and educational status appears to be linked to higher levels of obesity; black African, black Caribbean, Bangladeshi and Pakistani female ethnic groups appear to have higher levels of obesity than to the population norm (Department of Health 2011). These trends also appear to reflect important socio-political patterns that have been linked to weight status: BME groups commonly possess a lower socio-economic status, have lower family incomes and lower social mobility compared to native UK residents, and are more often concentrated into industrial, urbanized areas with little green space, higher crime rates and poorer access to supermarkets and fresh foods (Gutneau and Mathrani 2011). These latter factors reflect the obesogenic environment hypothesis discussed in chapter 1 (see 1.0), and the social structural models that influence diet and nutrition discussed and appraised by Delormier et al. (2009) and Schubert et al. (2012). Because of the established links between demographics, environments and obesity (Swinburn et al. 2011), the sampling of this research and prior evidence are insufficient to draw conclusions about the wider UK community.

However, the sample obtained for this research was sufficient to achieve data saturation and develop the theoretical frameworks of studies one and two. Similarly, the meta-theoretical positioning of critical realism posits that the achievement of generalisable findings is a misnomer (Maxwell 2012). Therefore, the findings of this research should

not be generalized to wider UK-based populations and generalizability should not be inferred without additional investigation undertaken under different paradigmatic assumptions with a more diverse, probabilistic sample of participants. Nonetheless, the achievement of generalisable findings was beyond the scope of this thesis, which sought to explore the weight-loss experience in depth and appraise the competency framework underpinning nutrition education in the UK. Research aligned to critical realism might however seek transferability (Guba and Lincoln 1994), and look to test and question hypotheses or concepts developed during research within different contextual circumstances (Guba and Lincoln 1994, Hannes 2011). These are indicated in 6.5.1. The characterisation of weight loss in this thesis appears to support the findings of large-scale quantitative studies (Nakade et al. 2012), and reflects and adds to the existing qualitative weight-management evidence (Chambers and Swanson 2012, Hindle and Carpenter 2011, McKee et al. 2013). However, it should be noted that much of the existing evidence has been conducted using homogeneous samples of white adults of educated and middle-class backgrounds, reflecting the participant sample of this thesis. Therefore, further research utilising larger more diverse samples from a range of social and ethnic backgrounds, using multiple and iterative sampling methods, might now be required to add to the findings of this thesis and enhance the existing literature in this area.

Another limitation is that this thesis explored weight-loss experiences only, which might not fully reflect the weight-maintenance experience. Weight loss and weight-maintenance are interrelated; successful weight loss begets successful weight maintenance (Hindle and Carpenter 2011) and weight loss and weight maintenance are predicated on common adjustments to diet, physical activity, and behaviour (Johnstone 2013, McKee et al. 2013, Nakade et al. 2012). However, dieting individuals appear to transition towards weight maintenance after they achieve weight loss, as weight reductions diminish and plateau over time (McKee et al. 2013, Stubbs et al. 2012). This transition appears to be difficult, challenging long-term adherence as the maintenance of weight-loss behaviours no longer leads to tangible outcomes, reducing motivation (Hindle and Carpenter 2011). Recall that this is also experienced in an adapted physiological state of increased appetite, increased preoccupations with food, cravings, and reduced energy expenditure (Sumithran et al. 2011). Weight maintenance might therefore pose further challenges to dieters that are not apparent within the weight-loss

phase, and were therefore not explored within this thesis. The detailed exploration of weight maintenance was beyond the scope of this research however, which sought to investigate and identify common weight-loss experiences that could be used for the comparisons with the competency framework, reflecting a lack of research in the area (see 2.4). The qualitative experience of weight maintenance features strongly in the literature, and readers are advised to consult the research by Chambers and Swanson (2012), Epiphaniou and Ogden (2010), Hindle and Carpenter (2011), and McKee et al. (2013) for a more detailed exploration of weight maintenance (see 2.4). In many instances the findings of this thesis appeared to reflect those of the authors listed, indicating that weight loss and weight maintenance share common challenges. Nevertheless, the qualitative exploration of weight loss appears to be under-represented in the literature, and this thesis offers new and detailed insight into this important aspect of weight management. Future research could be conducted to compare the weight loss and weight-maintenance experience, adding to the findings of this research, and progress the qualitative understanding of weight management in general.

An additional limitation of this thesis was that the AfN's core competency model was the only estimate of undergraduate nutrition knowledge used for the comparisons within study two, and might not reflect the breadth and depth of knowledge that accredited course providers are actually delivering. Nevertheless, the core competency criteria is an important guiding document that underpins the curriculum of accredited nutrition degrees (Association for Nutrition 2012), and reflects the need to ensure optimal workforce development and consistency within education provision (Hughes et al. 2004, Jonsdottir et al. 2010). Future research might therefore be necessary to evaluate the practices of accredited and non-accredited courses, and to explore the working practices of nutritionists registered to the UKRN directly.

6.3: Strengths of this Thesis

To date this thesis is one of only a handful of studies that has attempted to understand weight-loss or weight-maintenance experiences using qualitative techniques in a UK population. An advantage of qualitative research is that it facilitates an in-depth understanding of experiences and behaviour (Savin-Baden and Major 2013). As a result, this thesis was able to describe and explain the experiences of a group of dieters in rich detail, and by doing so, added new and deeper insights into the weight-loss

experience, supporting existing research, and adding to our understanding of weight management. This thesis achieved the aim of study one. The use of FA conceptualised and described by Ritchie and Spencer (1994) was an important methodological strength of this research. Quality assessment of the current evidence conducted for the first literature review of chapter two (see 2.2) revealed that much of the existing qualitative weight-management research is of poor quality, lacked transparency in how data was managed, reduced, and analysed, and as a result of insufficient reporting practices, might not be valid and/or reliable (credible/dependable, Guba and Lincoln 1994). Many of the issues highlighted in chapter two reflect common concerns articulated about the poor rigour observed in some qualitative research studies (Hammersley 2007). Framework analysis, however, is a flexible qualitative tool that is systematic and explicit in its approach to managing and interpreting data (Srivastava and Thompson 2009). Framework analysis, therefore, is a reliable qualitative method that is rigorous and transparent (Furber 2010, Guba and Lincoln 1994, Ritchie and Lewis 2003), appeasing some of the reported concerns about qualitative methods (Gale et al. 2013). This, coupled with the ontological positioning of this research towards realism, which necessitates stringent reporting practices (Guba and Lincoln 1994, Hannes 2011), accommodated many of the concerns articulated about qualitative research and strengthened the robustness of this thesis (Gale et al. 2013).

Another important strength of this research was the sampling of male participants. Males are under-represented in weight-management research (De Souza and Ciclitera. 2005), which is biased towards samples of white, middle class females mostly. To date, very few studies have attempted to understand the weight-management needs of males qualitatively (De Souza et al. 2005, Morgan et al. 2011, Zinn and Schofield, 2010). This research is one of only a few investigations that appear to have recruited male participants in an attempt to understand their weight-loss experiences. However, it should be recognised that obtaining male participants in an effort to explore their experiences was not an explicit aim of this research, despite it being a valuable outcome. This thesis however reflects a demand for new, more diverse strands within nutrition science and nutrition education (Pelto et al. 2003, Schubert et al. 2012), and sought to investigate the claims of authors who argue that nutrition education might be inadequate (Schubert et al. 2012). This thesis was able to investigate if nutrition education propagates a partial understanding of a complex, nutritional problem. This

thesis, therefore, was able to successfully achieve the aim of study two. At the time of writing, this is the first study of its kind that provides an in-depth comparison of lived experiences of weight loss with an educational framework, to explore the education and training needs of nutritionists. This thesis offers new insights and recommendations to improve the education and training of nutritionists in the UK, and is novel in its conception and method. This thesis, therefore, should now serve as a catalyst for further investigation, and prompt the reconsideration of the competency models used to underpin nutrition education (and registration).

6.4: Summary

Weight loss was revealed to be an encompassing experience that necessitated the adjustment of cognitions, behaviours, lifestyles, and social contexts to achieve weight-reduction. Participants in this research described weight loss as a complex challenge with physical, social, and behavioural dimensions that were experienced and described as a dichotomy of barriers to and facilitators of their efforts. The AfN's core competency criteria was revealed in this research to be focussed towards scientific knowledge, lacked psycho-social dimensions, and appeared to contain no guidance or competency criteria that specified the requirement for nutritionists to understand weight loss, weight maintenance, or weight management explicitly. This latter finding was surprising, considering that overweight and obesity are a burgeoning problem for society (Swinburn et al. 2011), and that dietary adjustments and nutrition education are implicit components of weight-loss interventions (Dansinger et al. 2007). This thesis has argued that because participants in this research described physical, dietary, social, and psychological components of their weight-loss journeys, and that because the AfN's core competency document appears to lack specific and detailed criteria that reflect the psycho-social and behavioural dimensions that the participants described, that the core competency framework might be insufficient to provide student nutritionists with a comprehensive understanding of weight loss.

6.5: RESEARCH AND PRACTICE IMPLICATIONS

6.5.1: Study One Research Implications

This qualitative study explored the weight-loss experiences of a homogenous sample of white, educated, adult, participants with an average age of 40 ± 10 years (mean \pm SD) from the United Kingdom. A similar study including individuals of different socioeconomic groups and ethnicities is required to ensure a more inclusive account of participants in the community. The findings from this research could inform the development of a larger cross-sectional survey to extend the scope of this evidence and allow for the verification or refutation of the findings of this research. Additional research is warranted to explore if adopting weight-loss diets and behaviours fosters social isolation and marginalisation from peer groups, which was indicated within the lived experiences of participants here (see 4.11.3 and 5.4.5.2). Further research might also be necessary to investigate incidences, motives and mechanisms behind spousal sabotage experienced during weight loss (see 4.13.6). These recommendations reflect the experiences of participants in this research and participants in other qualitative investigations elsewhere (De Souza and Ciclitera 2005, Hindle and Carpenter 2011), perhaps indicating that these might be common factors in the weight-loss experience. However, despite these appearing to be both common and important challenges, the specific investigation of these experiences within weight management appears to be lacking at this time; further research is needed to verify the findings of this research and offer solutions to their presence, if necessary. Participants in this study reported benefits of becoming mindful and self-aware. Whilst research has now begun to investigate the role of mindfulness-based and intuitive-eating weight-management interventions as alternatives to cognitive-behavioural therapy (Caldwell, Baime and Wolever, 2012), future research should look to further explore the role of mindfulness-based approaches to weight loss and weight maintenance, and to assess challenges that individuals might experience whilst being mindful also.

One of the key and unexpected findings of study one was the presence of gender-related differences in the group's experiences (see 4.13.9 and 4.13.12). Future research should therefore investigate gender-related differences in weight-loss experience and further explore gender-related preferences for treatment strategies such as dietary counselling, nutrition education and social support, adding to the preliminary findings this research

and that of Zinn and Schofield (2010). This knowledge might be necessary to identify the preferred treatment strategies and support mechanisms of male and female dieters, if they exist. Further research into the weight-related experiences of males is warranted in general. Finally, study one provided an in-depth exploration of the weight-loss experiences of a group of individuals. While evidence exists which explores the weight-maintenance experiences of successful dieters, much of this research is in its infancy at the time that this thesis was written. Therefore, an important recommendation of this thesis is that further research is necessary to explore both the weight-loss and weight-maintenance experience, perhaps within the contexts of multiple qualitative methodologies, to identify and appraise factors that enable some dieters to achieve and maintain weight loss over the long-term, identify strategies that can be developed to allow more individuals to lose and maintain weight loss, or identify ways to negate the effects of those that impede it.

6.5.2: Study Two Research Implications

Whilst one of the key findings from study two was that the competency criteria for accredited nutrition degrees might be biased towards scientific knowledge and lacking detail about the social and behavioural dimensions of weight loss (see 5.5.5), this research was perhaps also limited by its small sample of volunteers. Therefore, further research with a larger and more diverse sample is needed to extend the preliminary findings of this investigation similarly. Secondly, further research might be conducted to determine if and how weight loss is being taught within higher education in the UK directly. This research might also look to appraise the practices of courses accredited to the AfN with those that are not, and investigate if differences exist within the weight-loss curricula of accredited and unaccredited degree programmes. Additionally, whilst this research contrasted the lived experiences of a group of dieters to the core competency framework of the AfN, future research might also look to compare the weight-management practices of registered nutritionists against a set of competencies developed from the deep insight into the weight-loss or weight-maintenance experience (or both). This research might then determine directly if accredited nutritionists require additional education and training in weight management.

6.5.3: Practice Implications

On the basis of the preceding discussions the following practice recommendations can be made. Firstly, on the basis that no information or guidance was provided within the document for these areas, the AfN's core competency framework might need to be reconsidered to include criteria that stipulate an understanding of weight loss and weight maintenance. This should be reflected in core competency 4: *Health and Wellbeing*, which described the competency requirements for the application of nutrition science within health and wellbeing contexts (Association for Nutrition 2012). The core competency framework appeared to contain comprehensive criteria that reflected the scientific underpinning of food and nutrition, and the practical applications of nutrition science in domains such as diet design and nutritional counselling. Therefore, additional core competency criteria that reflect the psycho-social dimensions of food, nutrition and weight loss (and perhaps other dietary challenges) might need to be addressed in similar detail in the competency framework. These criteria should reflect the specificity and comprehensiveness of the scientific criteria and include, but not be limited to, knowledge the following concepts, which were discussed and rationalised within studies one and two in detail:

- Behaviour change
- Self-efficacy
- Social cognitive theory
- Self-determination theory
- Health as expanding consciousness theory
- Trans-theoretical model of behaviour change
- Locus of control
- Dietary Restraint
- Stress and coping
- Goal setting
- Social support (structural and functional)
- Exercise and physical activity

Nutritionists might also need knowledge of the following behaviour change techniques, which were also discussed and rationalised within studies one and two, in order to

effectively work alongside other health professionals to achieve weight-related goals as part of a multidisciplinary team, or, to provide more complete weight-loss services to clients as private practitioners:

- Cognitive behavioural therapy
- Mindfulness-based interventions
- Motivational interviewing
- Intuitive Eating
- Implementation Intentions

It should be noted that higher education providers might need to strategically employ social scientists in order for knowledge of the preceding concepts and techniques to be embedded, appraised and delivered effectively within undergraduate programmes. Changes to the core competency framework as suggested might then lead to an interdisciplinary understanding of weight management, which might be needed for a more complete appreciation of its complexity and for more effective weight-management treatments to be developed in research and administered in practice. Indeed, the development of an interdisciplinary understanding of dietary problems appears to reflect the critiques of authors highlighted in this thesis (Pelto et al. 2003, Schubert et al. 2012). Importantly, adjusting the competency framework as suggested above might provide graduate nutritionists with additional knowledge and skills needed to design and deliver effective weight-management services and educational programmes, and facilitate the AFN's goals of advancing standards of evidence-based practice, supporting frontline workers with the tools needed to use nutrition safely and effectively, and supporting high quality, relevant, nutrition training via course accreditation (Association for Nutrition 2015).

On-going training and continuing professional development (CPD) are obligatory activities for dietitians, psychologists and other health professionals in the United Kingdom, who must meet the Health and Care Professional Council's (HCPC) CPD requirements of 1/2 to 1 day of CPD activities per month (British Dietetic Association 2015, British Psychological Society 2015, Health and Care Professionals Council 2015). This CPD requirement is necessary to uphold and maintain chartered status with the HCPC (British Dietetic Association 2015, British Psychological Society 2015). Such

activities are not obligatory for registered nutritionists however, but are recommended for associate nutritionists seeking to gain the knowledge necessary for the achievement of fully-registered status (Association for Nutrition 2015). If the core competency module cannot be adjusted as recommended in this thesis, registered nutritionists might need to consider undertaking regular CPD activities to improve their knowledge and skills in areas relevant to practice, such as weight loss, reflecting the practices of health professionals within other disciplines (Health and Care Professionals Council 2015). The development of bespoke weight-management CPD activities, as recommended herein, might assist with this recommendation (see.6.1.4). Indeed, if the AFN is to realise its goal of furthering professionalisation and achieve chartered status for registered nutritionists (Cade et al. 2012), this latter recommendation might become a practice requirement for registered Nutritionists in the future.

6.6: CONCLUDING REMARKS

This thesis has explored the weight-loss experiences of a group of individuals who were either trying to lose weight or maintain lost weight in order to improve their health, body-image, and quality of life. This thesis has attempted to illustrate and explain the weight-loss experience in rich detail, in order to provide the reader with an understanding of the experiences of dieters. This thesis has indicated that weight loss is experienced as a difficult and ongoing challenge that is facilitated and obstructed by forces experienced in opposition. For some, weight loss appeared to be a transformative journey, as well as a desired outcome. This thesis has mapped theoretical and practical explanations of these experiences against competency documentation that is used to accredit nutrition degree programmes, in order to appraise this documentation as a suitable metric to underpin the education and training of nutritionists at undergraduate level in the UK. This evaluation might assist with future revisions to this framework. Supplementary to these aims this thesis has identified areas in need of further investigation, to better understand weight loss and weight management in general. This thesis has identified tools and techniques that can be used by professionals to accommodate some of the issues identified within this research, and provided recommendations for education providers to better understand and teach weight loss and weight management to student nutritionists in higher education. Importantly, this thesis has added new information to the existing qualitative weight-management research, and to the author's knowledge, is the first study to investigate the education of nutritionists in the UK since the inception of the UKVRN. To the author's knowledge similarly, this appears to be the first study of its kind to investigate the claims of authors who have criticised the education and training of nutritionists in general (Schubert et al. 2012), should now serve as a catalyst for further investigation, and perhaps continue the debate about the sufficiency of the current nutrition science paradigm in this time of epistemic diversity and prosperity.

7.0: Introduction

The following section will supplement chapters 1-6, providing readers with information that can be used to understand the processes that led to the development and completion of studies one and two, and can be used to better evaluate the validity (credibility) of this thesis (Darawesheh 2014). Finlay (2002) and Gilgun (2010) suggest that reflexivity is an essential component of good qualitative research, broadly defining reflexivity as being mindful of the reciprocal relationships between the inner-self (as a researcher) and the research process. Reflexivity might also be understood as an awareness of the researcher's biases, attitudes, motivations and meaning perspectives; as an acknowledgement of social context (race, gender), the subjective dynamics of researcher-participant relationships, and emergent or co-constructed nature of knowledge within research (Probst and Berenson 2014). D'Cruz et al. (2007) differentiate three modes of reflexivity: awareness of the researcher's responses to immediate contexts, understanding of the role of researcher-participant dynamic (in knowledge development), and acknowledgement of the role of emotion (during the research process). D'Cruz et al (2007) support reflexivity as a good practice requirement for qualitative researchers.

While reflexivity is considered to be good practice it is not without criticism. Probst and Berenson (2014) reveal that reflexivity has been criticised for its potential to promote self-indulgence (where a researcher might shift attention away from the participants or the phenomenon of interest towards themselves), and its ability to expose biases and mistakes which might make novice researchers feel threatened. Probst and Berenson (2014) discuss and add to Pillow's concerns (Pillow 2003), highlighting that the act of being reflexive does not necessarily ensure methodological rigour and good quality research, especially when representing someone else's reality, but that reflexivity needs to focus on an acknowledgement of what researchers are aware of, what researchers are not aware of, and how these factors might have influenced the research process (Pillow 2003). Pillow describes this as '*Reflexivity of Discomfort*' (Pillow 2003).

To date, and despite the many definitions and dialogues, it appears that there is no universally accepted method of performing reflexivity (Darawesheh 2014). However, this chapter will undertake three modes of reflexivity for reasons explained as follows. This chapter will engage with '*Personal Reflexivity*' as recommended by Longhofer and Floersch (2012), to situate the researcher into the thesis and explore my biography and it's relation to the research question; '*Methodological Reflexivity*', to allow the transparent explanation of the processes of research design, development and data collection (Malacrida 2007), and '*Analytical Reflexivity*', to discuss how data was analysed and interpreted within this thesis (Paulus et al. 2010). These modes of reflexivity will be embedded within a narrative which describes and explains this research from conception to completion, allowing for the validity of this thesis to be scrutinised and evaluated, in line with critical realist research underpinning (Sobh and Perry 2006).

7.1: The Research Question

The development of the concept and context for this thesis was an iterative process; the research question was developed over several years and was facilitated within the Professional Doctorate programme's DPS-1 and supervisory processes. My decision to explore weight loss however was a product of my interest in weight loss and body composition. This interest developed over time and for two reasons: 1) I have achieved and experienced weight loss myself and 2) I have helped others achieved their weight loss goals in my work as a practitioner. My role as an educator within higher education was impetus for me to explore education. My original goal, however, was not to explore weight loss within undergraduate nutrition education. Instead, I had intended to do one of two things: investigate the effects of a novel dietary intervention to achieve weight loss, or, perform a systematic literature review investigating the effects of meal frequency on health-related outcomes. These ideas were eventually abandoned however for reasons that will also be discussed. The pragmatics of obtaining external funding, recruiting participants, and administering a novel intervention while in full-time work ruled out the first idea. Completing a systematic literature review was insufficient to satisfy the criteria of a level 8 thesis, ruling this idea out too. This left me in a difficult position: I needed to undertake and submit a thesis to complete my doctoral studies however I did not know what to do for my research project; I knew that the idea needed

to be grounded in evidence, of interest to me, and reflective of level 8 study, but I was without inspiration. This was 2011.

7.1.1: Conceptualisation

As an educator I teach a range of subjects and lead several modules. At the time that this research was conceptualised I was teaching a level 5 module: *'Research in Sport and Physical Activity,'* and had recently completed the module: *'Epistemology, Methodology and Method'.* My exposure to these modules necessitated that I begin to engage with qualitative research, which was new to me at the time, having learnt about science and quantitative research previously. Indeed, my undergraduate and postgraduate education was deep rooted in biological science and the scientific method. However, if I was learn about epistemology, methodology, and research paradigms as part of my doctoral education, and teach others about epistemology, methodology, and research paradigms too, I needed to better engage with this information. This background served as a catalyst for me to begin to explore social science and ultimately led to the development of the research question for this thesis. Searching for research to discuss in my teaching, I discovered an article published in 2012 (Schubert et al. 2012) and an earlier article published in 2003 (Pelto et al. 2003). These articles discussed how social science had been neglected in nutrition science, that nutrition science was developed from biomedical research models, and that the nutritional problems of modern society had deep-rooted social antecedents and consequences. The critiques of these authors were interesting, and made me evaluate about the adequacy of biomedical knowledge to understand and treat conditions with complex aetiology. The article by Schubert et al. (2012) even suggested that until nutrition education better engages with social knowledge, particularly at an agential level, and embeds this knowledge within the infrastructure of course curricula, that this (alleged) bias towards scientific knowledge would persist and that nutrition problems would continue to be partially understood and poorly treated. This latter contention, whilst critical of the fabric of nutrition education, motivated my decision to investigate whether weight loss, because of its multifaceted and under-reported underpinnings (Stubbs and Lavin 2013), was fully reflected in the education and training of nutritionists.

Overweight and obesity are a complex dietary problem and an important issue for modern society (Swinburn 2011). At the time of this thesis's conception I had

developed an interest in obesity and weight loss, which while clearly reflecting my personal experiences, was developed and cemented via my teaching at Sheffield Hallam University. As a result of my engagement with literature needed for the modules I was teaching, I had become aware of multi-modal lifestyle interventions used to treat obesity and achieve statistically-significant weight loss, such as the Diabetes Prevention Programme (Bray 2009, Diabetes Prevention Programme Research Group 2009) and the LookAHEAD programme (The LookAHEAD Research group 2010), and was interested to note that these interventions were considered to be important and pivotal weight-loss treatments. Typically, lifestyle interventions consist of diet, physical-activity and behaviour-change/psychological interventions (Hagobian and Phelan 2013). These interventions are thought to be effective (Burke and Wang 2009), and a large portion of their success stems from the integration of multi-modal dietary, physical-activity, health-psychology and behaviour-change interventions (Keränen et al. 2009). Indeed, it is believed that the efficacy of complex lifestyle interventions transcends the sum of their treatments (Burke and Wang 2009, Stubbs et al. 2011).

My exposure to these programmes and critiques led to my exploration of social science, health psychology, and behaviour-change research, to understand their role within weight-loss contexts. This led me to research that suggested that weight loss might be an artefact of changes to social contexts and behaviours, as well as more obvious changes to diet and physical activity (Gallagher et al. 2006, Kiernan et al. 2012, Teixeira et al. 2012). This concept resonated with my earlier experiences, making me reflect on whether true life-long weight loss is a product of dietary, social, or psychological change (or changes to all factors), and whether nutrition education programmes educate student nutritionists about these other dimensions. It is interesting to note that scientific research indicates that many diets will help people achieve weight loss (Sacks et al. 2009). Experiential research suggests similarly that any diet works as long as it can be maintained (Thomas et al. 2008). Research also indicates that environmental and behavioural changes facilitate dietary adherence over the life-course (Stubbs et al. 2012). If these factors are essential components of weight loss, and that Nutritionists work with people to educate or help them achieve weight loss, then I was interested to know if nutritionists are adequately educated about the psycho-social and bio-physical elements of weight loss equally. Schubert's argument suggested not

(Schubert et al. 2012). I was interested to investigate whether this might be the case. This was 2012.

7.2: My Background

I am a registered Nutritionist (rNUT), member of the AfN, and have been on the UKVRN since 2012. My background, however, is in sport science. My undergraduate degree is in sport and exercise science. My postgraduate degree is in sport and exercise science too. I have a postgraduate certificate in learning and teaching in higher education and I have industry awards in strength and conditioning and Olympic weightlifting. My professional background is that of applied sport science practice. I have worked self-employed as a personal trainer and strength and conditioning coach. I have also worked in further education as a lecturer too. Working as a trainer I would create and deliver training programs, and eventually over time I found myself providing dietary guidance. Whilst teaching in further education colleges I began teaching nutrition modules and found this to be a formative life experience. I enjoyed teaching, I enjoyed nutrition, I enjoyed devising and writing diets and exercise programmes, and I particularly enjoyed the successes of others who undertook them. My experiences of further education led me to pursue my career in higher education, where I now find myself leading courses and modules at levels 4-7.

In 2006 I applied to Sheffield Hallam University to begin my MSc in sport and exercise science and was employed by the university shortly after completing the degree, as a consultant and part-time lecturer in a dual role. Over the years I have accumulated a wealth of consultancy experiences, provided exercise and dietary guidance, and educated about training, exercise and nutrition. I applied for and was granted full registration to the UKVRN in 2012 having demonstrated over seven years of industry experience and the underpinning competencies required for full registration. My professional experiences at this time were significant: I had worked within industry to design food products and sports supplements; I had worked with athletes at the highest level, having provided support to British Volleyball prior to the 2012 Olympics (and athletes of similar qualification too); and I had taught nutrition (and other) modules from BTEC to MSc level. However, despite my professional experiences and accredited status, I do not possess an undergraduate or postgraduate degree in nutrition; I achieved full registration to the UKVRN via indirect entry. While I have undertaken

and taught nutrition modules at undergraduate and postgraduate level, I have not completed a formal, accredited nutrition degree and do not possess a BSc (Hons) in nutrition. I had no prior experience or tacit understanding of undergraduate nutrition education that I could reflect upon whilst developing this thesis. This lack of experience was not disadvantageous however, particularly in the context of realist research paradigms which necessitate that the researcher separates their biases and experiences from the research process (Maxwell 2012)—I had few opinions that could bias the research. Indeed, the impetus for the research question was developed broadly from the suggestions of Schubert et al. (2012), Pelto and Freake (2003), and through the advisement of colleagues. Whilst undertaking this thesis I was learning as much about nutrition education as I was about weight loss, psychology, sociology, behaviour change, and qualitative research.

7.3: The Decision to Interview Participants

The preliminary proposal for the research project was much broader than the final iteration. I had originally planned to interview dieters and nutritionists and obtain agential data about their experiences of weight loss and weight-loss clients, intending to contrast these to nutrition curricula and indicative content of undergraduate degree programmes. The decision to interview dieting participants, to obtain experiential information rather than obtain data from existing literature, was underpinned by a literature search undertaken in 2012, which revealed that much of the weight-loss literature which unpicked factors associated with successful and unsuccessful weight loss had been undertaken quantitatively using questionnaires (Latner et al 2013), surveys (Abildso et al 2014) and ratings scales (Turk et al. 2012). This reflected one of Schubert's contentions that agential information might be missing from the nutrition literature (Schubert et al. 2012), and underscored my decision to gain experiential data by interviewing participants myself. It was felt that exploring individual's experiences directly might provide new and deeper information, and highlight issues not previously identified or discussed in the literature. This suspicion was also partially confirmed by preliminary literature searches, which highlighted that the qualitative investigation of weight-management experience was in its infancy at the time that this thesis was conceptualised, and that weight-loss research was particularly underrepresented. The former observation was also articulated in the studies identified for chapter 2: authors in

most studies (whether they met the inclusion criteria for the review or not) highlighted the paucity of qualitative data and recommended that more research was greatly needed (Hammarström et al. 2014, Reyes et al. 2012, McKee et al. 2013). Study one was therefore developed as a necessary step for the successful completion of study two, but was also designed to be a standalone project that reflected an independent research requirement.

Feedback from the DPS-1 viva processes of the Professional Doctorate programme indicated that I needed to make my intended project smaller. On the recommendation of the DPS-1 advisory panel the final thesis would explore the participants' experiences only, and instead of obtaining curricula and indicative content from accredited degree programmes (who might not want to share this information), I would use the core competency model developed by the AfN as the comparator, which provides the curriculum framework of accredited programmes and is freely observable in the public domain. Reflecting critically upon the research question, and via discussions with colleagues, it became clear that this thesis would be a qualitative investigation congruent with the assumptions of critical realism. Realism has been conceptualised in many forms, however the ontological assumption of critical realism is that objective knowledge can never be known to mankind however the many alternative accounts of knowledge are equally valid (Maxwell 2012). Critical realism assumes a constructivist epistemological stance as well as a realist ontological viewpoint, and so whilst true reality can never be known according to this meta-theory, reality is a relative concept that is experienced and interpreted in subjective ways (Morris 2003). Within this research weight-management education within undergraduate nutrition degree programmes was the unknowable reality that was to be investigated. This was to be achieved by exploring and triangulating the AfN's core competency model, the participants' experiences of weight management, and my interpretation of the data—a triumvirate of differing realities.

7.4: Framework Analysis

Framework analysis is a flexible, qualitative tool that is not underpinned by a particular philosophical context and provides a transparent audit trail of data management and reduction (Ritchie et al. 2013). This is thought to be an important strength of the method (Srivastava and Thomson 2008). Framework analysis requires the development

of matrices that are used to compare cases and themes and determine associations and incongruences within data (Furber 2010). These matrices would facilitate the contrasting of the core competency model to the participants' data, and meant that FA was an appropriate tool to analyse the data in this research. The decision to utilise FA was made whilst searching for methodology papers and discovering that the technique had been used successfully in previous studies (Staniford et al. 2011). Framework analysis is known to be time intensive and difficult however (Furber 2010, Srivastava and Thomson 2008). The transparency and stage-by-stage approach to data reduction and analysis of FA appealed to me; my previous experiences of science had meant that I was comfortable with structured procedures. Despite the forewarning of authors (Smith and Firth 2011), I was happy to undertake FA in my first qualitative research exploration. My identity as a researcher, which reflected my scientific education, was partially congruent with the unbiased observer required of positivistic science (McNamee 2005). The process-driven structure of FA appealed to my understanding and experiences of research and reflected the objectivity of critical realism concurrently (Sobh and Perry 2006). However, qualitative research views the researcher as an intrinsic component of the research process, chiefly immersed in the generation and interpretation of data (Ritchie et al. 2013). This differed greatly from my prior experiences, posed an interesting challenge, and fostered an important paradigmatic shift for me; this research became an important learning experience.

7.5: Data Collection

Data was collected over the summer of 2013. I met participants in a mutually agreed place, most often places of work and coffee shops. Whilst I had previously interviewed people during a pilot interview and for modules undertaken on the Professional Doctorate programme, I was very much a novice interviewer. The role of an interviewer in critical realist research is to negotiate dialogue actively, where the interviewer guides the dialogue towards the discussion of topics of interest which the interviewee explores and discusses (Smith and Elger 2012). Taking an active role in the interviews was difficult at first, but my skills developed as the interviews progressed. Previous experiences of pilot interviewing highlighted that I had to multitask during interviews, and that I was not comfortable with reading the interview guides, actively listening to participants, and engaging with dialogue concurrently. This

meant that during pilot interviews I failed to explore important discussion points and that I had simply waited for people to finish talking before I asked another question, which are common issues for novice interviewers (Rabionet 2011). This meant that going into the final interviews that I was careful to engage participants in dialogue actively, listen to their responses, and guide the interviews as directed by the interview schedule and probe questions, but remain flexible to emerging discussion. To achieve this, I used tick sheets to ensure that topics had been discussed, annotated notes and wrote memos to myself during the interviews, and referred to them as needed, but allowed the dialogue to evolve (where appropriate).

7.5.1: Catharsis

The interviews proved to be cathartic for many participants, reflecting the suggestions of DiCicco-Bloom and Crabtree (2006), and Hand (2003), who suggest that interviews can lead to confessional dialogue. In many instances the thoughts and experiences of participants reflected many of my own experiences of weight loss, and the interviews challenged me to maintain professionalism as I empathized with the participants. Whiting (2008) warn that professionalism can become compromised by over-familiarity during interviewing, and in many instances I was tempted to engage with dialogue beyond the scope of the interview guide and research question. Effective interviewers are able to facilitate the deep exploration of experiences, concepts and perceptions, establish sufficient rapport and trust to achieve information exchange, but possess the necessary discipline to keep the focus of the interview on topic simultaneously (Ritchie et al. 2013). An important reflection of this experience was that I was indeed able to effectively establish rapport with participants and facilitate the exchange of sensitive and important information, but because of the nature of the research question and my own experiences of weight loss, I needed to actively disengage with participants during the interviews. This was difficult. Whilst this was a challenge, my own experiences of weight loss (which were not shared), enabled me to recognise thinking patterns and formative experiences, which then allowed me to probe for deeper information when appropriate. Thus, rather than exploring surface-level knowledge only, I was able to explore the in-depth understanding of weight-related experiences. I collected very rich and detailed data.

7.6: Data Analysis and Interpretation

Data analysis and interpretation began as the interview transcripts were received from the transcription company. Upon receipt of the transcripts the participants' data was coded and entered into NVivo. A total of eight participants were sampled iteratively to achieve data saturation. To code the data in study one open coding and *in-vivo* codes were used and later categorised into themes (Braun and Clarke 2006, Ritchie et al. 2013). In comparison to study two, the analysis of study one was straightforward: participants' words were used directly to code data and that coded data partially reflected, expanded upon and developed or refuted topics already seen in literature. Often, this reflected the interview guide's content, which was developed from literature and was verified with experts prior to being used in the interviews. Realist researchers seek to eliminate investigator bias and use conceptual frameworks developed prior to data collection to inform analyses (Sobh and Perry 2006). The original goal of study two was to analyse the participants' data obtained from study one and use the theoretical framework developed as the comparator to the AfN core competency criteria. However, during the analytical process of study two it became clear that the interview data needed to be re-coded, re-analysed, and interpreted differently, to create equivalence and improve the homogeneity of the data. Study two was much more difficult to analyse than study one.

The thematic framework of study one, while incompatible with study two, necessitated that I become immersed in the data, and for the purposes of study two, served as useful prior work, which in realist research should be used to develop preliminary conceptual frameworks (Sobh and Perry 2006). So, whilst the analyses of study one could not be used directly in study two to contrast data, it served to familiarise me with the dialogue and the participants' meaning perspectives, and indirectly helped to form the conceptual frameworks of study two. In study two data from the participants and core competency document were combined as a new dataset. Where the data appeared to discuss or evidence social knowledge and theories it was necessary to triangulate this information against existing literature and theoretical concepts deductively. Triangulation is an important component of realist research (Sobh and Perry 2006), and triangulating the data against existing theories and knowledge proved to be challenging. I had very limited prior knowledge of the psycho-social information I was discovering, and had no

prior knowledge of health psychology, sociology, or behaviour change. However, the work undertaken for study one familiarised me sufficiently to be able to access, engage with, and evaluate this information, such that study two could be completed satisfactorily; this thesis engendered my understanding of psycho-social and behaviour-change knowledge.

While the researcher in realist research is an active tool (Morris 2003), researcher biases and perceptions need to be minimised during the research process for it to remain congruent with the paradigm (Maxwell 2012, Sobh and Perry 2006). This resonated with my experiences of research, however actively interpreting data as required in study two challenged me to question whether the codes and frameworks developed within the study reflected conceptual frameworks within the data, or whether these codes and frameworks simply reflected concepts that I wanted to observe. These concerns reflect those of novice researchers and have been articulated elsewhere (Smith and Firth 2011). I was happy to later see that the theoretical models of study one and study two were agreed by my supervisory team during verification/peer-debriefing meetings. My anxieties with the analysis and interpretation of the data reflected my unease and unfamiliarity with interpretivism and qualitative data analysis. Despite the many important and transformative experiences I experienced during the research process of this thesis, interpretation was still an uncomfortable and alien experience for me; I was and still am a novice researcher.

7.7: CONCLUSION

This reflexive account of the research process has highlighted my personal context, the methodological and analytical decisions made, and the experiences encountered in the conducting of this thesis. This chapter should therefore serve as supplementary information to the studies of this thesis. Key reflections from this research are that while I am comfortable with deductive and process-driven models of quantitative research, I am much less comfortable with the uncertainties and abstractness of interpretivism and qualitative research. Reflexivity is a contested concept within literature (Probst and Berenson 2014), and there is uncertainty about how to best embed reflexivity to achieve valid (credible) findings in qualitative research (Darawesheh 2014). There is similar uncertainty about how to precisely operationalize reflexivity within research too (Probst and Berenson 2014). Despite these concerns, Finlay (2002) writes of the value of reflexivity, highlighting that reflexivity can be used to examine the impact of the researcher's position, motives, and bias. Reflexivity allows the public to evaluate research decisions and outcomes, and when used appropriately, enhances the validity (credibility) of a study's findings (Darawesheh 2014). Indeed, my own experiences of reflexivity reflect Finlay's support for reflexive dialogue, and so whilst reflexivity might be seen to be ambiguous, contentious, and even chaotic by some (Probst and Berenson 2014), reflexivity might also be necessary for qualitative research to uphold quality and maintain rigour.

REFERENCES

CHAPTER 1: INTRODUCTION

AHERN, Amy L., et al. (2013). Participants' explanatory model of being overweight and their experiences of 2 weight loss interventions. *Annals of family medicine*, **11** (3), 251-257.

ALBERTS, H. J. E. M., THEWISSEN, R. and RAES, L. (2012). Dealing with problematic eating behaviour. The effects of a mindfulness-based intervention on eating behaviour, food cravings, dichotomous thinking and body image concern. *Appetite*, **58** (3), 847-851.

ANDRADE, Ana M., et al. (2010). The effect of physical activity on weight loss is mediated by eating self-regulation. *Patient education and counseling*, **79** (3), 320-326.

ASHER, Roberta C. Z., BURROWS, Tracy L. and COLLINS, Clare E. (2013). *Very low-energy diets for weight loss in adults: A review*. Nutrition & Dietetics, **70** (2), 101-112.

ASSOCIATION FOR NUTRITION (2012). Competency requirements for course accreditation: UK voluntary register of nutritionists. [online]. Association for Nutrition. <http://www.associationfornutrition.org/Portals/0/COURSE%20ACCREDITATION%20COMPETENCIES%20July%202012.pdf>.

ASSOCIATION FOR NUTRITION (2014). Careers in nutrition [online]. <http://www.associationfornutrition.org/Default.aspx?tabid=145>.

BEFORT, C. A., et al. (2008). Weight maintenance, behaviors and barriers among previous participants of a university-based weight control program. *International journal of obesity*, **32** (3), 519-526.

BERTHOUD, Hans-Rudolf, LENARD, Natalie R. and SHIN, Andrew C. (2011). Food reward, hyperphagia, and obesity. *American journal of physiology: regulatory, integrative and comparative physiology*, **300** (6), 1266-1277.

BHATTI, Adnan Bashir, ALI, Farhan and SATTI, Siddique Akbar (2013). Association of obesity with stroke. *International journal of biomedical research*, **4** (8), 421-425.

BLOMAIN, Erik Scott, et al. (2013). Mechanisms of weight regain following weight loss. *ISRN obesity*, **2013**, 1-7.

BURKE, Lora E., et al. (2009). Experiences of self-monitoring: Successes and struggles during treatment for weight loss. *Qualitative health research*, **19** (6), 815-828.

BURKE, Lora E. and WANG, Jing (2011). Treatment strategies for overweight and obesity. *Journal of nursing scholarship*, **43** (4), 368-375.

BUTLAND, J., et al. (2007). Foresight report: Tackling obesities: future choices – project report. London, Government Office for Science.

BUTRYN, Meghan L., WEBB, Victoria and WADDEN, Thomas A. (2011). Behavioral treatment of obesity. *The psychiatric clinics of North America*, **34** (4), 841-859.

BYE, C., AVERY, A. and LAVIN, J. (2005). Tackling obesity in men -- preliminary evaluation of men-only groups within a commercial slimming organization. *Journal of human nutrition and dietetics: The official journal of the British dietetic association*, **18** (5), 391-394.

CADE J. E et al., (2012). The making of a nutrition professional: the Association for Nutrition register. *Public health nutrition*, **15** 2012-2019.

CARTER, Frances A. and JANSEN, Anita (2012). Improving psychological treatment for obesity. which eating behaviours should we target? *Appetite*, **58** (3), 1063.

CHAMBERS, J. A. and SWANSON, V. (2012). Stories of weight management: Factors associated with successful and unsuccessful weight maintenance. *British journal of health psychology*, **17** (2), 223-243.

CHAPUT, Jean-Philippe, et al. (2007). Psychobiological effects observed in obese men experiencing body weight loss plateau. *Depression and anxiety*, **24** (7), 518-521.

DANSINGER, M. L., et al. (2005). Comparison of the atkins, ornish, weight watchers, and zone diets for weight loss and heart disease risk reduction: A randomized trial. *Journal of cardiopulmonary rehabilitation*, **25** (3), 184-185.

- DAVIS, Caroline A., et al. (2009). Dopamine for "wanting" and opioids for "liking": A comparison of obese adults with and without binge eating. *Obesity*, **17** (6), 1220-1225.
- DELANEY, J. P. et al., (2014). Effect of physical activity on weight loss, energy expenditure, and energy intake during diet induced weight loss. *Obesity*, **22** (2), 363-370.
- DELORMIER, Treena, FROHLICH, Katherine L. and POTVIN, Louise (2009). Food and eating as social practice--understanding eating patterns as social phenomena and implications for public health. *Sociology of health & illness*, **31** (2), 215-228.
- DEPARTMENT OF HEALTH. (2011). Equality analysis: A call to action on obesity in England [online]. Last accessed 10 August 2014 at: <http://www.dh.gov.uk/publications>.
- DIXON, J. B., DIXON, M. E. and O'BRIAN, P. E. (2003). Depression in association with severe obesity: changes with weight loss. *Archives of internal medicine*, **163** (17), 2058-2065.
- EKMEKCIOGLU, C. and TOUITOU, Y. (2011). Chronobiological aspects of food intake and metabolism and their relevance on energy balance and weight regulation. *Obesity reviews*, **12** (1), 14-25.
- ELKS, Carrie M. and FRANCIS, Joseph (2010). Central adiposity, systemic inflammation, and the metabolic syndrome. *Current hypertension reports*, **12** (2), 99-104.
- FABBRICATORE, Mariantonietta, et al. (2013; 2012). Food craving is associated with multiple weight loss attempts. *Mediterranean journal of nutrition and metabolism*, **6** (1), 79-83.
- FAWCETT, Katherine A. and BARROSO, Inês (2010). The genetics of obesity: FTO leads the way. *Trends in genetics*, **26** (6), 266-274.
- GISKES, K., et al. (2011). A systematic review of environmental factors and obesogenic dietary intakes among adults: Are we getting closer to understanding obesogenic environments? *Obesity reviews*, **12** (501), e95-e106.

- GROSS, A-F, FICKERT, S. and GÜNTHER, K. P. (2005). Obesity and arthritis. *Der orthopäde*, **34** (7), 638.
- HAGOBIAN, T. A. and PHELAN, S. (2013). Lifestyle interventions to reduce obesity and diabetes. *American journal of lifestyle medicine*, **7** (2), 84-98.
- HAMMARSTRÖM, Anne, et al. (2013; 2014). Experiences of barriers and facilitators to weight-loss in a diet intervention - a qualitative study of women in northern Sweden. *BMC women's health*, **14** (1), 59-59.
- HARDING, Seeromanie, et al. (2008; 2007). Ethnic differences in overweight and obesity in early adolescence in the MRC DASH study: The role of adolescent and parental lifestyle. *International journal of epidemiology*, **37** (1), 162-172.
- HAYS, Nicholas P. and ROBERTS, Susan B. (2008). Aspects of eating behaviors "disinhibition" and "restraint" are related to weight gain and BMI in women. *Obesity*, **16** (1), 52-58.
- HINDLE, L. and CARPENTER, C. (2011). An exploration of the experiences and perceptions of people who have maintained weight loss. *Journal of human nutrition and dietetics*, **24** (4), 342-350.
- HOWARTH, N. C., et al. (2006; 2007). Eating patterns and dietary composition in relation to BMI in younger and older adults. *International journal of obesity*, **31** (4), 675-684. .
- KIERNAN, M., et al. (2012). Social support for healthy behaviors: Scale psychometrics and prediction of weight loss among women in a behavioral program. *Obesity*, **20** (4), 756-764.
- KOLOTKIN, Ronette L., et al. (2006). Obesity and sexual quality of life. *Obesity*, **14** (3), 472-479.
- KORCZAK, Dieter and KISTER, Christine (2013). Overweight and obesity: The efficacy of diets for weight maintenance after weight loss. *GMS health technology assessment*, **9**, Doc06.

- KRASCHNEWSKI, J. L., et al. (2010). Long term weight loss maintenance in the United States. *International journal of obesity*, **34** (11), 1644-1654.
- LAM, Jamie Chung Mei, MAK, Judith Choi Wo and IP, Mary Sau Man (2012). Obesity, obstructive sleep apnoea and metabolic syndrome. *Respirology*, **17** (2), 223-236.
- LANDMAN, Jacqueline P. and WOOTTON, Stephen A. (2007). Professional regulation of nutritionists: Where are we now? *Proceedings of the nutrition society*, **66** (2), 269-276.
- LEIDY, Heather J., et al. (2010). The influence of higher protein intake and greater eating frequency on appetite control in overweight and obese men. *Obesity*, **18** (9), 1725-1732.
- LEIDY, Heather J. and CAMPBELL, Wayne W. (2011; 2010). The effect of eating frequency on appetite control and food intake: Brief synopsis of controlled feeding studies. *The journal of nutrition*, **141** (1), 154-157.
- LEWIS, S., et al. (2011). A qualitative investigation of obese men's experiences with their weight. *American journal of health behavior*, **35** (4), 458-469.
- LIEBEL, R. L., ROSENBAUM, M and HIRSH, J (1995). Changes in energy expenditure resulting from altered body weight. *New England journal of medicine*, **332**, 621-628.
- MCCAMBRIDGE, Jim, WITTON, John and ELBOURNE, Diana R. (2014). Systematic review of the Hawthorne effect: New concepts are needed to study research participation effects. *Journal of clinical epidemiology*, **67** (3), 267.
- MASON, C., et al. (2013). History of weight cycling does not impede future weight loss or metabolic improvements in postmenopausal women. *Metabolism: Clinical and experimental*, **62** (1), 127-136.
- MESAS, A. E., et al. (2012). Selected eating behaviours and excess body weight: A systematic review. *Obesity reviews*, **13** (2), 106-135.

MICHIE, Susan, et al. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALORE taxonomy. *Psychology & health*, **26** (11), 1479-1498.

MORGAN, Philip J., et al. (2011). Engaging men in weight loss: Experiences of men who participated in the male only SHED-IT pilot study. *Obesity research & clinical practice*, **5** (3), e239-e248.

MYERS, Jr, Martin G., et al. (2010). Obesity and leptin resistance: Distinguishing cause from effect. *Trends in endocrinology and metabolism*, **21** (11), 643-651.

NAKADE, Makiko, et al. (2012). What behaviors are important for successful weight maintenance? [online]. *Journal of obesity*, **2012**, 202037.

NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE (2006). Obesity, guidance on prevention, identification, assessment and management of overweight and obesity in adults and children. [online]. NICE guidelines [CG43]. <https://www.nice.org.uk/guidance/cg43>.

OCHNER, Christopher N., et al. (2013). Biological mechanisms that promote weight regain following weight loss in obese humans. *Physiology & behavior*, **120**, 106-113.

O'REILLY, G. A., et al. (2014). Mindfulness-based interventions for obesity-related eating behaviours: A literature review. *Obesity reviews*, **15** (6), 453-461.

PACANOWSKI, Carly R., et al. (2014). Binge eating behavior and weight loss maintenance over a 2-year period. *Journal of obesity*, **2014**, 1-9.

PISCHON, Tobias, NÖTHLINGS, Ute and BOEING, Heiner (2008). Obesity and cancer. *The proceedings of the nutrition society*, **67** (2), 128-145.

REYES, N. R., et al. (2012). Similarities and differences between weight loss maintainers and regainers: A qualitative analysis. *Journal of the academy of nutrition and dietetics*, **112** (4), 499-505.

RIEBE, Deborah, et al. (2005). Long-term maintenance of exercise and healthy eating behaviors in overweight adults. *Preventive medicine*, **40** (6), 769-778.

RITCHIE, Jane, et al. (2013). *Qualitative research practice: A guide for social science students and researchers*. London, Sage.

RYAN, D. (2005). *Risks and benefits of weight loss: Challenges to obesity research*. European Heart Journal Supplements, **7** (Suppl L), L27-L31.

SACKS, Frank et al. (2009). Comparison of weight loss diets with different compositions of fat, protein and carbohydrates. *The New England journal of medicine*, **360**, 859-873.

SAIRANEN, Essi, et al. (2014). Flexibility in weight management. [online]. *Eating behaviors*, **15** (2), 218-224.

SALINARDI, T. C., et al. (2013). Lifestyle intervention reduces body weight and improves cardiometabolic risk factors in worksites. *American journal of clinical nutrition*, **97** (4), 667-676.

SCHUBERT, Lisa, et al. (2012). Re-imagining the 'social' in the nutrition sciences. *Public health nutrition*, **15** (2), 352-359.

SCHWARTZ, Marlene B. and BROWNELL, Kelly D. (2004). Obesity and body image. *Body image*, **1** (1), 43-56.

SHAN, Yaso. (2008). Tackling the obesity crisis in the UK. *Primary health care*, **18** (8), 25-30.

STAMATIOU, Konstantinos and COPANITSANO, Panagiota (2012). Is there any association between obesity and benign prostatic hyperplasia? *International journal of urological nursing*, **6** (1), 11-16.

STUBBS, J., et al. (2011). Weight outcomes for 34271 participants in a commercial/primary care weight management partnership scheme. *Obesity facts*, **4**, 113-120.

STUBBS, J., et al. (2011). Problems in identifying predictors and correlates of weight loss and maintenance: Implications for weight control therapies based on behaviour change. *Obesity reviews*, **12** (9), 688-708.

- STUBBS, J., et al. (2012). Behavioural and motivational factors associated with weight loss and maintenance in a commercial weight management programme. *The open university journal*, **4**, 35-43.
- STUBBS, R. J. and LAVIN, J. H. (2013). The challenges of implementing behaviour changes that lead to sustained weight management. *Nutrition bulletin*, **38** (1), 5-22.
- SUMITHRAN, P., et al. (2011). Long-term persistence of hormonal adaptations to weight loss. *New England journal of medicine*, **365** (17), 1597-1604.
- SWENCIONIS, Charles and RENDELL, Sarah Litman (2012). The psychology of obesity. *Abdominal imaging*, **37** (5), 733-737.
- SWINBURN, BA, et al. (2011). Obesity 1 the global obesity pandemic: Shaped by global drivers and local environments. *Lancet*, **378** (9793), 804-814.
- TEIXEIRA, P. J., et al. (2004). Pretreatment predictors of attrition and successful weight management in women. *International journal of obesity*, **28** (9), 1124-1133.
- TEIXEIRA, P. J., et al. (2005). A review of psychosocial pre-treatment predictors of weight control. *Obesity reviews*, **6** (1), 43-65.
- TEIXEIRA, P. J., et al. (2012). Motivation, self-determination, and long-term weight control. [online]. *International journal of behavioral nutrition and physical activity*, **9** (22), 1-13.
- TEIXEIRA, Pedro J., et al. (2010). Mediators of weight loss and weight loss maintenance in middle-aged women. *Obesity*, **18** (4), 725-735.
- TEIXEIRA, Pedro, et al. (2004). Who will lose weight? A reexamination of predictors of weight loss in women. *International journal of behavioral nutrition and physical activity*, **1** (1), 1-12.
- THE LOOK AHEAD RESEARCH GROUP (2003). Look AHEAD (action for health in diabetes): Design and methods for a clinical trial of weight loss for the prevention of cardiovascular disease in type 2 diabetes. *Controlled clinical trials*, **24** (5), 610-628.

THE LOOK AHEAD RESEARCH GROUP (2007). Reduction in weight and cardiovascular disease risk factors in individuals with type 2 diabetes: one-year results of the look AHEAD trial. *Diabetes care*, **30** (6), 1374-1383.

THE LOOK AHEAD RESEARCH GROUP (2010). Long term effects of a lifestyle intervention on weight and cardiovascular risk factors in individuals with type 2 diabetes: Four year results of the Look AHEAD trial. *Archives of internal medicine*, **170** (17), 1566-1575.

TURK, Melanie Warziski, et al. (2009). Randomized clinical trials of weight loss maintenance: A review. *The journal of cardiovascular nursing*, **24** (1), 58-80.

TURNER-MCGRIEVY, Gabrielle M. and TATE, Deborah F. (2013). Weight loss social support in 140 characters or less: Use of an online social network in a remotely delivered weight loss intervention. *Translational behavioral medicine*, **3** (3), 287-294.

VALENTE, Thomas W., et al. (2009). Adolescent affiliations and adiposity: A social network analysis of friendships and obesity. *Journal of adolescent health*, **45** (2), 202-204.

VAN KONINGSBRUGGEN, Guido M., STROEBE, Wolfgang and AARTS, Henk (2012). Mere exposure to palatable food cues reduces restrained eaters' physical effort to obtain healthy food. *Appetite*, **58** (2), 593-596.

VOGELS, Neeltje, DIEPVENS, Kristel and WESTERTERP-PLANTENGA, Margriet S. (2005). Predictors of long-term weight maintenance. *Obesity research*, **13** (12), 2162-2168.

WANG, S. S., BROWNELL, K. D. and WADDEN, T. A. (2004). The influence of the stigma of obesity on overweight individuals. *International journal of obesity*, **28** (10), 1333-1337.

WANG, YC, et al. (2011). Obesity 2 health and economic burden of the projected obesity trends in the USA and the UK. *Lancet*, **378** (9793), 815-825.

WIEGLE, D., et al. (1988). Weight loss leads to a marked decrease in nonresting energy expenditure in ambulatory human subjects. *Metabolism*, **37**, 930-936.

WILDING, John P. H. (2011). Pathophysiology and aetiology of obesity. *Medicine*, **39** (1), 6-10.

WITHROW, D. and ALTER, D. A. (2011). The economic burden of obesity worldwide: A systematic review of the direct costs of obesity. *Obesity reviews*, **12** (2), 131-141.

WORLD HEALTH ORGANISATION (2014). Obesity and overweight, fact sheet no 311 [online]. Last accessed 10 August 2014 at:
<http://www.who.int/mediacentre/factsheets/fs311/en/>

WYCHERLEY, T. P., et al. (2012). Comparison of the effects of 52 weeks weight loss with either a high-protein or high-carbohydrate diet on body composition and cardiometabolic risk factors in overweight and obese males. *Nutrition & diabetes*, **2** (8), e20-e28.

YATURU, Subhashini (2011). Obesity and type 2 diabetes. *Journal of diabetes mellitus*, **1** (4), 79-95.

CHAPTER 2: LITERATURE REVIEW

ASSOCIATION FOR NUTRITION (2012). Competency requirements for course accreditation: UK voluntary register of nutritionists. [online]. Association for Nutrition. <http://www.associationfornutrition.org/Portals/0/COURSE%20ACCREDITATION%20COMPETENCIES%20July%202012.pdf>.

BERKMAN, Nancy, et al. (2013). Grading the strength of a body of evidence when assessing health care interventions for the effective health care program of the agency for healthcare research and quality: an update. [online]. Last accessed 23 December 2015 at: <http://www.ncbi.nlm.nih.gov/books/NBK174881/>

BOELL, Sebastian and Cecez-Kecmanovic, Dubravka (2014). On being 'systematic' in literature reviews in IS. [online]. *Journal of information technology*, 18 November 2014.

CADE, J. E., et al. (2012). The making of a nutrition professional: The association for nutrition register. *Public health nutrition*, **15** (11), 2012-2019.

CHAMBERS, Julie A. and SWANSON, Vivien (2012). Stories of weight management: Factors associated with successful and unsuccessful weight maintenance. *British journal of health psychology*, **17**, 223-243.

CROTTY, Patricia (1993). The value of qualitative research in nutrition. *Health sociology review*, **3** (1), 109-118.

CUMMINS, Steven and MACINTYRE, Sally (2006). Food environments and obesity--neighbourhood or nation? *International journal of epidemiology*, **35** (1), 100-104.

DE SOUZA, Paula and CICLITIRA, Karen E. (2005). Men and dieting: A qualitative analysis. *Journal of health psychology*, **10** (6), 793-804.

DELORMIER, Treena, FROHLICH, Katherine L. and POTVIN, Louise (2009). Food and eating as social practice--understanding eating patterns as social phenomena and implications for public health. [online]. *Sociology of health & illness*, **31** (2), 215-228.

EGGERS, T. D. and KENNEDY, O. B. (2010). Nutritionists: Is there a need for statutory registration in the UK? *Nutrition bulletin*, **35** (4), 332-336.

EIDE, Wenche, Barth. (1982). The nutrition educator's role in access to food-- from individual orientation to social orientation. *Journal of nutrition education*, **14** (1), 14-17.

EPIPHANIOU, Eleni and OGDEN, Jane (2010). Successful weight loss maintenance and a shift in identity from restriction to a new liberated self. *Journal of health psychology*, **15** (6), 887-896.

GASPARYAN, Armen Yuri, et al. (2011). Writing a narrative biomedical review: Considerations for authors, peer reviewers, and editors. [online]. *Rheumatology international*, **31** (11), 1409-1417.

GREEN, A. R., LARKIN, M. and SULLIVAN, V. (2009). Oh stuff it! the experience and explanation of diet failure an exploration using interpretative phenomenological analysis. *Journal of health psychology*, **14** (7), 997-1008.

GREEN, Bart N., JOHNSON, Claire D. and ADAMS, Alan (2006). Writing narrative literature reviews for peer-reviewed journals: Secrets of the trade. [online]. *Journal of chiropractic medicine*, **5** (3), 101-117.

HANNES, K. (2011). Critical appraisal of qualitative research. [online]. In: NOYES, J. et al. (eds). *Supplementary guidance for inclusion of qualitative research in Cochrane systematic reviews of interventions*. Cochrane Collaboration Qualitative Methods Group.

HANNES, Karin and LOCKWOOD, Craig (2011). Pragmatism as the philosophical foundation for the Joanna Briggs meta-aggregative approach to qualitative evidence synthesis. *Journal of advanced nursing*, **67** (7), 1632-1642.

HINDLE, L. and CARPENTER, C. (2011). An exploration of the experiences and perceptions of people who have maintained weight loss. *Journal of human nutrition and dietetics*, **24** (4), 342-350.

HUGHES, Roger (2004). Competencies for effective public health nutrition practice: A developing consensus. [online]. *Public health nutrition*, **7** (5), 683-691.

JONSDOTTIR, Svandis, et al. (2011). Consensus on the competencies required for public health nutrition workforce development in europe – the JobNut project. [online]. *Public health nutrition*, **14** (8), 1439-1449.

- KUPER, Ayelet, LINGARD, Lorelei and LEVINSON, Wendy (2008). Qualitative research: Critically appraising qualitative research. [online]. *BMJ: British medical journal*, **337** (7671), 687-689.
- LANDMAN, Jacqueline, BUTTRISS, Judith and MARGETTS, Barrie (1998). Curriculum design for professional development in public health nutrition in Britain. [online]. *Public health nutrition*, **1** (1), 69-74.
- LANDMAN, Jacqueline P. and WOOTTON, Stephen A. (2007). Professional regulation of nutritionists: Where are we now? *Proceedings of the nutrition society*, **66** (2), 269-276.
- MAYS, Nicholas and POPE, Catherine (2000). Assessing quality in qualitative research. [online]. *British medical journal*, **320** (7226), 50-52.
- MCCAMBRIDGE, Jim, WITTON, John and ELBOURNE, Diana R. (2014). Systematic review of the Hawthorne effect: New concepts are needed to study research participation effects. *Journal of clinical epidemiology*, **67** (3), 267.
- MCKEE, Heather, NTOUMANIS, Nikos and SMITH, Brett (2013). Weight maintenance: Self-regulatory factors underpinning success and failure. *Psychology & health*, **28** (10), 1207-1223.
- MCKENZIE, J. C. (1980). What is social nutrition? *Nutrition bulletin*, **5** (6), 309-325.
- MEEKER, Jessica, et al. (2014). Development of a competency framework for the nutrition in emergencies sector. *Public health nutrition*, **17** (3), 689-699.
- MURCOTT, A. (2000). Understanding life-style and food use: Contributions from the social sciences. *British medical bulletin*, **56** (1), 121-132.
- PELTO, Gretel H., FREAKE, Hedley C. and ASNS Long Range Planning Committee (2003). Social research in an integrated science of nutrition: Future directions. *The journal of nutrition*, **133** (4), 1231-1234.
- RITCHIE, Jane, et al. (2013). *Qualitative research practice: A guide for social science students and researchers*. London, Sage.

ROZIN, P (1981). The study of human food selection and the problems of 'Stage 1 Science'. In: MILLER, S. A (ed), *Nutrition and Behavior*. Philadelphia, Franklin Institute Press. 9-18.

SCHUBERT, Lisa, et al. (2012; 2011). Re-imagining the 'social' in the nutrition sciences. [online]. *Public health nutrition*, **15** (2), 352-359.

SWENCIONIS, Charles and RENDELL, Sarah Litman (2012). The psychology of obesity. *Abdominal imaging*, **37** (5), 733-737.

SWINBURN, BA, et al. (2011). Obesity 1 the global obesity pandemic: Shaped by global drivers and local environments. *Lancet*, **378** (9793), 804-814.

THE JOANNA BRIGGS FOUNDATION (2014). Joanna Briggs institute reviewer's manual 2014 edition [online]. Last accessed 23 December 2015 at: <http://joannabriggs.org/assets/docs/sumari/reviewersmanual-2014.pdf>

WHALE, Katie, GILLISON, Fiona B. and SMITH, Paula C. (2014). 'Are you still on that stupid diet?': Women's experiences of societal pressure and support regarding weight loss, and attitudes towards health policy intervention. *Journal of health psychology*, **19** (12), 1536-1546.

WILLIAMSON, C. S. (2012). Nutritionists and their qualifications: Setting the record straight. [online]. *Nutrition bulletin*, **37** (2), 131-134.

CHAPTER 3: GENERAL METHODS

BHASKAR, Roy (2008). *A realist theory of science*. London, Verso.

BRAUN, Virginia and CLARKE, Victoria (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, **3** (2), 77-101.

CALDER, Gideon (2011). Climate change and normativity: Constructivism versus realism. *Critical review of international social and political philosophy*, **14** (2), 153-169.

DUNCAN, Edward and NICOL, Margaret (2004). Subtle realism and occupational therapy: an alternative approach to knowledge generation and evaluation. *British journal of occupational therapy*, **67** (10), 453-456.

FURBER, Christine (2010). Framework analysis: A method for analysing qualitative data. *African journal of midwifery and women's health*, **4** (2), 97-100.

GALE, Nicola K., et al. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC medical research methodology*, **13**, 117-125.

GUBA, Egon and LINCOLN, Yvonne (1994). Competing paradigms in qualitative research. In: DENZIN, Norman and LINCOLN, Yvonne (eds). *Handbook of qualitative research*. Newbury Park, CA, Sage, 105-117.

HAMMERSLEY, Martyn (2007). The issue of quality in qualitative research. *International journal of research & method in education*, **30** (3), 287-305.

HANNES, K. (2011). Critical appraisal of qualitative research. [online]. In: NOYES, J. et al. (eds). *Supplementary guidance for inclusion of qualitative research in Cochrane systematic reviews of interventions*. Cochrane Collaboration Qualitative Methods Group.

HENDLEY, Steven (2006). Habermas, between metaphysical and natural realism. *International journal of philosophical studies*, **14** (4), 521-537.

LAKOFF, George (1987). *Women, fire and dangerous things*. University of Chicago Press.

LONG, T and JOHNSON, M. (2000). Rigour, reliability and validity in qualitative research. *Clinical effectiveness in nursing*, **4**, 30-37.

MADZIA, Roman (2013). Constructive realism: In defense of the objective reality of perspectives. *Human affairs*, **23** (4), 645-657.

MAXWELL, Joseph A. (1992). Understanding and validity in qualitative research. *Harvard educational review*, **62** (3), 279-300

MAXWELL, Joseph Alex (2012). *A realist approach for qualitative research*. London, Sage.

MAYS, Nicholas and POPE, Catherine (2001). Assessing quality in qualitative research. *British medical journal*, **320** (7226), 50-52.

MORRIS, Pam (2003). *Realism*. London, Routledge.

MCNAMEE, M. J. (2005). *Philosophy and the sciences of exercise, health and sport: Critical perspectives on research methods*. London, Routledge.

OLSEN, Wendy (2010). *Realist methodology: Benchmarks in social research methods series*. London, Sage.

OWENS, John (2011). An introduction to critical realism as a meta-theoretical research perspective [online].

<https://www.kcl.ac.uk/sspp/departments/education/research/cppr/workingpapers/Paper-1.pdf>.

PORTER, Sam (2007). Validity, trustworthiness and rigour: reasserting realism in qualitative research. *Journal of advanced nursing*, **60** (1), 79-86.

RITCHIE, Jane and SPENCER, Liz (1994). Qualitative data analysis for applied policy research. In: BRYMAN, A and BURGESS, R (eds). *Analyzing qualitative data*. 173-194.

RITCHIE, Jane and LEWIS, Jane (2003). *Qualitative research practice: a guide for social science students and researchers*. London, Sage.

RITCHIE, Jane, et al. (2013). *Qualitative research practice: A guide for social science students and researchers*. London, Sage.

SCHUBERT, Lisa, et al. (2012; 2011). Re-imagining the 'social' in the nutrition sciences. [online]. *Public health nutrition*, **15** (2), 352-359.

SHENTON, Andrew K (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for information*, **22**, 63-75.

SMITH, Joanna and FIRTH, Jill (2011). Qualitative data analysis: The framework approach. *Nurse researcher*, **18** (2), 52-62.

SOBH, Rana and PERRY, Chad (2006). Research design and data analysis in realism research. *European journal of marketing*, **40** (11/12), 1184-1209.

STANIFORD, Leanne Jane, et al. (2011). Key stakeholders' perspectives towards childhood obesity treatment: A qualitative study. *Journal of child health care: For professionals working with children in the hospital and community*, **15** (3), 230-244.

WARD, Deborah J., et al. (2013). Using framework analysis in nursing research: A worked example. *Journal of advanced nursing*, **69** (11), 2423-2431.

WIDDICOMBE, Sue and WOUFFITT, Robin (1995). *Language of youth subcultures: Social identity in action*. Brighton, Harvester Wheatsheaf.

WIMSATT, William, C. (2007). *Re-engineering philosophy for limited beings*. Cambridge, Harvard University Press.

ABUSABHA, RAYANE and ACHTERBERG, CHERYL (1997). Review of self-efficacy and locus of control for nutrition- and health-related behavior. *Journal of the American dietetic association*, **97** (10), 1122-1132.

ADOLFSSON, Birgitta, et al. (2005). Locus of control and weight reduction. *Patient education and counseling*, **56** (1), 55-61.

AHERN, Amy L., et al. (2013). Participants' explanatory model of being overweight and their experiences of 2 weight loss interventions. *Annals of family medicine*, **11** (3), 251-257.

ALBERTS, H. J. E. M., THEWISSEN, R. and RAES, L. (2012). Dealing with problematic eating behaviour. the effects of a mindfulness-based intervention on eating behaviour, food cravings, dichotomous thinking and body image concern. *Appetite*, **58** (3), 847-851.

ANDRADE, Ana M., et al. (2010). The effect of physical activity on weight loss is mediated by eating self-regulation. *Patient education and counseling*, **79** (3), 320-326.

ANDREWS, G. (1997). Intimate saboteurs. *Obesity surgery*, **7** (5), 445-448.

ANNESI, James J. and WHITAKER, Ann C. (2010). Psychological factors associated with weight loss in obese and severely obese women in a behavioral physical activity intervention. *Health education & behavior: The official publication of the society for public health education*, **37** (4), 593-606.

ARTHUR, Sue and NAZROO, James (2003). Designing fieldwork strategies and methods. In: RITCHIE, Jane and LEWIS, Jane (eds). *Qualitative research practice*. Thousand Oaks, CA, Sage 109-138.

AZEEM, Muhammad and SALFI, Nasser (2012). Usage of nvivo software for qualitative data analysis. *Academic research international*, **2** (1), 262-266.

BAKX, J. C., et al. (2005). Role of social support in lifestyle-focused weight management interventions. *European journal of clinical nutrition*, **59** (suppl 1), S179-S186.

- BANDURA, Albert (1989). Human agency in social cognitive theory. *American psychologist*, **44** (9), 1175-1184.
- BANDURA, Albert (2001). Social cognitive theory: An agentic perspective. *Annual reviews in psychology*, **52**, 1-26.
- BARAD, Karen Michelle (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham, N.C; London, Duke University Press.
- BECK, C., et al. (2013). A randomized trial of a community-based cognitive intervention for obese senior adults. *Journal of aging and health*, **25** (1), 97-118.
- BERRY, D. (2004). An emerging model of behavior change in women maintaining weight loss. *Nursing science quarterly*, **17** (3), 242-252.
- BRAUN, Virginia and CLARKE, Victoria (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, **3** (2), 77-101.
- BURKE, Lora E., et al. (2009). Experiences of self-monitoring: Successes and struggles during treatment for weight loss. *Qualitative health research*, **19** (6), 815-828.
- BYRNE, Susan M., COOPER, Zafra and FAIRBURN, Christopher G. (2004). Psychological predictors of weight regain in obesity. *Behaviour research and therapy*, **42** (11), 1341-1356.
- CALDWELL, Karen L., BAIME, Michael J. and WOLEVER, Ruth Q. (2012). Mindfulness based approaches to obesity and weight loss maintenance. *Journal of mental health counseling*, **34** (3), 269.
- CHAMBERS, J. A. and SWANSON, V. (2012). Stories of weight management: Factors associated with successful and unsuccessful weight maintenance. *British journal of health psychology*, **17** (2), 223-243.
- CLARKE, A. M., LISSEL, S. L and DAVIES, C. (2008) Complex critical realism. *Advanced nursing science*, **31** (4), E67-E79.

- DADDARIO, Diane K. (2007). A review of the use of the health belief model for weight management. *Medsurg nursing: Official journal of the academy of medical-surgical nurses*, **16** (6), 363.
- DECI, Edward L. and RYAN, Richard M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie canadienne*, **49** (3), 182-185.
- DELANEY, J. P. et al., (2014). Effect of physical activity on weight loss, energy expenditure, and energy intake during diet induced weight loss. *Obesity*, **22** (2), 363-370.
- EDMUNDS, Jemma, NTOUMANIS, Nikos and DUDA, Joan L. (2007). Adherence and well-being in overweight and obese patients referred to an exercise on prescription scheme: A self-determination theory perspective. *Psychology of sport & exercise*, **8** (5), 722-740.
- EGAN, Sarah J., et al. (2013). Anxiety as a mediator between perfectionism and eating disorders. *Cognitive therapy and research*, **37** (5), 905-913.
- ELFHAG, K. and RÖSSNER, S. (2005). Who succeeds in maintaining weight loss? A conceptual review of factors associated with weight loss maintenance and weight regain. *Obesity reviews: An official journal of the international association for the study of obesity*, **6** (1), 67-85.
- EPIPHANIOU, Eleni and OGDEN, Jane (2010). Successful weight loss maintenance and a shift in identity from restriction to a new liberated self. *Journal of health psychology*, **15** (6), 887-896.
- FAIRBURN, Christopher and BEGLIN, Sarah (2008). *Cognitive behavior therapy and eating disorders*. New York, Guilford Press.
- FOSTER, Gary D., MAKRIS, Angela P and BAILER, Brooke A. (2005). Behavioral treatment of obesity. *American journal of clinical nutrition*, **82** (1), 230S-235S.
- FRESCO, David M., et al (2010). Mindfulness based cognitive therapy. In: HERBERT, James and FORMAN, Evan (eds.), *Acceptance and mindfulness in cognitive behavior*

therapy: *Understanding and applying the new therapies*. New Jersey, John Wiley & Sons, 57-82.

GALLAGHER, Kara I., et al. (2006). Psychosocial factors related to physical activity and weight loss in overweight women. *Medicine and science in sports and exercise*, **38** (5), 971-980.

GOLLWITZER, Peter M. and OETTINGEN, Gabriele (2011). Planning promotes goal striving. In: VOHS, Kathleen, D. and BAUMEISTER, Roy, F. (eds.), *Handbook of self-regulation: Research, theory and application*. London, Guilford Press, 162-185.

GOLLWITZER, Peter M. and SHEERAN, Paschal (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in experimental social psychology*, **38**, 69-119.

GREEN, A. R., LARKIN, M. and SULLIVAN, V. (2009). Oh stuff it! the experience and explanation of diet failure an exploration using interpretative phenomenological analysis. *Journal of health psychology*, **14** (7), 997-1008.

GUBA, Egon and LINCOLN, Yvonne (1994). Competing paradigms in qualitative research. In: DENZIN, Norman and LINCOLN, Yvonne (eds). *Handbook of qualitative research*. Newbury Park, CA, Sage, 105-117.

GUEST, Greg, BUNCE, Arwen and JOHNSON, Laura (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods*, **18**, 59-82.

HAMMARSTRÖM, Anne, et al. (2013; 2014). Experiences of barriers and facilitators to weight-loss in a diet intervention - a qualitative study of women in northern Sweden. *BMC women's health*, **14** (1), 59-59.

HANNES, K. (2011). Critical appraisal of qualitative research. [online]. In: NOYES, J. et al. (eds). *Supplementary guidance for inclusion of qualitative research in Cochrane systematic reviews of interventions*. Cochrane Collaboration Qualitative Methods Group.

- HINDLE, L. and CARPENTER, C. (2011). An exploration of the experiences and perceptions of people who have maintained weight loss. *Journal of human nutrition and dietetics*, **24** (4), 342-350.
- HUTCHESSON, M., et al. (2015). eHealth interventions for the prevention and treatment of overweight and obesity in adults: A systematic review with meta-analysis. *Obesity reviews*, **16** (5), 376-392.
- JOHNSTON, Craig A. (2013). Predictors of successful weight loss. *American journal of lifestyle medicine*, **7** (2), 115-117.
- KIERNAN, M., et al. (2012). Social support for healthy behaviors: Scale psychometrics and prediction of weight loss among women in a behavioral program. *Obesity*, **20** (4), 756-764.
- KVALE, Steinar (1996). *Interviews: An introduction to qualitative research interviewing*. London, Sage.
- LASZCZYNSKA, Aleksandra et al. (2007). Planning to lose weight: Randomized controlled trial of an implementation intention prompt to enhance weight reduction among overweight and obese women. *Health psychology*, **26** (4), 507-512.
- LEGARD, R., KEEGAN, J., and WARD, K (2003). In-depth interviews. In: RITCHIE, Jane and LEWIS, Jane (eds.), *Qualitative research practice: a guide for social science students and researchers*. Thousand Oaks, CA, Sage 138-169.
- LETHBRIDGE, Jessica, et al. (2011). The role of perfectionism, dichotomous thinking, shape and weight overvaluation, and conditional goal setting in eating disorders. *Eating behaviors*, **12** (3), 200-206.
- LINEHAN, Marsha, et al. (1986). Presenting problems of parasuicides versus suicide ideators and nonsuicidal psychiatric patients. *Journal of consulting and clinical psychology*, **54** (6), 880-881.
- LITINSKY, Anne M and HASLAM, Nick (1998). Dichotomous thinking as a sign of suicide risk on the TAT. *Journal of personality assessment*, **71** (3), 368-378.

MARTINS, Júlio C., et al. (2011). Effects of an 8-week physical activity program on body composition and physical fitness on obese and pre obese female students. *Journal of physical education and sport*, **11** (2), 226-234. .

MCKEE, Heather, NTOUMANIS, Nikos and SMITH, Brett (2013). *Weight maintenance: Self-regulatory factors underpinning success and failure*. England, Psychology & health, **28** (10), 1207.

MCLEAN, N., et al. (2003). Family involvement in weight control, weight maintenance and weight-loss interventions: A systematic review of randomised trials. *International journal of obesity*, **27** (9), 987-1005.

MICHIE, Susan, et al. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. *Annals and behavioural medicine*, **46** (1), 81-94.

MICHIE, Susan, et al. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALO-RE taxonomy. *Psychology & health*, **26** (11), 1479-1498.

MOND, J.M., et al. (2004). Validity of the eating disorder examination questionnaire in screening for eating disorders in community samples. *Behavioural research and therapy*, **42** (5), 551-567.

MORGAN, Philip J., et al. (2011). Engaging men in weight loss: Experiences of men who participated in the male only SHED-IT pilot study. *Obesity research & clinical practice*, **5** (3), e239-e248.

MRAZ, W and RUNCO, M.A (1994). Suicide ideation and creative problem solving. *Suicide and life threatening behavior*, **24** (1), 38-47.

NAKADE, Makiko, et al. (2012). What behaviors are important for successful weight maintenance? [online]. *Journal of obesity*, **2012**, 202037.

NATIONAL OBESITY OBSERVATORY (2011). Obesity and mental health [online]. Last accessed 23 December 2015 at:
http://www.noo.org.uk/uploads/doc/vid_10266_Obesity%20and%20mental%20health_FINAL_070311_MG.pdf

NEWMAN, Margaret A (1991). *Health as expanding consciousness*. 2nd ed., New York, National League for Nursing.

NEWMAN, Margaret A. (1997). Evolution of the theory of health as expanding consciousness. *Nursing science quarterly*, **10** (1), 22-25.

NOTWEHR, Faryle and YANG Jingzhen (2007). Goal setting frequency and the use of behavioral strategies related to diet and physical activity. *Health education research*, **22** (4), 532-538.

O'REILLY, G. A., et al. (2014). Mindfulness-based interventions for obesity-related eating behaviours: A literature review. *Obesity reviews*, **15** (6), 453-461.

PEARCE, J. W., LEBOW, M. D. and ORCHARD, J. (1981). Role of spouse involvement in the behavioral treatment of overweight women. *Journal of consulting and clinical psychology*, **49** (2), 236-244.

PHARRIS, Margaret Dexheimer (2011). Margaret A. Newman's theory of health as expanding consciousness. *Nursing science quarterly*, **24** (3), 193-194.

POWERS, Theodore A., KOESTNER, Richard and GORIN, Amy A. (2008). Autonomy support from family and friends and weight loss in college women. *Families, systems, & health*, **26** (4), 404-416.

REYES, N. R., et al. (2012). Similarities and differences between weight loss maintainers and regainers: A qualitative analysis. *Journal of the academy of nutrition and dietetics*, **112** (4), 499-505.

RITCHIE, Jane and SPENCER, Liz (1994). Qualitative data analysis for applied policy research. In: BRYMAN, A and BURGESS, R (eds). *Analyzing qualitative data*. 173-194.

RITCHIE, Jane and LEWIS, Jane (2003). *Qualitative research practice: a guide for social science students and researchers*. London, Sage.

RITCHIE, Jane, et al. (2013). *Qualitative research practice: A guide for social science students and researchers*. London, Sage.

- RYAN, Richard M. and DECI, Edward L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, **55** (1), 68-78.
- SAIRANEN, Essi, et al. (2014). Flexibility in weight management. [online]. *Eating behaviors*, **15** (2), 218-224.
- SCHWARTZ, Marlene B. and BROWNELL, Kelly D. (2004). Obesity and body image. *Body image*, **1** (1), 43-56.
- SCIAMANNA, Christopher N., et al. (2011). Practices associated with weight loss versus weight-loss maintenance results of a national survey. *American journal of preventive medicine*, **41** (2), 159-166.
- SHAFRAN, Roz, COOPER, Zafra and FAIRBURN, Christopher G. (2002). Clinical perfectionism: A cognitive-behavioural analysis. *Behaviour research and therapy*, **40** (7), 773-791.
- SHEERAN, Paschal, WEBB, Thomas, L and GOLLWITZER, Peter M. (2005). The interplay between goal intentions and implementation intentions. *Personality and social psychology bulletin*, **31** (1), 87-98.
- SMITH, Joanna and FIRTH, Jill (2011). Qualitative data analysis: The framework approach. *Nurse researcher*, **18** (2), 52-62.
- SNIEHOTTA, Falko F. (2009). Towards a theory of intentional behaviour change: Plans, planning, and self-regulation. *British journal of health psychology*, **14** (2), 261-273.
- SRIVASTAVA, Aashish and THOMSON, S. Bruce (2008). Framework analysis: A qualitative methodology for applied policy research. *Journal of administration and governance*, **4** (2), 72-79.
- STANIFORD, Leanne Jane, et al. (2011). Key stakeholders' perspectives towards childhood obesity treatment: A qualitative study. *Journal of child health care : For professionals working with children in the hospital and community*, **15** (3), 230-244.

- STENSEL, David (2010). Exercise, appetite and appetite-regulating hormones: implications for food intake and weight control. *Annals of nutrition and metabolism*, **57** (suppl2), 36-42.
- STUBBS, J., et al. (2011). Weight outcomes for 34271 participants in a commercial/primary care weight management partnership scheme. *Obesity facts*, **4**, 113-120.
- STUBBS, J., et al. (2011). Problems in identifying predictors and correlates of weight loss and maintenance: Implications for weight control therapies based on behaviour change. *Obesity reviews*, **12** (9), 688-708.
- STUBBS, J., et al. (2012). Behavioural and motivational factors associated with weight loss and maintenance in a commercial weight management programme. *The open university journal*, **4**, 35-43.
- STUBBS, R. J. and LAVIN, J. H. (2013). The challenges of implementing behaviour changes that lead to sustained weight management. *Nutrition bulletin*, **38** (1), 5-22.
- SUMITHRAN, P., et al. (2011). Long-term persistence of hormonal adaptations to weight loss. *New England journal of medicine*, **365** (17), 1597-1604.
- SWENCIONIS, Charles and RENDELL, Sarah Litman (2012). The psychology of obesity. *Abdominal imaging*, **37** (5), 733-737.
- TEIXEIRA, P. J., et al. (2004). Pretreatment predictors of attrition and successful weight management in women. *International journal of obesity*, **28** (9), 1124-1133.
- TEIXEIRA, P. J., et al. (2005). A review of psychosocial pre-treatment predictors of weight control. *Obesity reviews*, **6** (1), 43-65.
- TEIXEIRA, P. J., et al. (2012). Motivation, self-determination, and long-term weight control. [online]. *International journal of behavioral nutrition and physical activity*, **9**, (22), 1-13.
- TEIXEIRA, Pedro J., et al. (2010). Mediators of weight loss and weight loss maintenance in middle-aged women. *Obesity*, **18** (4), 725-735.

TEIXEIRA, Pedro, et al. (2004). Who will lose weight? A reexamination of predictors of weight loss in women. *International journal of behavioral nutrition and physical activity*, **1** (1), 1-12.

THOMAS, Samantha L., et al. (2008). "They all work...when you stick to them": A qualitative investigation of dieting, weight loss, and physical exercise, in obese individuals. *Nutrition journal*, **7** (1), 34-34.

TURNER-MCGRIEVY, Gabrielle M. and TATE, Deborah F. (2013). Weight loss social support in 140 characters or less: Use of an online social network in a remotely delivered weight loss intervention. *Translational behavioral medicine*, **3** (3), 287-294.

VOGELS, Neeltje, DIEPVEN, Kristel and WESTERTERP-PLANTENGA, Margriet S. (2005). Predictors of long-term weight maintenance. *Obesity research*, **13** (12), 2162-2168.

WARD, Deborah J., et al. (2013). Using framework analysis in nursing research: A worked example. *Journal of advanced nursing*, **69** (11), 2423-2431.

WING, Rena R. and PHELAN, Suzanne (2005). Long-term weight loss maintenance. *The American journal of clinical nutrition*, **82** (1 Supp 1), 222S -225S.

ZINN, Caryn and SCHOFIELD, Grant (2010). Weight loss experiences of New Zealand overweight blue and white collar workers: What works for employees? *Journal of science and medicine in sport*. **12** (2), e152-e153.

CHAPTER 5: STUDY TWO

ABRAHAM, C., and MICHIE, S. (2008). A taxonomy of behavior change techniques used in interventions. *Health psychology*, **27** (3), 379-387.

ABUSABHA, RAYANE and ACHTERBERG, CHERYL (1997). Review of self-efficacy and locus of control for nutrition- and health-related behavior. *Journal of the american dietetic association*, **97** (10), 1122-1132.

ADOLFSSON, Birgitta, et al. (2005). Locus of control and weight reduction. *Patient education and counseling*, **56** (1), 55-61.

ANDRADE, Ana M., et al. (2010). The effect of physical activity on weight loss is mediated by eating self-regulation. *Patient education and counseling*, **79** (3), 320-326.

ANNESI, James J. and WHITAKER, Ann C. (2010). Psychological factors associated with weight loss in obese and severely obese women in a behavioral physical activity intervention. *Health education & behavior: The official publication of the society for public health education*, **37** (4), 593-606.

ASSOCIATION FOR NUTRITION (2012). Competency requirements for course accreditation: UK voluntary register of nutritionists. [online]. Association for Nutrition. <http://www.associationfornutrition.org/Portals/0/COURSE%20ACCREDITATION%20COMPETENCIES%20July%202012.pdf>.

BAKX, J. C., et al. (2005). Role of social support in lifestyle-focused weight management interventions. *European journal of clinical nutrition*, **59**, (1), S179–S186.

BALCH, P. and ROSS, A. W. (1975). Predicting success in weight reduction as a function of locus of control: A unidimensional and multidimensional approach. *Journal of consulting and clinical psychology*, **43** (1), 119-119.

BANDURA, Albert (1989). Human agency in social cognitive theory. *American psychologist*, **44** (9), 1175-1184.

BANDURA, Albert (2001). Social cognitive theory: An agentic perspective. *Annual reviews in psychology*, **52**, 1-26.

- BARNES, Ann Smith, et al. (2007). Weight loss maintenance in african-american women: Focus group results and questionnaire development. *Journal of general internal medicine*, **22** (7), 915-922.
- BRAUN, Virginia and CLARKE, Victoria (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, **3** (2), 77-101.
- BROOM, David et al. (2009). Influence of resistance and aerobic exercise on hunger, circulating levels of acylated ghrelin and peptide YY in healthy males. *American journal of physiology: regulatory, integrative and comparative physiology*, **296** (1), 29-35.
- BURKE, Lora E., et al. (2009). Experiences of self-monitoring: Successes and struggles during treatment for weight loss. *Qualitative health research*, **19** (6), 815-828.
- BURKE, Lora E. and WANG, Jing (2011). Treatment strategies for overweight and obesity. *Journal of nursing scholarship*, **43** (4), 368-375.
- BUTRYN, Meghan L., WEBB, Victoria and WADDEN, Thomas A. (2011). Behavioral treatment of obesity. *The psychiatric clinics of North America*, **34** (4), 841-859.
- CADE J. E et al., (2012). The making of a nutrition professional: the Association for Nutrition register *Public health nutrition*, **15**, 2012-2019.
- CHAMBERS, J. A. and SWANSON, V. (2012). Stories of weight management: Factors associated with successful and unsuccessful weight maintenance. *British journal of health psychology*, **17** (2), 223-243.
- DADDARIO, Diane K. (2007). A review of the use of the health belief model for weight management. *Medsurg nursing: Official journal of the academy of medical-surgical nurses*, **16** (6), 363 -366.
- DANSINGER, M. L., et al. (2005). Comparison of the atkins, ornish, weight watchers, and zone diets for weight loss and heart disease risk reduction: A randomized trial. *Journal of cardiopulmonary rehabilitation*, **25** (3), 184-185.

- DECI, Edward L. and RYAN, Richard M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie canadienne*, **49** (3), 182-185.
- DELORMIER, Treena, FROHLICH, Katherine L. and POTVIN, Louise (2009). Food and eating as social practice--understanding eating patterns as social phenomena and implications for public health. *Sociology of health & illness*, **31** (2), 215-228.
- EDMUNDS, Jemma, NTOUMANIS, Nikos and DUDA, Joan L. (2007). Adherence and well-being in overweight and obese patients referred to an exercise on prescription scheme: A self-determination theory perspective. *Psychology of sport & exercise*, **8** (5), 722-740.
- EKMEKCIOGLU, C. and TOUITOU, Y. (2011). Chronobiological aspects of food intake and metabolism and their relevance on energy balance and weight regulation. *Obesity reviews*, **12** (1), 14-25.
- ELFHAG, K. and RÖSSNER, S. (2005). Who succeeds in maintaining weight loss? A conceptual review of factors associated with weight loss maintenance and weight regain. *Obesity reviews: An official journal of the international association for the study of obesity*, **6** (1), 67-85.
- GIDDENS, Anthony (1984). *The constitution of society: Outline of the theory of structuration*. Polity Press.
- GUBA, Egon and LINCOLN, Yvonne (1994). Competing paradigms in qualitative research. In: DENZIN, Norman and LINCOLN, Yvonne (eds). *Handbook of qualitative research*. Newbury Park, CA, Sage, 105-117.
- GUSTAFSSON, U. and DRAPER, A. (2009). The social aspects of food and nutrition. *Journal of human nutrition and dietetics: The official journal of the British dietetic association*, **22** (2), 87-88.
- HANNES, K. (2011). Critical appraisal of qualitative research. [online]. In: NOYES, J. et al. (eds). *Supplementary guidance for inclusion of qualitative research in Cochrane systematic reviews of interventions*. Cochrane Collaboration Qualitative Methods Group.

- HINDLE, L. and CARPENTER, C. (2011). An exploration of the experiences and perceptions of people who have maintained weight loss. *Journal of human nutrition and dietetics*, **24** (4), 342-350.
- JANKE, E. Amy, et al. (2014). A randomized clinical trial of an integrated behavioral self-management intervention simultaneously targeting obesity and pain: The STOP trial. *BMC public health*, **14** (1), 621-621.
- JOHNSON, Fiona and WARDLE, Jane (2005). Dietary restraint, body dissatisfaction, and psychological distress: A prospective analysis. *Journal of abnormal psychology*, **114** (1), 119-125.
- KORCZAK, Dieter and KISTER, Christine (2013). Overweight and obesity: The efficacy of diets for weight maintenance after weight loss. [online]. *GMS health technology assessment*, **9**, Doc06.
- KREUTER, Matthew W., et al. (1999). Understanding how people process health information: A comparison of tailored and nontailored weight-loss materials. *Health psychology*, **18** (5), 487-494.
- MARTINS, Catia et al. (2015). Effect of moderate- and high-intensity acute exercise on appetite in obese individuals. *Medicine and science in sport and exercise*, **47** (1), 40-48.
- MCKEE, Heather, NTOUMANIS, Nikos and SMITH, Brett (2013). *Weight maintenance: Self-regulatory factors underpinning success and failure*. England, Psychology & health, **28** (10), 1207.
- MICHIE, Susan, et al. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALORE taxonomy. *Psychology & health*, **26** (11), 1479-1498.
- MORTON, J. P. et al. (2010). Making the weight: a case study from professional boxing. *International journal of sports nutrition and exercise metabolism*, **20** (1), 80-85.
- MURCOTT, A. (2000). Understanding life-style and food use: Contributions from the social sciences. *British medical bulletin*, **56** (1), 121-132.

- NAKADE, Makiko, et al. (2012). What behaviors are important for successful weight maintenance? [online]. *Journal of obesity*, **2012**, 202037.
- PELTO, Gretel H., FREAKER, Hedley C. and ASNS Long Range Planning Committee (2003). Social research in an integrated science of nutrition: Future directions. *The journal of nutrition*, **133** (4), 1231-1234.
- PETTOELLO-MANTOVANI, Massimo (2005). The social and environmental dimensions of nutrition science. *Public health nutrition*, **8** (6A), 749-752.
- POLIVY, J., HEATHERTON, T. F. and HERMAN, C. P. (1988). Self-esteem, restraint, and eating behavior. *Journal of abnormal psychology*, **97** (3), 354-356.
- PORTER, Sam (2007). Validity, trustworthiness and rigour: reasserting realism in qualitative research. *Journal of advanced nursing*, **60** (1), 79-86.
- RITCHIE, Jane and SPENCER, Liz (1994). Qualitative data analysis for applied policy research. In: BRYMAN, A and BURGESS, R (eds). *Analyzing qualitative data*, 173-194.
- RITCHIE, Jane and LEWIS, Jane (2003). *Qualitative research practice: a guide for social science students and researchers*. London, Sage.
- RITCHIE, Jane, et al. (2013). *Qualitative research practice: A guide for social science students and researchers*. London, Sage.
- RUDERMAN, Audrey J. (1986). Dietary restraint: A theoretical and empirical review. *Psychological bulletin*, **99** (2), 247-262.
- RYAN, Richard M. and DECI, Edward L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, **55** (1), 68-78.
- SACKS, Frank et al. (2009). Comparison of weight loss diets with different compositions of fat, protein and carbohydrates. *The New England journal of medicine*, **360**, 859-873.

- SCHUBERT, Lisa, et al. (2012). Re-imagining the 'social' in the nutrition sciences. *Public health nutrition*, **15** (2), 352-359.
- SHAN, Yaso. (2008). Tackling the obesity crisis in the UK. *Primary health care*, **18** (8), 25-30.
- SNIEHOTTA, Falko F. (2009). Towards a theory of intentional behaviour change: Plans, planning, and self-regulation. *British journal of health psychology*, **14** (2), 261-273.
- SPAHN, Joanne M., et al. (2010). State of the evidence regarding behavior change theories and strategies in nutrition counseling to facilitate health and food behavior change. *Journal of the american dietetic association*, **110** (6), 879-891.
- SPENCER, L and WHELAN, E. (1988). *Going on YTS: The recruitment of young people with disabilities*. Sheffield, Sheffield Training agency.
- STENSEL, David (2010). Exercise, appetite and appetite-regulating hormones: implications for food intake and weight control. *Annals of nutrition and metabolism*, **57** (suppl 2), S36-S42.
- STUBBS, J., et al. (2011). Weight outcomes for 34271 participants in a commercial/primary care weight management partnership scheme. *Obesity facts*, **4**, 113-120.
- STUBBS, J., et al. (2011). Problems in identifying predictors and correlates of weight loss and maintenance: Implications for weight control therapies based on behaviour change. *Obesity reviews*, **12** (9), 688-708.
- STUBBS, J., et al. (2012). Behavioural and motivational factors associated with weight loss and maintenance in a commercial weight management programme. *The Open University journal*, **4**, 35-43.
- STUBBS, R. J. and LAVIN, J. H. (2013). The challenges of implementing behaviour changes that lead to sustained weight management. *Nutrition bulletin*, **38** (1), 5-22.
- SUMITHRAN, P., et al. (2011). Long-term persistence of hormonal adaptations to weight loss. *New England journal of medicine*, **365** (17), 1597-1604.
- SWINBURN, BA,

et al. (2011). Obesity 1 the global obesity pandemic: Shaped by global drivers and local environments. *Lancet*, **378** (9793), 804-814.

TEIXEIRA, P. J., et al. (2004). Pretreatment predictors of attrition and successful weight management in women. *International journal of obesity*, **28** (9), 1124-1133.

TEIXEIRA, P. J., et al. (2005). A review of psychosocial pre-treatment predictors of weight control. *Obesity reviews*, **6** (1), 43-65.

TEIXEIRA, P. J., et al. (2012). Motivation, self-determination, and long-term weight control. [online]. *International journal of behavioral nutrition and physical activity*, **9** (22), 1-13.

TEIXEIRA, Pedro J., et al. (2010). Mediators of weight loss and weight loss maintenance in middle-aged women. *Obesity (silver spring, md.)*, **18** (4), 725-735.

TEIXEIRA, Pedro, et al. (2004). Who will lose weight? A reexamination of predictors of weight loss in women. *International journal of behavioral nutrition and physical activity*, **1** (1), 1-12.

THOMAS, Samantha L., et al. (2008). "They all work...when you stick to them": A qualitative investigation of dieting, weight loss, and physical exercise, in obese individuals. *Nutrition journal*, **7** (1), 34-34.

VAN DORSTEN, Brent (2007). The use of motivational interviewing in weight loss. *Current diabetes reports*, **7** (5), 386-390.

WANG, YC, et al. (2011). Obesity 2 health and economic burden of the projected obesity trends in the USA and the UK. *Lancet*, **378** (9793), 815-825.

ZULKOSKY, Kristen (2009). Self-efficacy: A concept analysis. *Nursing forum*, **44** (2), 93.

CHAPTER 6: GENERAL DISCUSSION

ABILDSON, Christiaan G., et al. (2014). Predictors of weight loss maintenance following an insurance-sponsored weight management program. *Journal of obesity*, **2014**, 1-12.

ABRAHAM, C., and MICHIE, S. (2008). A taxonomy of behavior change techniques used in interventions. *Health psychology*, **27** (3), 379-387.

ADOLFSSON, Birgitta, et al. (2005). Locus of control and weight reduction. *Patient education and counseling*, **56** (1), 55-61.

AHERN, Amy L., et al. (2013). Participants' explanatory model of being overweight and their experiences of 2 weight loss interventions. *Annals of family medicine*, **11** (3), 251-257.

ALBERTS, H. J. E. M., THEWISSEN, R. and RAES, L. (2012). Dealing with problematic eating behaviour. the effects of a mindfulness-based intervention on eating behaviour, food cravings, dichotomous thinking and body image concern. *Appetite*, **58** (3), 847-851.

ANDRADE, Ana M., et al. (2010). The effect of physical activity on weight loss is mediated by eating self-regulation. *Patient education and counseling*, **79** (3), 320-326.

ASSOCIATION FOR NUTRITION (2012). Competency requirements for course accreditation: UK voluntary register of nutritionists. [online]. Association for Nutrition. <http://www.associationfornutrition.org/Portals/0/COURSE%20ACCREDITATION%20COMPETENCIES%20July%202012.pdf>.

ASSOCIATION FOR NUTRITION (2015). Continuing professional development (CPD). [online]. Association for Nutrition. <http://www.associationfornutrition.org/Default.aspx?tabid=96>.

ASSOCIATION FOR NUTRITION (2014). Careers in nutrition [online]. <http://www.associationfornutrition.org/Default.aspx?tabid=145>.

BAKX, J. C., et al. (2005). Role of social support in lifestyle-focused weight management interventions. *European journal of clinical nutrition*, **59** (suppl 1), S179-S186).

BANDURA, A. (2001). Social cognitive theory: An agentic perspective. *Annual review of psychology*, **52** (1), 1-26. .

BANDURA, Albert (1989). Human agency in social cognitive theory. *American psychologist*, **44** (9), 1175-1184.

BRITISH PSYCHOLOGICAL SOCIETY (2015). Frequently asked questions: is cpd compulsory? [online]. British psychological society. <http://www.bps.org.uk/careers-education-training/professional-development-centre/cpd-resources/frequently-asked-questions/frequently-asked-questions>.

BROOM, David et al. (2009). Influence of resistance and aerobic exercise on hunger, circulating levels of acylated ghrelin and peptide YY in healthy males. *American journal of physiology: regulatory, integrative and comparative physiology*, **296** (1), 29-35.

BURKE, Lora E., et al. (2009). Experiences of self-monitoring: Successes and struggles during treatment for weight loss. *Qualitative health research*, **19** (6), 815-828.

BURKE, Lora E. and WANG, Jing (2011). Treatment strategies for overweight and obesity. *Journal of nursing scholarship*, **43** (4), 368-375.

CADE, J. E., et al. (2012). The making of a nutrition professional: The association for nutrition register. *Public health nutrition*, **15** (11), 2012-2019.

CALDWELL, Karen L., BAIME, Michael J. and WOLEVER, Ruth Q. (2012). Mindfulness based approaches to obesity and weight loss maintenance. *Journal of mental health counseling*, **34** (3), 269-282.

CARTER, Michelle Clare, et al. (2013). Adherence to a smartphone application for weight loss compared to website and paper diary: Pilot randomized controlled trial [online]. *Journal of medical internet research*, **15** (4), e32.

CHAMBERS, J. A. and SWANSON, V. (2012). Stories of weight management: Factors associated with successful and unsuccessful weight maintenance. *British journal of health psychology*, **17** (2), 223-243.

CHAPUT, Jean-Philippe, et al. (2007). Psychobiological effects observed in obese men experiencing body weight loss plateau. *Depression and anxiety*, **24** (7), 518-521.

CROTTY, Patricia (1993). The value of qualitative research in nutrition. *Health sociology review*, **3** (1), 109-118.

CURIONI, C. C. and LOURENÇO, P. M. (2005). Long-term weight loss after diet and exercise: A systematic review. *International journal of obesity*, **29** (10), 1168-1174.

DANSINGER, M. L., et al. (2005). Comparison of the atkins, ornish, weight watchers, and zone diets for weight loss and heart disease risk reduction: A randomized trial. *Journal of cardiopulmonary rehabilitation*, **25** (3), 184-185.

DECI, Edward L. and RYAN, Richard M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie canadienne*, **49** (3), 182-185.

DELORMIER, Treena, FROHLICH, Katherine L. and POTVIN, Louise (2009). Food and eating as social practice--understanding eating patterns as social phenomena and implications for public health. *Sociology of health & illness*, **31** (2), 215-228.

DE SOUZA, Paula and CICLITIRA, Karen E. (2005). Men and dieting: A qualitative analysis. *Journal of health psychology*, **10** (6), 793-804.

DU, Huaindong et al. (2010). Dietary fiber and subsequent changes in body weight and waist circumference in European men and women. *American journal of clinical nutrition*, **91**, 329-336.

ELFHAG, K. and RÖSSNER, S. (2005). Who succeeds in maintaining weight loss? A conceptual review of factors associated with weight loss maintenance and weight regain. *Obesity reviews: An official journal of the international association for the study of obesity*, **6** (1), 67-85.

EPIPHANIOU, Eleni and OGDEN, Jane (2010). Successful weight loss maintenance and a shift in identity from restriction to a new liberated self. *Journal of health psychology*, **15** (6), 887-896.

FURBER, Christine (2010). Framework analysis: A method for analysing qualitative data. *African journal of midwifery and women's health*, **4** (2), 97-100.

GALE, Nicola K., et al. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC medical research methodology*, **13**, 117-125.

GISKES, K., et al. (2011). A systematic review of environmental factors and obesogenic dietary intakes among adults: Are we getting closer to understanding obesogenic environments? *Obesity reviews*, **12** (501), e95-e106.

GOLLWITZER, Peter M. and OETTINGEN, Gabriele (2011). Planning promotes goal striving. In: VOHS, Kathleen, D. and BAUMEISTER, Roy, F. (eds.), *Handbook of self-regulation: Research, theory and application*. London, Guilford Press, 162-185.

GOLLWITZER, Peter M. and SHEERAN, Paschal (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in experimental social psychology*, **38**, 69-119.

GRILO, Carlos M., et al. (2011). Cognitive-behavioral therapy, behavioral weight loss, and sequential treatment for obese patients with binge-eating disorder: A randomized controlled trial. *Journal of consulting and clinical psychology*, **79** (5), 675-685.

GUBA, Egon and LINCOLN, Yvonne (1994). Competing paradigms in qualitative research. In: DENZIN, Norman and LINCOLN, Yvonne (eds). *Handbook of qualitative research*. Newbury Park, CA, Sage, 105-117.

HAMMARSTRÖM, Anne, et al. (2013; 2014). Experiences of barriers and facilitators to weight-loss in a diet intervention - a qualitative study of women in northern sweden. *BMC women's health*, **14** (1), 59-59.

HAMMERSLEY, Martyn (2007). The issue of quality in qualitative research. *International journal of research & method in education*, **30** (3), 287-305.

HEALTH AND CARE PROFESSIONALS COUNCIL (2015). Standards of continuing professional development. Health and Care Professionals Council [online]. <http://www.hpc-uk.org/aboutregistration/standards/cpd/index.asp>.

- HINDLE, L. and CARPENTER, C. (2011). An exploration of the experiences and perceptions of people who have maintained weight loss. *Journal of human nutrition and dietetics*, **24** (4), 342-350.
- HUTCHESSON, M., et al. (2015). eHealth interventions for the prevention and treatment of overweight and obesity in adults: A systematic review with meta-analysis. *Obesity reviews*, **16** (5), 376-392.
- JANKE, E. Amy, et al. (2014). A randomized clinical trial of an integrated behavioral self-management intervention simultaneously targeting obesity and pain: The STOP trial. *BMC public health*, **14** (1), 621-621.
- JOHNSTON, Craig A. (2013). Predictors of successful weight loss. *American journal of lifestyle medicine*, **7** (2), 115-117.
- KORCZAK, Dieter and KISTER, Christine (2013). Overweight and obesity: The efficacy of diets for weight maintenance after weight loss. [online]. *GMS health technology assessment*, **9**, (6).
- KRASCHNEWSKI, J. L., et al. (2010). Long term weight loss maintenance in the United States. *International journal of obesity*, **34** (11), 1644-1654.
- LARSON, Thomas Meinert et al. (2010). Diets with high or low protein content and glycemic index for weight-loss maintenance. *New England journal of medicine*, **363** (22), 2102-2113.
- LEIDY, Heather J., et al. (2010). The influence of higher protein intake and greater eating frequency on appetite control in overweight and obese men. *Obesity (silver spring, md.)*, **18** (9), 1725-1732.
- MARTINS, Catia et al. (2015). Effect of moderate- and high-intensity acute exercise on appetite in obese individuals. *Medicine and science in sport and exercise*, **47** (1), 40-48.
- MAXWELL, Joseph Alex (2012). *A realist approach for qualitative research*. London, Sage.

- MCKEE, Heather, NTOUMANIS, Nikos and SMITH, Brett (2013). *Weight maintenance: Self-regulatory factors underpinning success and failure*. England, Psychology & health, **28** (10), 1207-1223.
- MICHIE, Susan, et al. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALO-RE taxonomy. *Psychology & health*, **26** (11), 1479-1498.
- MICHIE, Susan, et al. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. *Annals and behavioural medicine*, **46** (1), 81-94.
- MORGAN, Philip J., et al. (2011). Engaging men in weight loss: Experiences of men who participated in the male only SHED-IT pilot study. *Obesity research & clinical practice*, **5** (3), e239-e248.
- MYERS, Jr, Martin G., et al. (2010). Obesity and leptin resistance: Distinguishing cause from effect. *Trends in endocrinology and metabolism: TEM*, **21** (11), 643-651.
- NAKADE, Makiko, et al. (2012). What behaviors are important for successful weight maintenance? [online]. *Journal of obesity*, **2012**, 202037.
- NEWMAN, Margaret A. (1997). Evolution of the theory of health as expanding consciousness. *Nursing science quarterly*, **10** (1), 22-25.
- NEY, D. M., et al. (2009). Senescent swallowing: Impact, strategies, and interventions. *Nutrition in clinical practice*, **24** (3), 395-413.
- PELTO, Gretel H., FREAKE, Hedley C. and ASNS Long Range Planning Committee (2003). Social research in an integrated science of nutrition: Future directions. *The journal of nutrition*, **133** (4), 1231-1234.
- PROCHASKA, James O. (2008). Decision making in the transtheoretical model of behavior change. *Medical decision making: An international journal of the society for medical decision making*, **28** (6), 845-849.

- RITCHIE, Jane and SPENCER, Liz (1994). Qualitative data analysis for applied policy research. In: BRYMAN, A and BURGESS, R (eds). *Analyzing qualitative data*, 173-194.
- RITCHIE, Jane and LEWIS, Jane (2003). *Qualitative research practice: a guide for social science students and researchers*. London, Sage.
- RITCHIE, Jane, et al. (2013). *Qualitative research practice: A guide for social science students and researchers*. London, Sage.
- ROZIN, P (1981). The study of human food selection and the problems of 'Stage 1 Science'. In: MILLER, S. A (ed), *Nutrition and Behavior*. Philadelphia, Franklin Institute Press.
- RYAN, Richard M. and DECI, Edward L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, **55** (1), 68-78.
- SACKS, Frank et al. (2009). Comparison of weight loss diets with different compositions of fat, protein and carbohydrates. *The New England journal of medicine*, **360**, 859-873.
- SAIRANEN, Essi, et al. (2014). Flexibility in weight management. [online]. *Eating behaviors*, **15** (2), 218-224.
- SAVIN-BADEN, Maggi and MAJOR, Claire Howell (2013). *Qualitative research: The essential guide to theory and practice*. London, Routledge.
- SCHUBERT, Lisa, et al. (2012). Re-imagining the 'social' in the nutrition sciences. *Public health nutrition*, **15** (2), 352-359.
- SHAN, Yaso. (2008). Tackling the obesity crisis in the UK. *Primary health care*, **18** (8), 25-30.
- SRIVASTAVA, Aashish and THOMSON, S. Bruce (2008). Framework analysis: A qualitative methodology for applied policy research. *Journal of administration and governance*, **4** (2), 72-79.

- STENSEL, David (2010). Exercise, appetite and appetite-regulating hormones: implications for food intake and weight control. *Annals of nutrition and metabolism*, **57** (suppl2), 36-42.
- STUBBS, J., et al. (2012). Behavioural and motivational factors associated with weight loss and maintenance in a commercial weight management programme. *The Open University journal*, **4**, 35-43.
- STUBBS, R. J. and LAVIN, J. H. (2013). The challenges of implementing behaviour changes that lead to sustained weight management. *Nutrition bulletin*, **38** (1), 5-22.
- SUMITHRAN, P., et al. (2011). Long-term persistence of hormonal adaptations to weight loss. *New England journal of medicine*, **365** (17), 1597-1604.
- SWINBURN, BA, et al. (2011). Obesity 1 the global obesity pandemic: Shaped by global drivers and local environments. *Lancet*, **378** (9793), 804-814.
- TEIXEIRA, P. J., et al. (2004). Pretreatment predictors of attrition and successful weight management in women. *International journal of obesity*, **28** (9), 1124-1133.
- TEIXEIRA, Pedro J., et al. (2010). Mediators of weight loss and weight loss maintenance in middle-aged women. *Obesity (silver spring, md.)*, **18** (4), 725-735.
- TEIXEIRA, P. J., et al. (2012). Motivation, self-determination, and long-term weight control. [online]. *International journal of behavioral nutrition and physical activity*, **9** (22), 1-13
- VAN DORSTEN, Brent (2007). The use of motivational interviewing in weight loss. *Current diabetes reports*, **7** (5), 386-390.
- VOGELS, Neeltje, DIEPVENS, Kristel and WESTERTERP-PLANTENGA, Margriet S. (2005). Predictors of long-term weight maintenance. *Obesity research*, **13** (12), 2162-2168.
- ZINN, Caryn and SCHOFIELD, Grant (2010). Weight loss experiences of New Zealand overweight blue and white collar workers: What works for employees? *Journal of science and medicine in sport*. **12** (2), e152-e153

CHAPTER 7: REFLEXIVITY

ABILDSON, Christiaan G., et al. (2014). Predictors of weight loss maintenance following an insurance-sponsored weight management program. *Journal of obesity*, **2014**, 1-12.

ADOLFSSON, Birgitta, et al. (2005). Locus of control and weight reduction. *Patient education and counseling*, **56** (1), 55-61.

AHERN, Amy L., et al. (2013). Participants' explanatory model of being overweight and their experiences of 2 weight loss interventions. *Annals of family medicine*, **11** (3), 251-257.

ALBERTS, H. J. E. M., THEWISSEN, R. and RAES, L. (2012). Dealing with problematic eating behaviour. the effects of a mindfulness-based intervention on eating behaviour, food cravings, dichotomous thinking and body image concern. *Appetite*, **58** (3), 847-851.

ANDRADE, Ana M., et al. (2010). The effect of physical activity on weight loss is mediated by eating self-regulation. *Patient education and counseling*, **79** (3), 320-326.

ASSOCIATION FOR NUTRITION (2012). Competency requirements for course accreditation: UK voluntary register of nutritionists. [online]. Association for Nutrition. <http://www.associationfornutrition.org/Portals/0/COURSE%20ACCREDITATION%20COMPETENCIES%20July%202012.pdf>.

BAKX, J. C., et al. (2005). Role of social support in lifestyle-focused weight management interventions. *European journal of clinical nutrition*, **59**, (1), S179–S186.

BANDURA, Albert (1989). Human agency in social cognitive theory. *American psychologist*, **44** (9), 1175-1184.

BEFORT, C. A., et al. (2008). Weight maintenance, behaviors and barriers among previous participants of a university-based weight control program. *International journal of obesity*, **32** (3), 519-526.

BRAY, G. A., et al. (1999). The diabetes prevention program. design and methods for a clinical trial in the prevention of type 2 diabetes. *Diabetes care*, **22** (4), 623-634.

- BURKE, Lora E., et al. (2009). Experiences of self-monitoring: Successes and struggles during treatment for weight loss. *Qualitative health research*, **19** (6), 815-828.
- BURKE, Lora E. and WANG, Jing (2011). Treatment strategies for overweight and obesity. *Journal of nursing scholarship*, **43** (4), 368-375.
- CHAMBERS, Julie A. and SWANSON, Vivien (2012). Stories of weight management: Factors associated with successful and unsuccessful weight maintenance. *British journal of health psychology*, **17**, 223-243.
- CHAPUT, Jean-Philippe, et al. (2007). Psychobiological effects observed in obese men experiencing body weight loss plateau. *Depression and anxiety*, **24** (7), 518-521
- CRESWELL, J. W. (2007). *Qualitative enquiry and research design: choosing among five approaches*. 2nd ed., Thousand Oakes, Sage.
- CURIONI, C. C. and LOURENÇO, P. M. (2005). Long-term weight loss after diet and exercise: A systematic review. *International journal of obesity*, **29** (10), 1168-1174.
- CROTTY, Patricia (1993). The value of qualitative research in nutrition. *Health sociology review*, **3** (1), 109-118.
- DANSINGER, M. L., et al. (2005). Comparison of the atkins, ornish, weight watchers, and zone diets for weight loss and heart disease risk reduction: A randomized trial. *Journal of cardiopulmonary rehabilitation*, **25** (3), 184-185.
- DARAWSHEH, Wesam and STANLEY, Mandy (2014). Reflexivity in research: Promoting rigour, reliability and validity in qualitative research. [online]. *International journal of therapy and rehabilitation*, **21** (12), 560-568.
- D'CRUZ, Heather, GILLINGHAM, Philip and MELENDEZ, Sebastian (2007; 2005). Reflexivity, its meanings and relevance for social work: A critical review of the literature. [online]. *The British journal of social work*, **37** (1), 73-90.
- DECI, Edward L. and RYAN, Richard M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie canadienne*, **49** (3), 182-185.

DELORMIER, Treena, FROHLICH, Katherine L. and POTVIN, Louise (2009). Food and eating as social practice--understanding eating patterns as social phenomena and implications for public health. *Sociology of health & illness*, **31** (2), 215-228.

DE SOUZA, Paula and CICLITIRA, Karen E. (2005). Men and dieting: A qualitative analysis. *Journal of health psychology*, **10** (6), 793-804.

DIABETES PREVENTION PROGRAM RESEARCH GROUP (2009). 10-year follow-up of diabetes incidence and weight loss in the diabetes prevention program outcomes study. *The lancet*, **374** (9702), 1677-1686.

DICICCO-BLOOM, B. CRABTREE, B. F. (2006).The qualitative research interview. *Medical education*, **40** (4), 314-321.

ELFHAG, K. and RÖSSNER, S. (2005). Who succeeds in maintaining weight loss? A conceptual review of factors associated with weight loss maintenance and weight regain. *Obesity reviews: An official journal of the international association for the study of obesity*, **6** (1), 67-85.

FINLAY, Linda (2002). Negotiating the swamp: The opportunity and challenge of reflexivity in research practice. *Qualitative research*, **2** (2), 209-230.

FRITH, Hannah and GLEESON, Kate (2004). Clothing and embodiment: Men managing body image and appearance. *Psychology of men & masculinity*, **5** (1), 40-48.

FURBER, Christine (2010). Framework analysis: A method for analysing qualitative data. *African journal of midwifery and women's health*, **4** (2), 97-100.

GALE, Nicola K., et al. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research.*BMC medical research methodology*, **13**, 117 – 125.

GALLAGHER, Kara I., et al. (2006). Psychosocial factors related to physical activity and weight loss in overweight women. *Medicine and science in sports and exercise*, **38** (5), 971-980.

GILGUN, J. (2010). *Reflexivity and qualitative research*. [online]. Kindle ed., University of Minnesota.

- GUBA, Egon and LINCOLN, Yvonne (1994). Competing paradigms in qualitative research. In: DENZIN, Norman and LINCOLN, Yvonne (eds). *Handbook of qualitative research*. Newbury Park, CA, Sage, 105-117.
- GRILO, Carlos M., et al. (2011). Cognitive-behavioral therapy, behavioral weight loss, and sequential treatment for obese patients with binge-eating disorder: A randomized controlled trial. *Journal of consulting and clinical psychology*, **79** (5), 675-685.
- HAGOBIAN, T. A. and PHELAN, S. (2013). Lifestyle interventions to reduce obesity and diabetes. *American journal of lifestyle medicine*, **7** (2), 84-98.
- HAMMARSTRÖM, Anne, et al. (2013; 2014). Experiences of barriers and facilitators to weight-loss in a diet intervention - a qualitative study of women in northern Sweden [online]. *BMC women's health*, **14**, 59.
- HAMMERSLEY, Martyn. (2007). The issue of quality in qualitative research. *International journal of research and method in education*, **30** (3), 287-305.
- HAND, Helen (2003). The mentor's tale: A reflexive account of semi-structured interviews. *Nurse researcher*, **10** (3), 15-27.
- HANNES, K. (2011). Critical appraisal of qualitative research. [online]. In: NOYES, J. et al. (eds). *Supplementary guidance for inclusion of qualitative research in Cochrane systematic reviews of interventions*. Cochrane Collaboration Qualitative Methods Group.
- HINDLE, L. and CARPENTER, C. (2011). An exploration of the experiences and perceptions of people who have maintained weight loss. *Journal of human nutrition and dietetics*, **24** (4), 342-350.
- JANKE, E. Amy, et al. (2014). A randomized clinical trial of an integrated behavioral self-management intervention simultaneously targeting obesity and pain: The STOP trial. *BMC public health*, **14** (1), 621-621.
- KERÄNEN, Anna-Maria, et al. (2009). The effect of eating behavior on weight loss and maintenance during a lifestyle intervention. *Preventive medicine*, **49** (1), 32-38.

KIERNAN, M., et al. (2012). Social support for healthy behaviors: Scale psychometrics and prediction of weight loss among women in a behavioral program. *Obesity*, **20** (4), 756-764.

LANDMAN, Jacqueline P. and WOOTTON, Stephen A. (2007). Professional regulation of nutritionists: Where are we now? *Proceedings of the nutrition society*, **66** (2), 269-276.

LATNER, Janet D., et al. (2013). Community-based behavioral weight-loss treatment: Long-term maintenance of weight loss, physiological, and psychological outcomes. *Behaviour research and therapy*, **51** (8), 451-459.

LONGHOFER, Jeffrey and FLOERSCH, Jerry (2012). The coming crisis in social work: Some thoughts on social work and science. [online]. *Research on social work practice*, **22** (5), 499-519.

THE LOOK AHEAD RESEARCH GROUP (2010). Long Term Effects of a Lifestyle Intervention on Weight and Cardiovascular Risk Factors in Individuals with Type 2 Diabetes: Four Year Results of the Look AHEAD Trial. *Archives of internal medicine*, **170** (17), 1566-1575.

MALACRIDA, Claudia (2007). Reflexive journaling on emotional research topics: Ethical issues for team researchers. [online]. *Qualitative health research*, **17** (10), 1329-1339.

MAXWELL, Joseph Alex (2012). *A realist approach for qualitative research*. London, Sage.

MCKEE, Heather, NTOUMANIS, Nikos and SMITH, Brett (2013). Weight maintenance: Self-regulatory factors underpinning success and failure. *Psychology & health*, **28** (10), 1207-1223.

MCNAMEE, M. J. (2005). *Philosophy and the sciences of exercise, health and sport: Critical perspectives on research methods*. London, Routledge.

MICHIE, Susan, et al. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALORE taxonomy. *Psychology & health*, **26** (11), 1479-1498.

- MICHIE, Susan, et al. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. *Annals and behavioural medicine*, **46** (1), 81-94.
- MORRIS, Pam (2003). *Realism*. London, Routledge.
- NAKADE, Makiko, et al. (2012). What behaviors are important for successful weight maintenance? [online]. *Journal of obesity*, **2012** , 202037.
- NEWMAN, Margaret A (1991). *Health as expanding consciousness*. 2nd ed., New York, National League for Nursing.
- NEWMAN, Margaret A. (1997). Evolution of the theory of health as expanding consciousness. *Nursing science quarterly*, **10** (1), 22-25.
- PACANOWSKI, Carly R., et al. (2014). Binge eating behavior and weight loss maintenance over a 2-year period. *Journal of obesity*, **2014**, 1-9.
- PAULUS, T.M et al. (2010). I tell you, it's a journey, isn't it? Understanding collaborative meaning making in qualitative research. *Qualitative inquiry*, **16** (10), 852-862.
- PELTO, Gretel H et al. (2003). Social research in an integrated science of nutrition: Future directions. *The journal of nutrition*, **133** (4), 1231-1234.
- PILLOW, Wanda (2003). Confession, catharsis, or cure? rethinking the uses of reflexivity as methodological power in qualitative research. [online]. *International journal of qualitative studies in education*, **16** (2), 175-196.
- PROBST, Barbara and BERENSON, Laura (2014). The double arrow: How qualitative social work researchers use reflexivity. [online]. *Qualitative social work*, **13** (6), 813-827.
- PROCHASKA, James (2008). Decision making in the transtheoretical model of behavior change. *Medical decision making*, **28** (6), 845-859.
- RABIONET, Silvia E. (2011). How I learned to design and conduct semi-structured interviews: An ongoing and continuous journey. *The qualitative report*. **16** (2), 563-566.

- REYES, N. R., et al. (2012). Similarities and differences between weight loss maintainers and regainers: A qualitative analysis. *Journal of the academy of nutrition and dietetics*, **112** (4), 499-505.
- RITCHIE, Jane and SPENCER, Liz (1994). Qualitative data analysis for applied policy research. In: BRYMAN, A and BURGESS, R (eds). *Analyzing qualitative data*, 173-194.
- RITCHIE, Jane and LEWIS, Jane (2003). *Qualitative research practice: a guide for social science students and researchers*. London, Sage.
- RITCHIE, Jane, et al. (2013). *Qualitative research practice: A guide for social science students and researchers*. London, Sage.
- ROZIN, P (1981). The study of human food selection and the problems of 'Stage 1 Science'. In: MILLER, S. A (ed), *Nutrition and Behavior*. Philadelphia, Franklin Institute Press.
- RYAN, Richard M. and DECI, Edward L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, **55** (1), 68-78.
- SACKS, Frank et al. (2009). Comparison of weight loss diets with different compositions of fat, protein and carbohydrates. *The New England journal of medicine*, **360**, 859-873.
- SAIRANEN, Essi, et al. (2014). Flexibility in weight management. [online]. *Eating behaviors*, **15** (2), 218-224.
- SAVIN-BADIN, Maggi and MAJOR, Claire Howell. (2013). *Qualitative Research: The essential guide to theory and practice*. London, Routledge.
- SCHUBERT, Lisa, et al. (2012). Re-imagining the 'social' in the nutrition sciences. *Public health nutrition*, **15** (2), 352-359.
- SMITH, Joanna and FIRTH, Jill (2011). Qualitative data analysis: The framework approach. *Nurse researcher*, **18** (2), 52-62.

SRIVASTAVA, Aashish and THOMSON, S. Bruce (2008). Framework analysis: A qualitative methodology for applied policy research. *Journal of administration and governance*, **4** (2), 72-79.

STANIFORD, Leanne Jane, et al. (2011). Key stakeholders' perspectives towards childhood obesity treatment: A qualitative study. *Journal of child health care: For professionals working with children in the hospital and community*, **15** (3), 230-244.

STUBBS, J., et al. (2011). Problems in identifying predictors and correlates of weight loss and maintenance: Implications for weight control therapies based on behaviour change. *Obesity reviews*, **12** (9), 688-708.

STUBBS, J., et al. (2012). Behavioural and motivational factors associated with weight loss and maintenance in a commercial weight management programme. *The open university journal*, **4**, 35-43.

STUBBS, R. J. and LAVIN, J. H. (2013). The challenges of implementing behaviour changes that lead to sustained weight management. *Nutrition bulletin*, **38** (1), 5-22.

SUMITHRAN, P., et al. (2011). Long-term persistence of hormonal adaptations to weight loss. *New England journal of medicine*, **365** (17), 1597-1604.

SWINBURN, BA, et al. (2011). Obesity 1 the global obesity pandemic: Shaped by global drivers and local environments. *Lancet*, **378** (9793), 804-814.

TEIXEIRA, Pedro J., et al. (2010). Mediators of weight loss and weight loss maintenance in middle-aged women. *Obesity*, **18** (4), 725-735.

TURK, Melanie Warziski, et al. (2012). Psychosocial correlates of weight maintenance among black & white adults. *American journal of health behavior*, **36** (3), 395-407.

VAN DORSTEN, Brent (2007). The use of motivational interviewing in weight loss. *Current diabetes reports*, **7** (5), 386-390.

VOGELS, Neeltje, DIEPVENS, Kristel and WESTERTERP-PLANTENGA, Margriet S. (2005). Predictors of long-term weight maintenance. *Obesity research*, **13** (12), 2162-2168.

WHALE, Katie, GILLISON, Fiona B. and SMITH, Paula C. (2014). 'Are you still on that stupid diet?': Women's experiences of societal pressure and support regarding weight loss, and attitudes towards health policy intervention. *Journal of health psychology*, **19** (12), 1536-1546.

WHITING, L. S (2008). Semi-structured interviews: Guidance for novice researchers. *Nursing standard*. **22** (23), 35-40.

ZINN, Caryn and SCHOFIELD, Grant (2010). Weight loss experiences of New Zealand overweight blue and white collar workers: What works for employees? *Journal of science and medicine in sport*. **12** (2), e152-e153.

APPENDICES

Appendix 1: Ethical Approval Letter

Appendix 2: Participant Information Sheet

Appendix 3: Sample Informed Consent Form

Appendix 4: Interview Guide

Appendix 5: Transcript Sample, Participant 1

Appendix 6: Barriers Theme Framework Matrix (Study one)

Appendix 7: Facilitators Theme Framework Matrix (study one)

Appendix 8: Nutrition knowledge and Education, Exercise and Physical Activity and Diet Design Framework Matrix (study two)

Appendix 9: Psychological Constructs and Behaviour Changes Techniques Framework Matrix (study two)

Appendix 10: Social Determinants and Social Support Framework Matrix (Study two)

Appendix 11: Competency Requirements for Course Accreditation (Association for Nutrition Core Competency Document). Please note that approval was granted from the AFN for the replication of this document.

APPENDIX 1: Ethical Approval Letter

**Sheffield
Hallam
University** | **Centre for Health
and Social Care
Research**

18 December 2012

David Rogerson
Sheffield Hallam University
Room A210
Collegiate Hall
Collegiate Crescent Campus
Sheffield
S10 2BP

Dear David

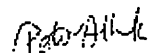
This letter relates to your research proposal:

Do undergraduate degree programs prepare nutrition consultants for effective practise? An analysis of dieters and practitioner's experiences of weight loss.

This proposal was submitted to the Faculty Research Ethics Committee for ethics and scientific review. It has been reviewed by two independent reviewers and has been passed as satisfactory. The comments of the reviewers are enclosed. You will need to ensure you have all other necessary permission in place before proceeding, for example, from the Research Governance office of any sites outside the University where your research will take place. This letter can be used as evidence that the proposal has been reviewed ethically and scientifically within Sheffield Hallam University. The documents we reviewed were:

- DPS1

Good luck with your project
Yours sincerely



Peter Allmark
Chair Faculty Research Ethics Committee
Faculty of Health and Well-being
Sheffield Hallam University
32 Collegiate Crescent
S10 2BP

0114 229 5777
p.allmark@shu.ac.uk

APPENDIX 2: Participant Information Sheet



Faculty of Health and Wellbeing Research Ethics Committee

Sport and Exercise Research Ethics Review Group

Participant Information Sheet

Project Title	Are nutritionist's best equipped to treat weight-loss?
Supervisor/Director of Studies	Dr Hora Soltani
Principal Investigator	David Rogerson
Principal Investigator telephone/mobile number	07825652044

Purpose of Study and Brief Description of Procedures

(Not a legal explanation but a simple statement)

You have been invited to undertake an interview as part of a Doctorate of Professional Studies student's research-based thesis. The purpose of the thesis is to investigate the adequacy of Nutritionist's education and training to help people to achieve weight-loss related goals. You have been invited to undertake an interview with the principal investigator because you have experience of undertaking a weight loss diet of some description. The interviews have been designed in such a way to explore your experiences of weight loss and dieting.

The interview contain a series of questions that will ask you about your motivations to lose weight; your experiences of dieting to achieve weight loss (physical, mental); whether your dieting experiences were successful or not; what worked for you; what did not work for you, etc. It is expected that the interviews will last between 30 – 60 minutes (approximately).

APPENDIX 2: Participant Information Sheet (cont.)

If you feel that answering questions about weight loss, weight-status, eating habits and dieting might upset you, then it is especially advised that you should not take part in these interviews. It is expected that you will only undertake one interview.

All interview data will be recorded using a digital voice recording device. If you object to having your voice recorded in any way it is advised that you do not take part in these interviews. All interview data will be treated as strictly confidential and your data will be anonymised numerically (you will be allocated suffix/number such as participant 1, participant 2, etc.).

You have the right to withdraw from the study at any time.

It has been made clear to me that, should I feel that these Regulations are being infringed or that my interests are otherwise being ignored, neglected or denied, I should inform Dr David Binney, Chair of the Sport & Exercise Research Ethics Review Group (Tel: 0114 225 5679) who will undertake to investigate my complaint.



Faculty of Health and Wellbeing

Research Ethics Committee

Sport and Exercise Research Ethics Review Group

INFORMED CONSENT FORM

TITLE OF PROJECT: Are nutritionist's best equipped to treat weight-loss?

The participant should complete the whole of this sheet himself/herself

Have you read the Participant Information Sheet?

YES/NO

Have you had an opportunity to ask questions and discuss this study?

YES/NO

Have you received satisfactory answers to all of your questions?

YES/NO

Have you received enough information about the study?

YES/NO

APPENDIX 3: Sample informed consent form (cont.)

To whom have you spoken?

.....

Do you understand that you are free to withdraw from the study:

- at any time
- without having to give a reason for withdrawing
- and without affecting your future medical care

YES/NO

Have you had sufficient time to consider the nature of this project?

YES/NO

Do you agree to take part in this study?

YES/NO

Signed Date

(NAME IN BLOCK

LETTERS).....

Signature of Parent / Guardian in the case of a minor

.....

APPENDIX 3: Sample informed consent form

FOR USE WHEN STILL OR MOVING IMAGES WILL BE RECORDED

Consent to scientific illustration

I hereby confirm that I give consent for photographic and/or videotape and sound recordings (the 'material') to be made of me. I confirm that the purpose for which the material would be used has been explained to me in terms which I have understood and I agree to the use of the material in such circumstances. I understand that if the material is required for use in any other way than that explained to me then my consent to this will be specifically sought.

1. I understand that the material will form part of my confidential records and has value in scientific assessment and I agree to this use of the material.

Signed..... Date.....

Signature of Parent / Guardian in the case of a minor

.....

2. I understand the material has value in teaching and I consent to the material being shown to appropriate professional staff for the purpose of education, staff training and professional development.

Signed..... Date.....

Signature of Parent / Guardian in the case of a minor

.....

APPENDIX 3: Sample informed consent form (cont.)

I hereby give consent for the photographic recording made of me on.....
to be published in an appropriate journal or textbook. It is understood that I have
the right to withdraw consent at any time prior to publication but that once the
images are in the public domain there may be no opportunity for the effective
withdrawal of consent.

Signed Date

Signature of Parent / Guardian in the case of a minor

.....

APPENDIX 4: Interview guide		
STAGE	QUESTION/ COMMENTS	PROBE
INTRODUCTION	<ul style="list-style-type: none"> • Thank you for agreeing to take part, • Today's interview will be recorded, • You have the right to not answer questions or withdraw, • All information will be treated as confidential, and all information will be made anonymous and no record of your name will be kept on any documents. • The purpose of the research is to explore the experience of dieting to lose weight, • You will not be judged on your answers or your success or failure to lose weight. 	
WEIGHT LOSS HISTORY	<ol style="list-style-type: none"> 1. What dieting or weight loss methods have you used in the past? 2. How frequently do you or have you dieted? 3. Can you describe any dieting or weight loss successes that you have had? 4. Can you describe any dieting or weight loss failures that you have had? 5. What was the length of time that you have dieted for? 	<p>Are you eating to lose weight right now?</p> <p>What diets have you done?</p> <p>When did you start dieting?</p> <p>How often does your weight yo-yo?</p> <p>Why were they successful?</p> <p>Did you lose much weight?</p> <p>Why were they unsuccessful?</p> <p>Why did you stop with these diets?</p> <p>What made you stop in the past?</p>

APPENDIX 4: Interview guide		
STAGE	QUESTION/ COMMENTS	PROBE
<p>(Appendix 4 cont.)</p> <p>PHYSICAL EXPERIENCE OF DIETING</p>	<ol style="list-style-type: none"> 1. How would you describe the physical experiences of dieting? 2. How does dieting alter your appetite and eating preferences? 3. If this applies to you, how deprived were you on your diet or diets 4. Can you describe any foods that you have craved while dieting at all? 5. How does eating to lose weight make you feel compared to your normal eating habits? 	<p>Did you experience any side effects?</p> <p>Why did you experience these?</p> <p>How did this make you feel?</p> <p>Why?</p> <p>How did you deal with these cravings?</p> <p>What things did you crave?</p>
<p>MOTIVATIONS FOR DIETING</p>	<ol style="list-style-type: none"> 1. What are you trying to achieve with your eating habits right now (weight-loss, maintenance, etc). 2. What are your motivations for dieting? 3. Why did you decide to lose weight? 4. Where there any experiences or trigger points that led to you wanting to lose weight? 	<p>If so, why?</p>
<p>DIETS AND NUTRITION</p>	<ol style="list-style-type: none"> 1. Can you describe what your eating habits are like right now? 2. How are you current habits different to previous ones? 3. What adjustments have you made to achieve your weight-related goals? 4. Have you cut any foods out or added foods in? 5. What made you decide to change your diet in this way? 6. How do you monitor progress? 	<p>How does this make you feel?</p> <p>How does this make you feel?</p> <p>Causes?</p> <p>Feelings / emotions?</p> <p>Re-start or give up?</p>

APPENDIX 4: Interview guide		
STAGE	QUESTION/ COMMENTS	PROBE
(Appendix 4 cont.) DIETS AND NUTRITION (Continued)	7. What do you do when progress stalls or stops? 8. How compliant have you been with your diets in past? 9. Can you describe what happens to you when you slip up on your diet? 10. Why do you think other people give up on diets?	
PHYSICAL ACTIVITY AND EXERCISE	1. What role does physical activity play in your weight loss? 2. What exercise or training did or do you do? 3. Which is more important to weight loss and why?	
PSYCHOLOGICAL AND SOCIAL EXPERIENCES OF DIETING	1. Can you describe how the process of dieting affects/affected you mentally? 2. How does dieting alter your self-perception?	Positives? Negatives? Body image?
OBSTACLES AND ENABLERS TO SUCCESSFUL DIETING	1. Can you describe any issues that you have prevented you from being successful from dieting before? 2. Can you describe any factors that have led to any dieting successes before?	Why were these barriers? What made these issues cause you to fail?
ROLES OF OTHER PEOPLE IN DIETING	1. How do the effects of others affect your dieting? 2. Can you describe any instances where other people (family, friends, work colleagues) have hampered your progress, 3. Can you describe any instances where other people (family,	Why?

APPENDIX 4: Interview guide		
STAGE	QUESTION/ COMMENTS	PROBE
(Appendix 4 cont.) ROLES OF OTHER PEOPLE IN DIETING (CONTINUED)	<ol style="list-style-type: none"> 4. friends, work colleagues) have helped your progress, 5. People have described social eating to be difficult when dieting, why do you think that this is? 	
RECOMMENDATIONS TO OTHER DIETERS	<ol style="list-style-type: none"> 1. What would your recommendations be to someone trying to lose weight? 2. If you were to try and lose weight again, how would you do it differently? 	
SUMMARY	<ul style="list-style-type: none"> • To summarize, do you agree that the following pieces of information adequately reflect your experiences of dieting? 	
TRANSITION	<ul style="list-style-type: none"> • Is there any other piece of information that you would like to add? 	
CLOSE	<ul style="list-style-type: none"> • Thank you for taking part • You will be provided with a copy of the interview transcript if you would like to request one. 	

APPENDIX 5: Transcript Sample, Participant 1 (plus preliminary analyses)

1.		Okay. What would you describe your eating habits are like at the moment then?
2.	<p>Weight Loss</p> <p>Calories + counting,</p> <p>Exercise/physical Activity</p> <p>Meals and food choices</p> <p>Concept or normal or accepted eating habits</p> <p>Barriers to eating, role of partner,</p>	<p>At the moment I am trying to lose weight and up until sort of four days ago it was mainly just calorie counting. So just trying to eat relatively healthy but keep under sort of 1,800 calories, and that's for me because I'm doing a bit of running at the moment, so I've had quite a prolonged period without exercise, and I'm trying to do a bit of exercise at the moment, so to work alongside that. So typically I have breakfast, like I have a cereal or a couple of slices of toast, and then lunchtime either a sandwich or a salad or, you know, something quite sort of classic lunch basically. Then in the evening have sort of a meal with like a fish or meat and vegetables and regular stuff. The last four days have been a bit difficult because it's been my partner's birthday so we've like eaten out. You know, there's been chocolates in the house and it's whenever there's any kind of social thing going on that I find it really difficult to stick to an eating plan.</p>
3.		Okay so how do your current eating habits now that you've got, because you're trying to lose weight and you count calories and you do things like that, how is that different from you not losing weight? What would be like your default eating sort of patterns and stuff like that?
4.	Athletics and how being an athlete impacted eating	I think from when I was competing it was like, it's almost like programmed into me to eat high protein, but what I'd do when I was doing that was not cut down on anything else as well, so it was kind of

APPENDIX 5: Transcript Sample, Participant 1 (plus preliminary analyses)

	<p>(Appendix 5 cont.)</p> <p>Calorie counting (2)</p> <p>Meals and Food choices(2)</p> <p>Evening eating as a problem</p>	<p>almost increasing everything. But obviously I'm not throwing anymore so I don't do that what I'm doing.</p> <p>I'd say like my default thing, and it's only when I started counting calories that I realised this was, you know, I'd have something like scrambled eggs for breakfast and I'd think that yeah that's good, but I'd have like three slices of toast with it. Or I'd have like a bowl of cereal and a couple of slices of toast in the morning, and then at lunchtime I'd have a sandwich and maybe a bag of crisps, or I'd have like a meal, like a proper meal at lunchtime, and then have a meal in the evening as well. And then usually when I get in from work I'm really hungry at four so I'd eat maybe a couple of biscuits or some toast then, and it's just, I'd say it was eating quite a bit more than I am at the moment. I think that's about it. But then it's like snacking as well maybe. Not in the daytime but in the evening. It's in the evening that I find that I eat more.</p>
5.		<p>So do you find that your appetite levels sort of differ throughout the day regardless of whether you're trying to lose weight or not?</p>
6.	<p>Lack of hunger/desire to eat</p> <p>Change of eating,</p> <p>Trying to watch; indicates a cycle of eating</p>	<p>Yeah so I never used to eat breakfast at all, like I was just never hungry in the morning. So it's only really sort of the last year-and-a-half that I've started eating breakfast. And when I'm trying to like watch what I eat it does go through my head like oh well if I don't eat breakfast and just start eating later then you're actually eating less throughout the day. I don't feel I get particularly any more hungry whether I eat breakfast or not by lunchtime.</p>
7.		<p>- and what diets or what weight loss methods or</p>

APPENDIX 5: Transcript Sample, Participant 1 (plus preliminary analyses)

	(Appendix 5 cont.)	what things have you done to try and do it previously?
8.	<p>Cycle of eating/dieting (8)</p> <p>Impact of athletics (4)</p> <p>Structure,</p> <p>Weight loss methods</p> <p>Lack of success and cycle of gain/loss (8)</p>	<p>Okay so in the past I've had like advice from nutritionists. I've done it sort of three different ways. So when I was competing at the start of the winter training we'd do like an intensive sort of like almost conditioning preparation phase, and within that it was I'd have ephedrine to lose weight, and also again just making me cut out carbs, and that was what the approach that was kind of adopted by most people. And I'd find that I'd have a good affect for like a month. I think the most I lost was like 10kgs doing that, but then that would go back on by about six weeks afterwards.</p>
9.		Why would that go back on?
10.	<p>Cycle of gain/loss (8)</p> <p>Link between training and eating,</p> <p>Barriers: cost</p> <p>Need for results</p> <p>Regimented</p> <p>Food and meal choices (2)</p>	<p>Because I'd just revert back to how I'd ate before and the training had changed from a combination of some circuits and some running to just mainly heavy weights and throwing, and when I was lifting I used to get really hungry so I'd eat quite a bit more when I was lifting. And then a few years ago I tried a different diet where I did, followed the advice of a nutritionist, but I just found that really didn't work for me. One because it was so expensive to stick to his meal plans, you're spending a lot of money on food, more than I'd normally spend on food, and also I didn't see any results. So it was really regimented in terms of it was like right eat this many grams of porridge oats in the morning and eat this mid-morning, then eat this at lunch, and then you'd have like two teas, but one of them would literally be like</p>

APPENDIX 5: Transcript Sample, Participant 1 (plus preliminary analyses)

	(Appendix 5 cont.) Unrealistic changes	a piece of salmon and some spinach, and then later in the evening you'd have maybe another piece of salmon and some more spinach or something like that, and it just - it was like as far away from my like natural, or the way I normally eat it could be.
11.		What is your normal eating habit then compared to that? Because that sounds, just to quickly recap that, that sounds like it was very very structured, very calculated, you know you have to count this, you have to eat this at this time, this at that time, so how is that different to what you would normally do then?
12.	Barriers: time Need for realism Meals and food choices Unrealistic changes: Taste/food preferences	I think it is the time issue as well as the counting. So it was the fact that I was supposed to eat at like 8am, 10, between 12 and 1, you know it's the time, but realistically when I'm working and/or training or just day-to-day life I probably eat three meals. I'd say it's almost four meals, but I say it's three meals. So I eat breakfast before I come to work in the morning, lunch at like twelve, one o'clock and then at four o'clock I'd say it was like I have a snack but it's actually probably the same amount as a meal, and then I'd have my tea sort of seven o'clock. So I think it's that it was like how often you had to eat and how you had to like measure everything out and like prepare it the night before and all that kind of stuff, and I just didn't like the taste of it, so it was like preparing hot food the night before, but then it would be cold when you ate it the next day and it just didn't taste very nice. I think that was an issue.

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
Participant 1	Struggles to moderate food and manage cravings.	Cannot diet when chocolate is in the house.	Finds social eating difficult and making it fit with her plan.	Finds "obsessiveness" about weighing, measuring and calculating foods
	Describes herself as "All or Nothing"	Tempted by crisps and chocolate being in the house.	Feels that she is easily influenced and that she likes to please people.	to be negative experience, taking away from the
	Often overeats when eating out.	Home environment growing up very healthy. Parents were athletes. When became responsible for food, rebelled against parents and overate and at forbidden foods.	Other people can influence her.	personalisation of food and eating.
	Explains that she "switches off" and that eating out "flicks a switch in her head"		Went to her friend's house. People were offering her extra cakes and tempting her.	
	Birthdays, holidays give her a reason to "come off the diet"	Previous work environment very unhealthy and influenced her eating habits while at work.	Partner affects her eating habits negatively, particularly in the evening when they eat together.	
	Cravings due to feelings of denial created by diet.			
	Finds plateaus discouraging, stops monitoring herself and then gives up.		Partner buys crisps and chocolates and she asks her to eat them out of the house otherwise she will be	
	If diet is too			

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
(Appendix 6 cont.)	“regimented” or has too many “rules” or “obsessive” makes her rebel and not adhere to the diet at all.		tempted by them and take them to work. Diet messages change regularly and are "shoved in your face" by media.	
Participant 1 (cont.)			Feels self-conscious and that people are judging her when eating out and asking for healthier options. Compares herself to other people who are smaller and becomes discouraged. Compares herself to her partner who she feels loses weight quicker Former athlete. Found athletics to be obsessive and promote	

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
(Appendix 6 cont.)			overeating and body-size because she was a shot putter.	
Participant 1 (cont.)			Father very anti-fat. Finds mother unhelpful and discouraging.	
Participant 2	Social eating and drinking can escalate if being too rigid.		<p>Sometimes has to breaks his diet to be social.</p> <p>Thinks that social eating can be a problem because of the association of eating and enjoyment.</p> <p>Believes that an important part of eating out is being able to enjoy luxurious foods but that this needs be limited.</p>	Weight loss is an "ongoing process" that is never ending.
Participant 3	Struggles to moderate eating certain foods sometimes. Was	Has non-diet food in the house because he does not want	Social eating and drinking can be a problem.	Obsessiveness can be problematic, particularly for

Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
Appendix 6 cont.)	given a bag of crisps after a marathon and ate them and then went out and bought a family pack and ate them.	to deprive his kids but finds this a temptation.	Has been self-conscious of the perception of being seen to be losing weight in the past, which has meant that he has hidden his dieting or been embarrassed to be doing it.	things like weighing. If weight loss is not as fast as he would like, this becomes a problem.
Participant 3	Sweet foods are one of his "vices", particularly biscuits. Cannot eat one or two, ends up eating the whole packet. If weight is not lost as quickly as he would like in the past, has gotten discouraged and gone off the diet.	Finds busy work and family life constraints make things difficult and that there is the urge to get quick fixes and simple food choices however these choices are often not the best nutritionally or diet friendly. Changing this is a "big thing" that affects the whole family.	Changing his eating habits is something that affects the whole family which means that he has felt reluctant to make changes because of its effects on them.	

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
<p>Appendix 6 cont.)</p> <p>Participant 4</p>	<p>Describes himself as an "all or nothing" person but over time he has begun to moderate this pattern slightly.</p> <p>Suggests that he can be "disciplined and focussed" and that a small treat is fine but there are other times that are very different and that he binge eats and goes off track.</p>	<p>Has a goodie drawer with chocolates and snack in the house and finds this a temptation.</p> <p>Suggests that he gained weight steadily over the years and was influenced by his house-mates eating habits, which changed his eating behaviour.</p> <p>First started dieting 1998 when working for McDonalds.</p> <p>Described how working for McDonalds meant that he would have to eat restaurant meals 2 x per day sometimes and</p>	<p>Finds dieting a challenge when the people around him eat foods that he is not allowed to.</p> <p>Describes incidences of how other peoples eating behaviours have influenced his negatively.</p> <p>Finds his wife to be unhelpful.</p> <p>Becomes very aware of her eating habits (particularly bad ones) and feels pressured to eat like she does.</p> <p>Feels like he eats less well around his wife.</p>	<p>Life can revolve around thinking about food.</p> <p>Weighing and exercise can become an obsession if not careful.</p> <p>Recognises that weight loss represents a permanent change in lifestyle and behaviours.</p>
Participant 4 (cont.)	Experiences cravings but there are no patterns to them. Can sometimes			

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
<p>Appendix 6 cont.)</p> <p>Participant 4 (cont.)</p>	<p>manage these with water and other times feels that these are uncontrollable. During these occasions he even binges on foods that he does not particularly want to eat.</p> <p>Describes disinhibited eating episodes and explains that he does not really want to eat the food but the “devil inside his head” makes him do it.</p>	<p>travel a lot, which meant that preparing food and eating healthy food was difficult.</p>		
	<p>When losing weight she describes it as a "psychological thing" where she is</p>	<p>Went on an all-inclusive holiday which led to a week of disinhibited eating and drinking.</p>	<p>Has a social life that includes dining out and drinking wine in company. Finds social occasions</p>	<p>Has to be "mindful" and make "conscious choices" all of the time. These</p>

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
Appendix 6 cont.)	"sometimes in the zone" and sometimes not.		difficult because friends are used to her previous habits and that it	choices take "emotional energy"
Participant 5	Something "clicks" in her head which means that she is either fully compliant or fully non-compliant. Gets "distracted" by life.		is hard to change their habits and her own.	Recognises that dieting must represent a permanent
5 (cont.)	Describes dieting as a "psychological thing" and that weight loss is a choice the she makes or does not. Has to be in a "frame of mind" to diet and is sometimes not.		Has cut down on social eating because menus may not have suitable choices on them without her "making a fuss" which she does not want to appear to be doing. This sometimes makes he take the day off from the diet if eating out.	change that is "the way you eat now".
	Feels that		Celebrated her birthday, mum's birthday and granddaughter's	Feels that you have to "choose this fall back pattern" with food.

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
	dieting deprives you of pleasant things in life		birthday which led to overeating	
Appendix 6 cont.) Participant 5 (cont.)	<p>Describes two mind-sets sometimes she is determined and other times feels like she may as well break the diet because she has not been successful.</p> <p>When she feels good she can lose weight, but when she is feeling bad she gains weight and that success is driven by "what goes on in your head"</p> <p>Describes incidences of having a "death</p>		<p>Describes a tension that arises between her and her network of friends because her habits are now different from theirs. She describes that she feels self-conscious and noticeable.</p> <p>Describes other people like her mum cooking and tempting her with food that she cannot eat out of kindness.</p> <p>Thinks that other people feel sorry for her and that buying her</p>	

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
Appendix 6 cont.)	wish" and eaten foods she has not meant to despite not even wanting them nor enjoying them.		treats will "delight" her.	
Participant 6		<p>Work constraints and variable schedule mean that he has to make food choices around his working patterns and that his lifestyle is not as regimented or consistent as he would like it to be.</p> <p>Work structure is such that he does not know where he will be tomorrow and struggles to have a routine, which is important.</p>	<p>Describes the people around you as being influential and suggests that if you are told you are a failure you will be</p> <p>People can have a large effect if they do not know you are dieting, they will expect you to eat socially and may question you if you do not go.</p>	<p>Has a difficult and busy lifestyle with work business lunches, networking and international travel.</p> <p>Feels like he has to "recommit" to eating well in order to remain on track with his healthful eating habits given his life circumstances,</p>

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
<p>Appendix 6 cont.)</p> <p>participant 6</p>		<p>Has to travel a lot.</p> <p>Work schedule and travelling means that his food resources like his larder are not available and that he has to make choices, especially when confronted with social eating due to work.</p> <p>Describes eating out at as part of his work schedule as difficult because his food resources that he has created are not always available.</p> <p>Work routine and travel makes quick fix diets and short detox diets unworkable because when he</p>	<p>Describes people not noticing weight loss as being "crushing" and that recognition from others and from you as being important.</p> <p>Describes instances where he goes on holiday with friends and when they go to eat in the evening leads to eating and drinking too much and a loss of restraint.</p>	<p>or, if progress has stalled.</p> <p>Therefore feels that this has to represent a permanent change and that "motivation" and internalised and external factors, such as affirmation from others, needs to re-affirm that motivation to continue on.</p>

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing Thinking	Environments	Social Pressures	Weight Centeredness
Participant				
<p>Appendix 6 cont.)</p> <p>Participant 6 (cont.)</p>		<p>goes back to his work routine, his mind "flips back" after being completely focussed on his detox.</p> <p>Describes instances where he goes on holiday with friends and when they go to eat in the evening leads to eating and drinking too much and a loss of restraint.</p>		
Theme	All or Nothing Thinking	Environments	Social Pressures	Weight Centeredness
Participant				
<p>Participant 7</p>	Describes incidences of "losing control" and binge eating. These are sometimes in response to life events.	<p>Food choices at work are not great. Healthy foods are least accessible at work. Has problems accessing diet-friendly foods when at work.</p> <p>Due to buys family</p>	<p>Dieting can make her feel isolated. Food is the "one thing that makes you different".</p> <p>When partner (and other people) asks about her</p>	<p>What loss and dieting is "always on your mind" and that is something "you never stop thinking about".</p> <p>Finds that calorie counting</p>

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
<p>Appendix 6 (cont.)</p> <p>Participant 7 (cont.)</p>	<p>Feels like food and dieting is always on her mind, when something challenges her, eating habits are the first to deteriorate.</p> <p>Dieting is something "that just consumes you".</p>	<p>life and long work hours, struggles to find the time to prepare meals and take them to work.</p> <p>Describes eating separate from the family as being a problem because she does not have the support and structure from within the family "environment".</p> <p>Making different choices to the family creates isolation.</p> <p>Busy work-life means that physical activity and exercise are the first things that do not get done.</p>	<p>progress loss she feels pressure/hurried because they know about it.</p> <p>Has a social network of friends that eat and drink together and describes pressure about being on a diet because people "thinking that your boring".</p> <p>Feels that slimming classes enforce shame and humiliation when you step on the scales and that people there judge you.</p> <p>Describes shame and the feeling of</p>	<p>and using self-monitoring apps and technology makes weight loss and dieting something that is "on your mind" "all of the time" because you are noting it down.</p> <p>This promotes rigidity and restriction and the perception of deprivation.</p> <p>Can find herself thinking about the foods that she cannot have.</p> <p>Dieting can "consumes you" and "everything that you're going to eat".</p>

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
Appendix 6 cont.)			<p>judgement when others questioned her weight loss.</p> <p>Describes rebellion where if people question why she is eating something, she will want to eat it but then feel bad for eating it.</p>	
Participant 7 (cont.)			<p>Describes eating separate from the family as being a problem because she does not have the support and structure from within the family "environment". Making different choices to the family creates isolation.</p>	

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
Appendix 6 cont.) Participant 7 (cont.)			People judge you based on what you are eating which creates pressure. Describes being self-conscious when eating out as people view her as "that fat girl over there"	
Participant 8	When progress stalls or is very slow this become demotivating and can lead to going off track for a while.	People bring cakes and foods into work and has sometimes found it difficult to say no (does not want to be seen as impolite).	People bring cakes and foods into work and has sometimes found it difficult to say no (does not want to be seen as impolite). Sees eating as a social thing. Social eating can be a problem if not restrained. If "eating bad"	

APPENDIX 6: Barriers Theme Framework Matrix (Study one)				
Theme	All or Nothing	Environments	Social Pressures	Weight
Participant	Thinking			Centeredness
Appendix 6 cont.)			and someone else is doing it too, feels like this almost gives permission to do it.	

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
Participant 1	Thinking about and visualising successes motivates her.	Has found that being more aware of the nutritional contents of food has allowed her to make “informed choices”. Likes to feel informed	Plans her exercise habits based on her schedule. Now plans meals more than in the past and believes this has helped.	Feels that exercise and dieting complement each other and explains that she “cannot do diet without exercise” Feels like diet and exercise is a “double-attack”.
	Describes intuitive eating. Explains how paying attention to appetite cues has led to an eating style that seems to be working for her and allowing her to lose weight. Explains that this personalised approach is what works for her.	Describes that understanding energy balance has helped her understand what she needs to do to lose weight and why she has been unsuccessful in the past. Warn stoo much knowledge can become obsessive and become a barrier.		Looks forward to and enjoys exercise.
	Described how		Explains in	Exercising

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
<p>Appendix 7 cont)</p> <p>Participant 2</p>	<p>he now pays attention to “where he is what he is doing” and how “managing his diet and behaviour is at the forefront” of his mind.</p> <p>Is now comfortable with being hungry due to a change in mentality and is aware of how poor food choices can mute his outlook. Has found that understanding hunger has changed his perceptions. Explains that a healthy outlook</p>	<p>Working with nutritionists and reading and improving his knowledge have allowed him to “pick up things” that he can do to improve his diet-related behaviours.</p>	<p>detail and regularly that having structure is important to him. Explains that he has weekly and monthly shopping lists and keeps food in the house to reflect his goals.</p> <p>Explains that organisation and structure make him feel “in control” of his behaviours and that compared to previous attempts, he now feels more in control a lot more organised and structured about his habits.</p> <p>Recommends</p>	<p>regularly "punctuates a reminder to stay on track. Explains that exercise therefore reinforces healthful eating habits.</p>

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
Appendix 7 cont.)	is important. Describes that we have choices about how we want to be and that people do not have to be all or nothing.		that planning, organisation and structure is important to accommodate challenging environments but that structure and eating habits have to be flexible.	
Participant 2 (cont.)	Describes that having “perspective” is important and that has developed a comfortable relationship with food that allows him to break rules and remain in control which is based on a conscious choice.			
Participant 3	Described how he has developed intuitive eating and that by	Discusses that knowledge and understanding of	Likes having a structured approach to eating and exercise. If his	Exercise and dieting habits are intertwined. If he eats badly, feels that this

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
(Appendix 7 cont)	listening to his appetite cues, this has allowed him to eat based on how he feels. Also describes how he is now aware of how eating and foods makes him feel.	"good or bad food" or "better or worse" food is important to make appropriate, informed choices. Discusses the importance of understanding nutrient contents of food and using app to found out calories and macronutrients to develop self-awareness.	training is structured, his eating is structured too. The structure and strategies he has arrived at have taken refinement over 5 months. Discusses importance of being prepared, such as cooking the night before and preparing meals and having healthy quick alternatives is important.	ruins the good work that going out for a run achieves. If he eats well, then the run has been productive. Exercise habits drive eating habits. Makes decisions about what and how much to eat based on training.
Participant 3 (cont.)	Explains that compared to before, he does not eat for the sake of it, if he is hungry he will eat, if he is not hungry, he will not eat. Rationalises his food choices based on his running habits.		Organisation and structure needs to be flexible to allow for long-term consistency.	When out of the habit of exercising, eating habits get worse.

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
(Appendix 7 cont.)	Describes the realisation/ metacognition that he has developed subconscious healthy eating preferences over time.	Has found that educational components of weight loss course to be formative. Suggests that he “never used to understand how food affected the body”. Now understands that there are consequences of "shovelling in high fat, high sugar foods".	Enjoys have the structure of 4 Personal Trainer sessions per week.	Feels that going to the gym 4 times per week gives him a calorie "safety net".
Participant 4	Describes that he now tries to view food as fuel.			"Discipline of physical activity" has helped progress. Is important that he does not have to think about it and can go in and be "run ragged". Enjoys the feeling it provides.
	Describes that he has developed self-awareness and attentiveness to eating.	Has now signed up to fitness and wellbeing blogs and online magazine to learn more. Exercise and weight loss have engendered motivation to learn more.		Feels that if it was not for physical activity he would eat more.

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
<p>(Appendix 7 cont.)</p> <p>Participant 5</p>	<p>Describes that “mindfulness” is very important so that you “don’t go onto automatic pilot” and sabotage efforts.</p> <p>Describes how her mum gave her some aniseed rock (which she is not allowed) and suggests that in order to not eat the food you have to be mindful” and consciously chose “not to do it”. Also suggests this “conscious choices” take “emotional energy”.</p>	<p>Suggests that practical knowledge is important and explains that Sliming clubs can be beneficial because she gets new ideas for things to cook.</p> <p>Suggests that clubs like slimming world work by giving people more recipes and ideas and that variety keeps people interested.</p>		

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
(Appendix 7 cont.)	Discusses how circumstances (such as travel and work) mean that he has to consistently make "choices" to ensure that his eating habits reflect his weight loss goals.	Suggests that knowledge was the foundation of his success. Discussing the slimming group, suggested that small changes allowed him to understand what he "needed as fuel" and why he "needed it" and reveals that understanding energy balance was very important for him.	Has a system of eating and activity that he knows works that is about a "way of life forever". Suggests that having structures and finding structures that work is important to ensure progress. These structures are built upon knowledge and organisation.	Describes exercise as "hugely important". Cycles to work during the summer and that this burns 500 calories an hour.
Participant 6 (cont.)	Describes successful dieting being built upon a "state of mind" and "being honest" with ourselves.	Reads lots to improve knowledge. Knowledge of food is important to understand the "the right food	Wanted to have a system that allowed him to manage his weight as he got older. Need to have a	Reveals that exercise and diet have additive effects for him. Finds that exercise can increase his hunger and that he has to manage the two.

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
(Appendix 7 cont.)		<p>that you want". Discusses cooking and preparation and finding good and bad ways of creating meals as being important.</p> <p>Suggests that people "need education" about with energy balance and suggests that we need to "empower people" with education and support and that people of his generation were not educated about food and nutrition.</p>	<p>plan of where we have come from and where we want to get to and how quickly we can get there. Needs to be realistic.</p> <p>Likes to plan, research and cook meals. Brings meals to work and cooks food in bulk.</p>	
Participant 6 (cont.)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
	Describes		Planning and	Is trying to do

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
(Appendix 7 cont.)	<p>dieting as something that "always on your mind" and that after 3-4 weeks mental patterns change and altered food behaviours become automatic.</p> <p>Describes an increased self-awareness and explains that she "cannot just sit there and eat a baguette" because this would make her gain weight, so has to make choices that reflect what she can and cannot get away with.</p>		<p>organisation has helped with diet and losing weight. Plans out meals that the family are having over the weekend, along with exercise and eating out and makes sure that the family have next week's food in the cupboards.</p> <p>Plans around partner working away. Plans food for the family and herself.</p> <p>Structure and planning, while important, thing are time consuming and have to be a</p>	<p>more exercise and that this is pre-planned. Explains that she now runs three times per week for 1/2 an hour and does a circuit class and toning class. Feels like the exercise and diet are "working together".</p> <p>Went away for the weekend and went for a run on Friday morning to compensate for drinking. Uses exercise to cope for planned deviations.</p>
Participant 7				

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
(Appendix 7 cont.)	Explains that she now thinks differently about what she and the family eat. And		family decision involving partner, which has been key.	
Participant 7 (cont.)	has a different relationship with food. Thinks about cooking and looking at recipes. No longer considers unhealthy food as an option.		Planning has meant that she does not need to think about food so much. Brings snacks to work so does not have to make decisions all of the time.	
7 (cont.)			Feels that she is now in control as a result of her structure. Explains that she cooks proper meals: “doing veg and fish at 8 at night. Never done that before”.	
	Explains that her weight is	Using apps and calorie counters	Uses calorie counting to	Uses exercise for performance

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
(Appendix 7 cont.)				
Participant 8	<p>“always on the back” of her “mind” and that because of this, she is vigilant to weight changes and has a “tipping point” within which she takes action and makes changes to lose weight.</p>	<p>to improve awareness of intake is important. Believes that people would be shocked with how much they eat unless they learned about the energy contents of foods, how to measure it and what their intakes are.</p>	<p>structure her eating patterns and records foods using myfitnesspal.</p> <p>Takes food to work and plans to deviate from diet with social occasions.</p> <p>Going to the gym gives her structure and patterns that she can plan and stick to.</p> <p>Feels like she does better when things are organised and structured and that this has led to her successes.</p> <p>Organisation and structure can also provide</p>	<p>goals and finds that exercise promotes feeling of wellness.</p> <p>Exercise improves feelings of positivity, even when feeling bad due to a lack of restraint or a lack of progress.</p> <p>Going to the gym gives her structure and patterns that she can plan and stick to.</p> <p>Finds that eating and exercise “go hand in hand”</p> <p>Exercise can be used for goals other than</p>

APPENDIX 7: Facilitators Theme Framework Matrix (study one)				
Theme	Mindfulness	Knowledge	Organisation	Exercise
Participant				
(Appendix 7 cont)			planned flexibility.	weight loss

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
(Appendix 7 cont.)		Explains that she uses an app on her phone as a food diary and calorie counter.	Having friends that understanding and supportive are helpful to her efforts. Finds it helpful to chat to her friend who is health conscious.
Participant 1		Uses clothing fit as an indicator of losses. Notices weight loss from the tummy first; she sometimes measures this circumference.	Having a healthy work environment with health conscious colleagues who are conscious of what they eat and exercise regularly is beneficial and translates into her behaviours.
		Regular weighing and measuring tummy circumferences have been beneficial, along with positive comments from others and feeling more energetic.	Dieting works best when her partner does it with her because they are both conscious of it.
		Has bought scales so	

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
(Appendix 7 cont.)		she can measure foods and reduce portion sizes.	
Participant 2	Previous failures were because he was not able to “commit to task” now feels that he is able to do so.	Has daily records of am and pm weights and tick and cross of diet and exercise, uploads this into excel out of interest to observe compliance and fluctuations. Weighs himself twice per day and continues this habit out of interest. Has previously weighed foods, counted calories and taken photographs which allowed him to understand what his diet should be and was a good educational tool	Working with a nutritionist in a self-contained environment was beneficial to his successes and led to significant weight loss. He felt accountable and changed his behaviour as a result of this.
	Discusses the important of the realisation of wanting	Uses an app on phone, but uses this occasionally and not	Has been open to family and friends about changing eating

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
(Appendix 7 cont.)	to lose weight and that he does not care what anybody else thinks.	excessively, such as every meal. May do this 4-5 days every 3-4 weeks to check and re-educate and understand where his calorie intake is.	habits. Being open has helped because people "will support me in that" and that it "takes the pressure off".
Participant 3		<p>Uses exercise performance as an indicator of progression.</p> <p>Has used excel to track and monitor weight, bodyfat % and created graphs</p> <p>Occasionally weighs himself but does not focus on it or write it down. Main focus is feel and running.</p> <p>When monitoring weight in past got demotivated when it did not come down as quickly as he would like or when it</p>	<p>Recommends that others should be open with people about the acknowledgement that you are trying to do something.</p>

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
(Appendix 7 cont.)		plateaued.	
Participant 3 (cont.)			

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
(Appendix 7 cont.)	Discusses that his recent success was because he was ready to change. Suggests that people make excuses because they are "not ready to change".	Has used food diaries to monitor his intake. This food diary "disciplined" his "mind" and made him think twice about whether to eat or not.	Has found that having fit friends with an interest in fitness to be beneficial. When in their company its "normal behaviour to be committed and motivated".
Participant 4	Says that weight loss is like when he stopped smoking and describes that when he gave up smoking he was "psychologically ready to give up". Suggests that people need to have the "mind-set" of being	Suggests that he is "motivated by noticing how his physiology is changing". Finds it motivating to go and get weighed while trying to lose weight. Would weigh himself morning and night and at other times too. Can feel that his body is a	Feels more motivated to be good in the presence of friends that are fit. Went to Glastonbury and was motivated to choose carefully and sensibly because in the company of people that were doing the

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
<p>(Appendix 7 cont.)</p> <p>Participant 4</p>	<p>"ready inside".</p> <p>Something that "clicks"</p>	<p>different shape and finds that is motivating and can feel that he is fitter. Self-monitoring can become obsessive however.</p>	<p>same. Would not do this without them.</p>
<p>Participant 5</p>	<p>Realised that there became a point where she needed to lose weight.</p> <p>Also came a point when she realised that she could not do it alone.</p> <p>Describes herself as "thinking like a fat person" but would like to change her mind-set.</p> <p>Describes small changes worked because she came into the programme in a "frame of mind" that made it work.</p>	<p>Uses clothes and the mirror as indicators of weight loss and as tools to engender change when she plateaus</p>	<p>Recommends that others should not try to lose weight on their own and that they should have a buddy or group. These groups can "wear you down" but also gives a sense of belonging.</p> <p>Slimming world makes her feel supported, that she is not alone but part of a team of people with common challenges and goals.</p> <p>Feels that the slimming club she attends gives her emotional support and strength; recharges her batteries.</p> <p>Having sister-in-law</p>

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
(Appendix 7 cont.)			going to slimming world with her is helping. When out on family occasions together with the sister-in-law they support each other. When they socialise and cook for each other they make slimming world choices.
Participant 5 (cont.)			
	<p>Suggests the Need to "be honest with ourselves". In order to make long-lasting changes.</p> <p>Suggests that the mental decision to make change is good and "almost like a love affair".</p>	<p>Has a withings scale that reports information to myfitnesspal app; uses a fitbug tracker, Scosche armband that tracks heart rate and GPS regularly.</p> <p>Explains that he enjoys using technology like thus.</p> <p>Myfitnesspal app allows him to make decisions about foods using barcode scanner and to reflect and see</p>	<p>Discusses the need for "group effort" and that "my wife and I will never do it alone". Suggests that he would find it difficult if his wife was "happy to sit there each crisps and chocolate" while he was dieting.</p> <p>Believes that you cannot do a diet of any type unless you "have the support of those who live around you".</p>

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
<p>(Appendix 7 cont.)</p> <p>Participant 6</p>		<p>if he has been good or "deluding" himself.</p> <p>Discusses using data to track energy intake and expenditure.</p> <p>Started food diary because it was easy to forget what he had to eat.</p>	<p>Suggests need for weight loss groups that work together to help other lose the weight.</p> <p>Thinks that clubs like weightwatchers can work but also be "demoralising and horrible" when you have not "achieved what you should have done".</p>
	<p>Discusses and recognises a "whole mind change" where "I'm the reason why I'm the size that I am" and that the only way to change "is by me in control".</p>	<p>Weighs herself using scales. Measures weight, key areas like top of legs and top of arms. Finds that this allows her to monitor progress and keep her accountable.</p>	<p>Is attending slimming world with a friend and is finding this to be helpful and motivating.</p> <p>Lifestyle changes now involve her partner which helps both of them. At first her partner was not doing it for first 4-6 weeks and this was hard. When partner got involved, it became</p>

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
<p>(Appendix 7 cont.)</p> <p>Participant 7</p>			<p>much simpler.</p> <p>Now finds that it is different when whole family is doing it.</p> <p>There is extra pressure when doing it on your own. When doing together with partner, this pressure is lifted because doing it together.</p> <p>Uses friends and her partner for help when she is craving foods.</p> <p>Has "other people to "bounce off" and motivate her to be consistent. If immediate family were eating unhealthy foods this would "send me into a spiral"</p> <p>She is now dieting together with three friends too. They text each other when they</p>

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
<p>(Appendix 7 cont.)</p> <p>Participant 7 (cont.)</p>			<p>need help and encouragement. Feels that the more people that know, the better. If eating out with friends they plan what they will eat, such as healthier options before they go out. If she was not working with friends, would just end up tucking in because did not want to feel different.</p>
Participant 8	<p>Recognises that her successes were that she no longer wanted to be overweight and that she has not regained weight because she does not want to go back to her previous size.</p> <p>Suggests the need to “take responsibility” and act.</p>	<p>Weighs herself every day. Uses myfitnesspal to count calories and monitor her food intake. Finds that this can provide structure (which is important) but also allow for planning.</p> <p>Regular weighing allows her to remain within a weight</p>	

Appendix 7: Facilitators Theme Framework Matrix (study one)			
Theme	Readiness to Change	Self-Monitoring	Social Support
Participant			
(Appendix 7 cont.)		<p> bracket. So that when she goes beyond her weight bracket, she tries to lose weight to go back to her ideal range. Calls this her “tipping point”. </p>	

APPENDIX 8: Nutrition knowledge and Education, Exercise and Diet Design Framework Matrix (study two)				
Knowledge and Education		Exercise and Physical Activity	Diet Design	Self-Management
AfN	Specific contents	Specific contents. Might not relate to participants.	Very specific contents.	No specific contents.
	<p>Theories and applications of improving health, behaviour and change and theories of nutrition health education and promotion.</p> <p>Science, physiology, energy balance, digestion, absorption, metabolism, metabolic demand for nutrients, nutrient and non-nutrients in foods, health and disease, how</p>	<p>Principals of measuring energy balance, expenditure, body-composition, fitness and physical activity and theory and methods of investigating diet, nutrient and activity patterns.</p> <p>Nature of human body and physical activity. How Nutrition changes with physical activity, theories of improving health, behaviour and change also specified.</p>	<p>Nutritional requirements change based on variables like age, gender, activity. Must understand dietary, activity and Nutritional assessment methods, measuring nutritional requirements, status and data interpretation.</p> <p>Nutritionist must be able to design a diet to meet the specifications of the client group and must know how to assess energy balance, expenditure,</p>	<p>Factors that affect individuals, communities and population's needs and practises, financial, social and environmental circumstances, theories and applications of methods of improving health, behaviour and change.</p>

APPENDIX 8: Nutrition knowledge and Education, Exercise and Diet Design Framework Matrix (study two)				
Knowledge and Education		Exercise and Physical Activity	Diet Design	Self-Management
(App. 8 cont.) AfN	needs change with age consequence of deficiency, dietary analysis, food chain, food policy, commodities contents specified.		nutritional status, and diet and activity patterns.	
Part.	Important aspect of success. Want to make informed choices, that becoming educated/increasing knowledge in nutrition improved understanding of healthful food choices and impacted	Exercise and diet are complementary and have additive behavioural effects. Behavioural effects transcend energy expenditure and underpin its effectiveness. Exercise punctuate reminders to eat well, the discipline of activity translates elsewhere into lives compounding dietary and exercise behaviours and effectiveness.	Diets need to be individualised to be sustainable. Macronutrient ratios, portion sizes, and food choices were adjusted to lose weight and manage hunger/satiety and cravings. Increasing knowledge improved diet design.	Organising and structuring lives necessary to achieve consistency and weight loss. Without this, very difficult. Weekly and monthly shopping lists, cooking food in bulk, bringing food to work and larders at home beneficial. Lack of structure has led to previous failures. However too much

APPENDIX 8: Nutrition knowledge and Education, Exercise and Diet Design Framework Matrix (study two)				
Knowledge and Education		Exercise and Physical Activity	Diet Design	Self-Management
(App. 8 cont.)	<p>their food choices.</p> <p>An increased understanding of how food affects the body, energy content, psychology of eating, , provenance of food, recipe ideas and food choices to assist with variety.</p> <p>Educational components from commercial providers very effective.</p>	<p>Physical activity provides a calorie safety net.</p> <p>Exercise provides structure and flexibility and can be used to set goals and achieve goal.</p> <p>Eating habits can be linked to exercise goals and reciprocate.</p> <p>Exercise can give a sense of productivity and positivity even when feeling negative.</p> <p>This feeling enhances its effects and sustainability.</p>	<p>Flexible eating approaches might be needed for maintenance purposes and that calorie counting/control is a good way to achieve this.</p> <p>Exercise can influence appetite negatively</p> <p>However if short term goals require weight loss, more stringent or drastic measures can be taken.</p>	<p>structure makes things difficult and rigid.</p> <p>Having structure managing time to reflect diet and exercise and organisation allows participants to feel in control which is foundation for consistency.</p> <p>Organisation and structure provide guidelines and frameworks that can be worked within but also provide flexibility if planned properly.</p> <p>Exercise adds an additional level of structure.</p>
Part.				

APPENDIX 9: Psychological Constructs and Behaviour Changes Techniques						
Framework Matrix (study two)						
Theme	Dietary	Goal	Locus of	Self-	Self-	Coping
Case:	Restraint	Setting	Control	Efficacy	Monitoring	
Afn	No specific content	No specific content	No specific content	No specific content	No specific content	No specific content
	Factors that affect individual's needs, theories and application of methods of improving health, behaviour and change.	Factors that affect individual's needs, theories and application of methods of improving health, behaviour and change.	Factors that affect individual's needs, theories and application of methods of improving health, behaviour and change.	Factors that affect individual's needs, theories and application of methods of improving health, behaviour and change.	Factors that affect individual's needs, theories and application of methods of improving health, behaviour and change.	Factors that affect individual's needs, theories and application of methods of improving health, behaviour and change.
Part.	Important behaviour.	Important behaviour.	Important cognition.	important cognition	Important behaviour	Important behaviour
	Rigidity with dieting can make eating unsustainable , limits choices and minimises social eating. Rigidity creates "obsessiveness" which leads to	Improves motivation, consistency and self-efficacy. Setting and achieving goals creates the sensation of achievement	Internal locus of control enhances motivation and enables success. Being in control engenders feeling of decision making, enhances focus and promotes	High self-efficacy demonstrated when describing successful events. Linked to eating, weight loss and exercise goals. Self-efficacy for	Promotes self-regulation. Food diary apps, body measurements , weighing scales, taking photographs of food and indirect assessments such as assessing how	Events or situations often require coping strategies to be consistent. Can include driving when

APPENDIX 9: Psychological Constructs and Behaviour Changes Techniques						
Framework Matrix (study two)						
Theme	Dietary	Goal	Locus of	Self-	Self-	Coping
Case:	Restraint	Setting	Control	Efficacy	Monitoring	
(App. 9 cont.)	cheating and cravings. Rigidity has led to previous failure and the feeling that they are not in control of their eating, creating guilt.	nt and improves positivity. Goals can be exercise-related, educational, weight loss oriented, health-related and fitting into certain clothes or dress-sizes or related to life events like weddings. Goals necessary to remain within threshold weight ranges.	and underpins flexible restraint so that they have a 'flexible', 'relaxed' and 'balanced' outlook'. Internal locus of control can be challenged and 'slip ups' do occur. External locus of control leads to disinhibited eating or difficulties in adhering to dieting plans. Can also promote feelings of negativity when weight creeps up or because of a lack of restraint.	each of these might be interconnected; achieving one might impact others beneficially. Low self-efficacy leads to emotional challenges and might underpin previous and current failures. Lack of results can promote low self-efficacy and lead to demotivation. Goals can be used to promote self-efficacy, such as exercise, and be used to	clothes fit, feelings of energy and wellness and exercise performance times regularly used. Self-monitoring also increases 'focus' and consistency and is used as an educational tool. Can become obsessive, a lack of progress can be detrimental creating discouragement. Self-monitoring increases vigilance to changes.	socializing (not drinking), choosing or limiting food choices at events, flexible restraint, exercise. Lack of coping strategies can lead to binge eating and unrestrained eating, cravings and weight cycling. Stress and pressure can be a problem and promote comfort eating and drinking.
Part.	Flexibility allows them to make choices and remain in control. Eating habits have to allow for family life and social eating in order to be sustainable. This also eliminates guilt. Structure, like counting calories can be beneficial					

APPENDIX 9: Psychological Constructs and Behaviour Changes Techniques						
Framework Matrix (study two)						
Theme	Dietary	Goal	Locus of	Self-	Self-	Coping
Case:	Restraint	Setting	Control	Efficacy	Monitoring	
<p>(App. 9 cont.)</p> <p>Part.</p>	<p>and allow you to work higher calorie foods into diet if they are within allotted calories. Coping mechanisms can engender flexible restraint.</p>	<p>such as exercise, are required to maintain positivity and self-efficacy when faced with a lack of progress s and negativity.</p>		<p>maintain self-efficacy during negative periods.</p>		<p>Coping strategies are also important when faced with a lack of progress.</p> <p>Coping with weight regain is important for maintenance as weight begins to regain and so measures need to be taken to reduce weight periodically.</p>

APPENDIX 10: Social determinants and Social Support Framework Matrix (study two)

Themes:			
Cases:	Environmental Determinants	Socio-cultural determinants	Social Support
AfN	<p>Specific Contents</p> <p>Factors that affect an individual's, communities' and population groups' nutritional needs and practises, religious and cultural beliefs and practices that impact on food, nutrition, health. Consideration of financial/social and environmental circumstances on diet and nutritional intake.</p>	<p>Specific Contents</p> <p>Factors that affect an individual's, communities' and population groups' nutritional needs and practises, religious and cultural beliefs and practices that impact on food, nutrition, health. Consideration of financial/social and environmental circumstances on diet and nutritional intake.</p>	<p>Factors that affect an individual's, communities' and population groups' nutritional needs and practises and consideration of financial/social and environmental circumstances on diet and nutritional intake.</p>
Part.	<p>Environments can impact weight loss efforts negatively. The home, workplace and travel which have made consistency a problem and influencing their choices and behaviours. Availability of foods, time constraints, environmental structures and appetite promoting cues can cause</p>	<p>Social influences, social environments and situations can impact food choices and weight loss.</p> <p>Participants describe past experiences and life events have driven their eating habits, such as sports participation,</p>	<p>Very Important.</p> <p>Participants explain that having supportive partners, families and friends is essential.</p> <p>Weight loss can lead to feelings of isolation and alienation (being an outcast). Social groups can provide support and guidance and</p>

APPENDIX 10: Social determinants and Social Support Framework Matrix (study two)			
Themes:			
Cases:	Environmental Determinants	Socio-cultural determinants	Social Support
<p>(App. 10 cont.)</p> <p>Part.</p>	<p>problems.</p> <p>Environment can enable success, examples provided of structures at home and in the work place reinforcing behaviours.</p>	<p>family/parents and work-related factors which have contributed to weight gain and created problematic relationships with food. Participants describe socialising, drinking and social eating as challenging. Participants discuss how others, such as social circles, can influence their food choices negatively and describe a range of social pressures.</p> <p>Social occasions can present themselves with challenges to weight loss goals creating social pressures.</p>	<p>encouragement, reinforcing weight loss goals. Partners, friends, families and work colleagues important. Slimming clubs can provide support.</p> <p>A lack of social support leads to feeling isolated from significant others, creating "tension" and "pressure".</p> <p>Partners, spouses and family members can sabotage efforts and create additional challenges.</p>

APPENDIX 11: Competency Requirements for Course Accreditation (Association for Nutrition Core Competency Document)

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AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

Core Competency 1 - Science

Knowledge and understanding of the scientific basis of nutrition. Understanding nutritional requirements from the molecular through to the population level – for either human or animal systems.

CC1a - The human body and its functions, especially digestion, absorption, excretion, respiration, fluid and electrolyte balance, cardiovascular, neuro-endocrine, musculoskeletal and haematological systems, immunity and thermoregulation, energy balance and physical activity

CC1b - Mechanisms for the integration of metabolism, at molecular, cellular and whole body levels

CC1c - What nutrients are (including water & oxygen)

CC1d - Nature and extent of metabolic demand for nutrients

CC1e - How nutrients are used by the body, consequences of deficiency and assessment of nutritional status

CC1f - Non-nutrient components of foods and drinks that affect diet and health including alcohol

CC1g - Nutrient analysis: calculating nutrient contents of foods and diets of an individual or group of individuals, justifying choice of a method of dietary assessment for a specific stated purpose

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AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

(continued from overleaf)

Core Competency 1 – Science (cont.)

Knowledge and understanding of the scientific basis of nutrition. Understanding nutritional requirements from the molecular through to the population level – for either human or animal systems.

CC1h - Digestion, absorption, transportation and storage of nutrients and non-nutrient components of foods

CC1i - Nutrition in health and disease, consequences of an unbalanced diet

CC1j - Nature of common conditions that require dietary manipulation or can affect physical activity, such as obesity, diabetes, hypertension, cardiovascular disease, cancer etc.

CC1k - How nutritional needs change with age, gender, physical activity, lifestyle etc

CC1l - Ability to plan, conduct, analyse and report on investigations into an aspect of nutrition in a responsible, safe and ethical manner

CC1m - Ability to carry out sample selection and to ensure validity, accuracy, calibration, precision, replicability and highlight uncertainty during collection in accordance with the basic principles of good clinical practice

CC1n - Ability to obtain, record, collate, analyse, interpret and report nutrition-related

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AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

(continued from overleaf)

data using appropriate qualitative and quantitative research and statistical methods in the field and/or laboratory and/or intervention studies, working individually or in a group, as is most appropriate for the discipline under study

CC1o - Prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually

CC1p - Health research methods, dietary nutrition methodologies and nutritional epidemiology

CC1q - Theories of and development of practical skills in communication and learning

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AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

Core Competency 2 – Food Chain

Knowledge and understanding of the food chain and its impact on food choice.

Integrating the food supply with dietary intake.

CC2a - Food commodities (staple foods, main sources of key nutrients, novel foods etc) within UK and/or internationally

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AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

(continued from overleaf)

CC2b - Effect on chemical composition and nutritional quality of food and diet of:

- methods of food production, preparation, preservation, fortification and format
- sources of food supply
- methods of cooking & storage

Core Competency 2 – Food Chain (cont.)

Knowledge and understanding of the food chain and its impact on food choice.

Integrating the food supply with dietary intake.

CC2c - Familiarity with and/or development of practical skills involved in the methods to analyse the composition of foods

CC2d - Ability to formulate ideas and opinions concerning food, nutrients, non-nutrient components of food and nutrition effectively and appropriately

CC2e - Understanding of issues associated with food sustainability.

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AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

APPENDIX 11: Competency Requirements for Course Accreditation (Association for Nutrition Core Competency Document)

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AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

(continued from overleaf)

Core Competency 4 – Health/Wellbeing

Understanding how to apply the scientific principles of nutrition for the promotion of health and wellbeing of individuals, groups and populations; recognising benefits and risks.

CC4a - Principles and methods of measurement and estimation of energy balance; energy expenditure physical activity and fitness; body mass; body composition; how body mass and energy balance are controlled

Core Competency 4 – Health/Wellbeing (cont.)

Understanding how to apply the scientific principles of nutrition for the promotion of health and wellbeing of individuals, groups and populations; recognising benefits and risks.

CC4b - Theory and methods of investigating the dietary, nutrient and activity patterns of the general population, sub groups and the individual

CC4c - Scientific basis of the safety and health promoting properties of nutrients and non-nutrient components of food, based on knowledge of the metabolic effects of nutrients, anti-nutrients, toxicants, additives, pharmacologically active agents (drugs); nutrient-nutrient interactions, nutrient-gene interactions, 'nutri-ceuticals', functional foods, and any other metabolically active constituents of foods and the diet

CC4d - Scientific basis for the measurement and estimation of nutritional requirements, dietary reference values for the general population

APPENDIX 11: Competency Requirements for Course Accreditation (Association for Nutrition Core Competency Document

(Permission to reprint this information was granted by the Association for Nutrition).

AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

(continued from overleaf)

CC4e - Understanding the general principles underpinning, and strengths and limitations of, common methods of assessment of nutritional status including clinical, anthropometric, dietary, biochemical, physiological, and functional methods

CC4f - Understanding the general principles and methods associated with determining the efficacy, health attributes, health claims, safety, and legal aspects of foods, drinks and supplements

CC4g - Ability to recognise strengths and weaknesses in dietary, nutrition and health research methods, in order to understand the limitations of the scientific basis of nutritional knowledge

Core Competency 4 – Health/Wellbeing (cont.)

Understanding how to apply the scientific principles of nutrition for the promotion of health and wellbeing of individuals, groups and populations; recognising benefits and risks.

CC4h - Ability to integrate knowledge and understanding from a variety of sources to identify or propose solutions in one of the following areas: Improvement of human health or improvement of the welfare and/or productivity of animals or improvement of food production and sustainability

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AREAS OF KNOWLEDGE & SKILLS TO BE COVERED

(continued from overleaf)

Core Competency 5 – Professional Conduct

Understanding of Professional Conduct and the nutritionists Code of Ethics along with evidence of good character.

CC5a - Ethics and values of professions.

CC5b - AfN Code of Ethics and Statement of Professional Conduct

CC5c - Legal context of nutrition practice; including current UK legislation and guidelines to providing information to individuals

CC5d - Responsibilities and accountability in relation to the current European and National legislation, national guidelines, local policies and protocols and clinical/corporate Governance in relation to nutrition

CC5e - Can recognise the moral and ethical issues of investigation and appreciate the need for ethical standards and professional codes of conduct applicable to both interventional and observational studies

CC5f - The relevance of the research governance framework

CC5g - Intellectual property issues