THE UNIVERSITY OF HULL

‘The Relationships between Psychological Factors and Weight Loss’

being a thesis submitted for the Degree of Doctor of Clinical Psychology

in the University of Hull

by Rochelle Crawford

July 2010

Acknowledgements

Firstly, I would like to thank all of the participants who took the time to take part in my study and who shared their experiences with me. I have been humbled and moved by this.

I would especially like to thank Dr Lesley Glover and Dr Stella Morris who have been so supportive in all aspects of this process. Without their sound advice and kind support I do not believe I would have had such a positive experience of conducting research. I would also like to thank Dr Eric Gardiner for his wisdom and kind support.

Special thanks also go to Mr Prashant Jain, as well as members of the Surgical Weight-Loss Support Group in Hull, for their assistance in design aspects of the empirical research from their vast knowledge and experience.

Finally, I would like to thank all my friends and family for their support and encouragement throughout this whole process. Especial thanks go to Anthony, Katrina, Debbie, Jade, and Jenni for much tea, cake and wise words.

A. Overview

This portfolio has three parts:

Part one is a systematic literature review in which the theoretical, conceptual and empirical literature relating to the impact of initial weight-related expectations on weight-loss and related outcomes is explored.

Part two is an empirical paper exploring the relationships between self-efficacy and illness cognitions with the outcome variables of weight-loss, physical and mental health status, and individual perception of outcome.

Part three is comprised of the appendices.

B. Table of Contents

C. List of Tables

Systematic literature review

Empirical paper

D. List of figures

Systematic literature review

Empirical paper

Part One: Systematic Literature Review

The Impact of Pre-treatment Weight-loss Expectations on Actual Outcome in People who are Overweight and Obese: A Systematic Review of the Literature.

Department of Clinical Psychology and Psychological Therapies,

Hertford Building, University of Hull, HU6 7RX

R.j.crawford@2007.hull.ac.uk

Rochelle Crawford

July 2010

This paper is written in the format ready for submission to the British Journal of Health Psychology. Please see Appendix 2.1 for the Guideline for Authors.

Word count (including references and tables): 10,244

The Impact of Pre-treatment Weight-loss Expectations on Actual Outcome in People who are Overweight and Obese: A Systematic Review of the Literature.

ROCHELLE CRAWFORD[1] & DR LESLEY GLOVER[1]

[1]*Department of Clinical Psychology and Psychological Therapies, The University of Hull, Hull, HU6 7RX, England.*

Abstract

Purpose: There is an assumption that high expectations of weight-loss treatments are detrimental to outcome. However, research suggests contradictory findings. The purpose of this review was to collate research exploring the impact of weight-loss expectations on weight-loss, psychological outcome, satisfaction, and attrition. It was hoped this would further understanding of the relationship between expectations and outcome.

Methods: PsychInfo, Medline, and Web of Science were systematically searched and nineteen relevant papers were identified. To be included for review studies had to assess and analyse expectations in relation to a defined outcome; distinguish between higher and lower expectations; include participants who were aged over 18 and attempting to lose weight or maintaining weight-loss; be published within a peer-reviewed journal between 1990 and 2010. Findings were analysed qualitatively.

Results: Findings were largely contradictory. The relationship between expectations and weight-loss appears to change over time, with it becoming stronger as duration of weight-loss increases, such that higher expectations result in higher weight-loss. The relationships between expectations with psychological outcome, satisfaction and

attrition are less clear but suggest that these factors to be important in understanding the relationship between weight-loss and expectations.

Conclusions: Through reviewing literature regarding the relationships between expectations with various outcomes a number of contradictions emerged. Exploration of these contradictions enabled an understanding to be developed of the complex relationship between expectations and weight-loss treatment outcome. Proposed theoretical models attempting to understand this relationship within a wider framework are discussed, as are a number of areas for further research.

1. Introduction

There is an assumption within the literature that high ('unrealistic') expectations regarding weight-loss treatment outcome are in some way detrimental, resulting in attempts to develop programmes to reduce expectations. One such study found that it was possible to reduce expectations during a 40-week modified-cognitive behavioural intervention, however this had little impact upon weight-loss maintenance at one-year follow-up (Foster et al., 2004). Whilst focus has been upon expectations being negative, a systematic literature review looking at the impact of expectations upon weight-loss treatment outcomes has yet to be undertaken.

Research suggests that traditional weight-loss methods (such as diet and exercise) result in a 5-10% reduction in initial body weight (Wing, 2002; Wadden & Foster, 2000): considerably less than the 20-34% deemed reasonable (Fabricatore, et al., 2007; Wadden et al., 2003), and the 17% perceived as 'disappointing' (Foster, Wadden, Vogt, & Brewer, 1997), by those undergoing treatments. Whilst expectations tend to relate to physically ideal body weight (Foster et al., 2004; Miller and Eggert, 1992), in light of what can reasonably be achieved, these expectations are often perceived as unrealistic. Additionally, when these goals are achieved they tend not to be maintained with most, or all, initial weight being regained (Wadden, Sarwer, & Berkowitz, 1999). A similar trend has been reported for those undergoing weight-loss surgeries, with patients seeking losses between 38 - 47.6% of initial body weight (Wee, Jones, Davis, Bourland, & Hamel, 2006; Wadden, et al., 2006): surgery results in approximately 35% reduction (Buchwald, et al., 2004). In a survey of 194 mental health professionals, problematic expectations/rationale for surgery, and unrealistic weight-loss expectations were considered a clear contraindication to bariatric surgery by 24.2% and18% of the sample respectively (Fabricatore, Crerand, Wadden, Sarwer, & Krasucki, 2006). It was unclear

what rationale participants based this upon nor what was meant by ‘problematic’ or ‘unrealistic’ expectations.

The impact of unrealistic goals upon behaviour initiation and maintenance in weight-loss has been discussed from several viewpoints. The cognitive-behavioural approach suggests that continually striving for ‘unrealistic’ goals can challenge weight-loss by undermining what has been achieved (Cooper & Fairburn, 2001). Additionally, it is proposed that this process negatively impacts upon the ability to use effective weight maintenance strategies, potentially resulting in frustration and disengagement from ongoing maintenance (Cooper & Fairburn, 2001; Cervone, Jiwani, and Wood, 1991). In support of this, Byrne, Cooper and Fairburn, (2003), found that obese women reaching weight-loss goals maintained this loss to a greater extent than those not, suggesting goal achievement is important.

High expectations could, however, act as an important motivator in both making the initial decision to lose weight and in performing necessary weight-loss behaviours. This is because if expectations regarding weight-loss outcome were low then engagement in the decision-making process to lose weight may not occur. This is suggested to be important within the transtheoretical model of behaviour change (Prochaska, DiClemente, and Norcross, 1992) where in the contemplation stage an individual considers the benefits and disadvantages associated with behaviour change.

One model of behaviour change links these differing views by suggesting that different beliefs govern behaviour initiation and maintenance. Rothman (2000) proposes that high outcome expectations serve to motivate behaviour change but it is satisfaction with outcome that is paramount in weight-loss maintenance. Byrne et al., (2003), found that, regardless of whether initial goals had been achieved, weight-loss maintainers reported more satisfaction with outcome than those regaining weight. Another factor that might

be important is thinking style as it was found that those regaining weight displayed a more dichotomous thinking style than weight-loss maintainers (Byrne et al., 2003). This might suggest that maintainers are able to be more flexible in their goals and so feel satisfaction with outcome even if it differs from pre-conceptions, in contrast to those regaining weight.

Much research seems to be based on the assumption that high expectations regarding weight-loss treatment outcomes are detrimental. Additionally, bariatric candidates may be refused surgery on this basis. No review has been identified in this area and findings from research appear variable.

Consequently, a systematic literature review was undertaken to address the question: what impact do pre-treatment weight-related expectations regarding outcome have upon actual outcome?

2. Method

2.1 Search Strategy

An initial search using the term [Expect*] with [weight loss] was conducted using PsycInfo to obtain an overview of available literature. 106 peer-reviewed articles with participants aged 18 and over were retrieved and following review of titles and abstracts, further searches combining the terms ‘weight loss goals’, and ‘weight loss expect*’, with ‘outcome’, ‘maintenance’, ‘relapse’, and ‘regain’, were conducted. The electronic databases PsycInfo, Medline, and Web of Science were used in undertaking searches (accessed in March 2010 and June 2010). Publication bias was reduced by hand-searching the references of obtained studies and contacting expert researchers in the field for advice regarding additional search terms and articles. However, it should be kept in mind that there may have been some degree of publication bias introduced in

that only papers published in peer-reviewed journals were included within this review. Figure 1 illustrates the search process.

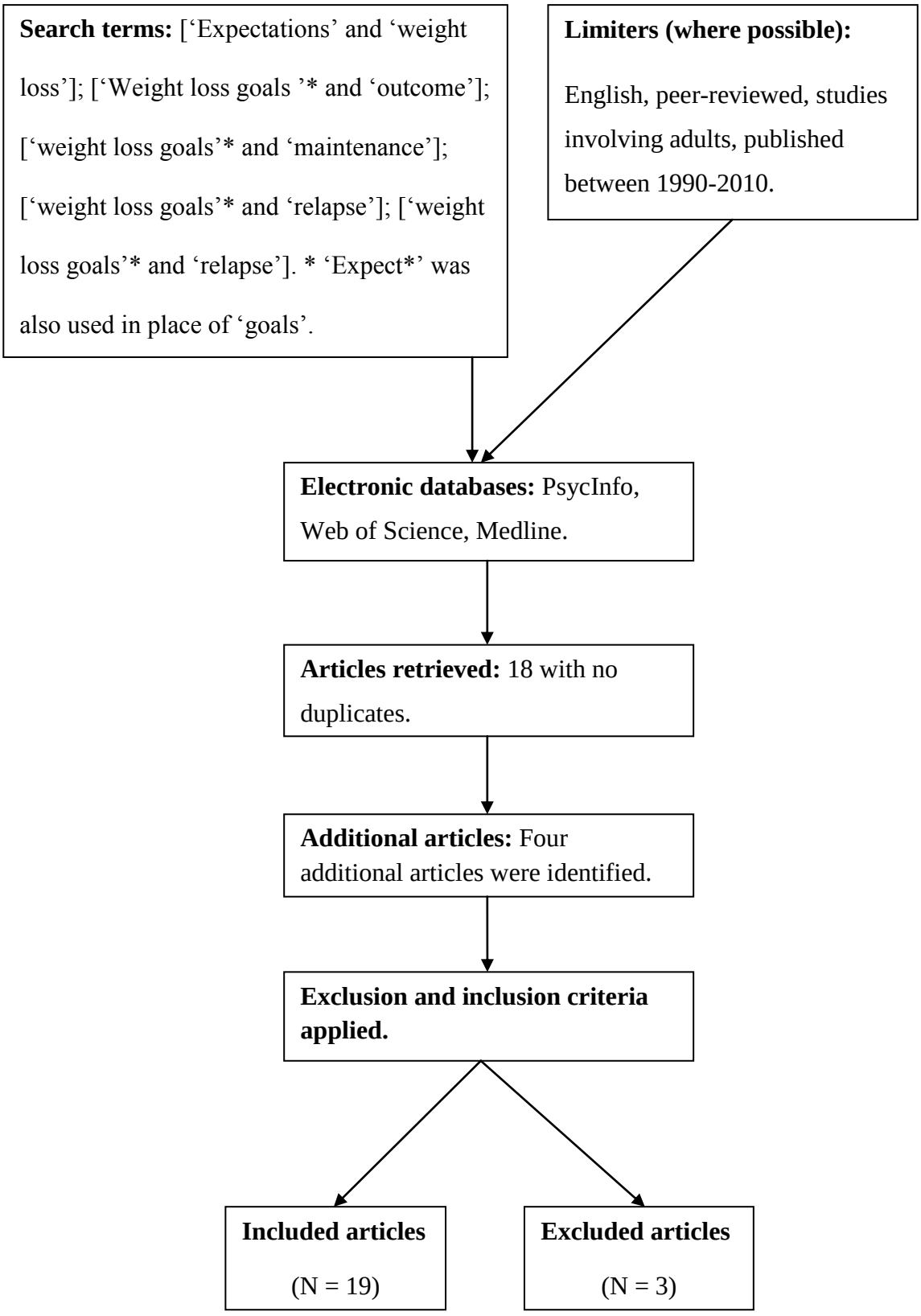


Figure 1. Flowchart of article selection process.

2.2 Note on definitions

In this study the term ‘expectations’ refers to beliefs that people hold around the most likely outcome following weight-loss treatment. It is important to consider whether expectations differ from goals and hopes regarding outcome. ‘Goals’ refer to some defined outcome that is sought. Within this review goals and expectations will be used interchangeably as within the literature it seems that this has largely been the case. ‘Hope’ is more elusive as it can refer to fantasies and, whilst someone may wish to experience particular outcomes, this does not necessarily mean they expect this to occur. Thus in this review there is a distinction between expectations/goals and hopes.

However, this distinction is not straight-forward because a measure used by many studies included within this review is Part II of the ‘Goals and Dream Weights Questionnaire’ (GRWQ; Foster et al., 1997). Whilst Part I assesses weight goals, Part II assesses four weight-loss domains (‘dream’; ‘happy’; ‘acceptable’; and ‘disappointed’). For specific details of this measure see Foster et al., (1997) in Table 1. It is debateable whether expectations are being assessed with Part II of this measure or another construct. However, studies using it have been included within this review as they state that they are measuring expectations. Thus it is important that these studies be included and discussed further.

2.3 Study Selection

To be included within the review, studies had to meet the following inclusion criteria: (1) expectations were assessed and analysed as part of the investigation with regard to a defined outcome; (2) studies distinguished between level of expectations (3) participants were attempting to lose weight or maintaining weight-loss; (4) participants were aged 18 and over; (5) studies were published in a peer-reviewed journal between 1990 and 2010. Articles published before 1990 were excluded because these generally

reflected more preliminary research within this area. Within some of these studies important details, such as gender and age of participants, were not made clear which made interpretation of results difficult. Case studies, review studies, and articles not published in English were excluded.

Excluded articles

One article meeting inclusion criteria was excluded from analysis (Wadden, Berkowitz, Sarwer, Prus-Wisniewski, & Steinberg, 2001) due to data from this study being re-published at a later date and providing more relevant information to the question under review (Wadden et al., 2003), thus including it would have produced replication. A further two studies were excluded after being identified as potentially relevant (Byrne et al., 2003; Carels et al., 2005). Byrne et al., (2003) qualitatively explored differences between people maintaining weight-loss and those regaining weight. However, whilst weight goals were explored there was no indication of whether initial goals had been higher or lower between groups. Carels et al., (2005), assessed outcome expectancies in the form of responses to statements such as, 'I have confidence in meeting my weight loss goals', but at no point were specific goals ascertained.

2.4 Quality Assessment

Downs and Black's quality checklist (1998) was used to assess the quality of articles. It was adapted by the author (RC) to take into account the nature of the studies under review (see Appendix 4.1). Each article was rated by two independent raters using this measure which assesses various study aspects, including validity, measures used, and participant characteristics. Studies were not excluded on the basis of quality: rather this analysis served to provide additional information about studies. Cohen's kappa indicated that inter-rater reliability was high at 0.90. The quality assessment ratings for

each study can be seen in Table 1. The highest rating available was 20 and as can be seen all studies were of fairly high quality.

3. Results

In total, nineteen studies met the inclusion criteria (Ames et al., 2005; Carels, Cacciapaglia, Douglass, Rydin, & O'Brien, 2003; Dalle Grave, Calugi, 2005; Dalle Grave, Melchionda, 2005; Fabricatore et al., 2007; Finch et al., 2005; Foster et al., 1997; Gorin et al., 2007; Jeffery, Mayer & Wing, 1998; Lanyon & Maxwell, 2007; Lanyon, Maxwell & Kraft, 2009; Linde, Jeffery, Finch, Ng, & Rothman, 2004; Linde, Jeffery, Levy, Pronk, & Boyle, 2005; Oettingen and Wadden, 1990; Teixeira et al., 2002; Teixeira et al., 2004; Wadden et al., 2003; White, Masheb, Rothschild, Burke-Martindale, & Grilo, 2007; Zijlstra, Larsen, de Ridder, van Ramshorst, & Geenen, 2009).

3.1. Description of studies

In description of studies the Body Mass Index (BMI) classifications of participants and gender will be discussed as literature suggests these to be important in weight-related outcomes. Sample size ranged from 25 (Oettingen and Wadden, 1990) to 1801 (Linde et al., 2005)

BMI

Seven studies included participants with BMI's between 25 and 39.9 suggesting them to be overweight or obese (Ames et al., 2005; Lanyon, et al., 2009; Gorin et al., 2007; Jeffery et al., 1998; Linde et al., 2005; Teixeira et al., 2002; Teixeira et al., 2004). Two studies included participants with BMI's ranging between 25 to over 40 suggesting them to be overweight, obese, or morbidly obese (Finch et al., 2005; Linde et al., 2004); one study included participants with BMI's between 30 to 39.9, suggesting them to be

obese (Oettingen and Wadden, 1990); nine studies included participants with BMI's from 30 upwards, suggesting them to be obese and morbidly obese (Carels et al., 2003; Fabricatore et al., 2007; Foster et al., 1997; Dalle Grave, Calugi, et al., 2005; Dalle Grave, Melchionda, et al., 2005; Wadden et al., 2003; White et al., 2007; Lanyon & Maxwell, 2007; Zijlstra et al., 2009).

Gender

Eight studies included only females (Ames et al., 2005; Carels et al., 2003; Foster et al., 1997; Linde et al., 2004; Oettingen and Wadden, 1990; Teixeira et al., 2002; Teixeira et al., 2004; Wadden et al., 2003); eleven studies included both females and males (Dalle Grave, Calugi, et al., 2005; Dalle Grave, Melchionda, et al., 2005; Fabricatore et al., 2007; Finch et al., 2005; Gorin et al., 2007; Jeffery et al., 1998; Lanyon & Maxwell, 2007; Lanyon, Maxwell & Karft, 2009; Linde et al., 2005; White et al., 2007; Zijlstra et al., 2009).

Findings have been grouped according to the various outcomes they were investigating. Specific details of studies can be seen in Table 1 and details of weight-loss treatments in Table 2.

3.2 Weight-loss

Sixteen studies explored initial expectations with regard to weight-loss. However, the time points over which they examined this varied. Results are therefore separated into short-term, (weight-loss up to six months after treatment start), mid-term, (weight-loss after six-months and up to twelve-months after treatment start), and longer-term (weight-loss occurring more than twelve-months after treatment start) weight-loss, and weight regain and maintenance.

3.2a Short-term weight-loss

Overall, findings regarding the association between initial expectations and short-term weight-loss are mixed. Whilst some studies suggest a tentative relationship between expectations and weight-loss, other studies have found no association.

Two studies found higher expectations to be related to reduced weight-loss (Teixeira et al., 2002; Carels et al., 2003). However, there are features of both of these studies which should be considered. Teixeira et al., (2002), included all participants within analyses, including those lost to attrition, using the Last-Observation-Carried-Forward (LOCF) method. Limitations associated with this need to be kept in mind, as no significant association was found when only treatment completers were included in analyses. Additionally, Part II of the GRWQ (Foster et al., 1997) was used and, as previously discussed, it is debateable as to whether this provides a valid measure of expectations. Carels et al., (2003), assessed participants' expectations regarding how successful they felt the programme would be, which may have been interpreted in varying ways.

In contrast, two studies found that higher expectations were significantly associated with increased weight-loss. Finch et al., (2005) sought to manipulate expectations experimentally by placing participants into treatment groups emphasising an 'optimistic' message or a 'balanced' message. Whilst no significant difference in expectations or weight-loss was found between groups, when controlling for group, there was a significant association between expectations at week four and weight-loss at week eight. One limitation is that they did not report associations between expectations and weight-loss for the overall sample for other time-points. Fabricatore et al., (2007), also found a positive relationship between expectations and weight-loss in one treatment group (brief-therapy-plus-drug) but found no association within the overall sample. Questions used to assess expectations in this study appear to have good face validity

and the added strength that they may have enabled participants to ground expectations within past weight-loss experiences.

A number of studies have not found any relationship between initial expectations and short-term weight-loss. Oettingen and Wadden (1991) failed to find a significant association within their small sample of females. This finding has been replicated in a larger female sample (Linde et al., 2004), and within a bariatric population (White et al., 2007). However, it should be noted that weight-loss tends to occur rapidly following surgery and so expectations may have little impact upon short-term weight-loss.

Wadden et al., (2003), using the same questions to assess expectations as used by Fabricatore et al., (2007), found no significant association between expectations and weight-loss at various time-points. It should be noted that the LOCF method was used to account for attrition. Ames et al., (2005), compared two treatment approaches, one of which focused upon expectation change. Whilst the two groups differed in the realism of their expectations, as measured by Part II of the GRWQ (Foster et al., 1997), there was equivalent weight-loss for both groups. Jeffery et al., (1997), also failed to find an association between desired and actual weight-loss. However, it is unclear at what time-point initial weight-loss was measured. Additionally, the authors suggest that they are measuring weight-loss goals, but the question used in assessing these could be measuring hopes that participants do not expect to achieve.

3.2b Mid-term weight-loss

Overall, findings are again mixed with regard to the relationship between expectations and mid-term weight-loss. Interestingly, the relationship between these variables has been found to change over time (Oettingen & Wadden, 1991; White et al., 2007).

Findings remained consistent one-year after treatment commencement within Fabricatore et al.'s study (2007). Oettingen and Wadden, (1991), found that, in contrast to earlier findings, one-year after treatment commencement there was a significant relationship between higher expectations and greater weight-loss. White et al., (2007), discovered a similar effect in their sample of bariatric patients one year post-operatively for 'Acceptable', 'Dream', and 'Happy' weights, though findings were only marginally significant for 'Dream' and 'Happy' weights. The authors note that findings should be interpreted cautiously given the number of analyses done.

Ames et al. (2005), and Wadden et al. (2003), continued to find no association between expectations and one-year weight-loss. Linde et al., (2005) sought to clarify the relationship between goals and weight-loss with a large sample of men and women. At 12-months they found no significant association between goals and weight-loss, though they did for 'ideal' weight for both men and women. Within the bariatric literature, and in contrast to White et al., (2007), Zijlstra et al. (2009) found that weight-loss one-year post-operatively was not related to pre-operative expectations of psychosocial outcome. Additionally, Lanyon and Maxwell (2007), in exploring predictors of outcome after gastric bypass surgery, failed to report an association between pre-operative expectations of self-confidence, self-esteem, and social life, with weight-loss one-year post-operatively. It should be noted that within this study the authors do not report that they are measuring expectations: it is only in a later paper that they discuss this and how, within the earlier study, a positive but weak correlation was found between expectations and weight-loss (Lanyon, et al., 2009). It is interesting to note that the bariatric studies finding no association explored psychosocial expectations whilst White et al. (2007) explored expectations of weight-loss and found an association.

3.2c Long-term weight-loss

Overall, findings are mixed though the majority of research appears to suggest that higher expectations are associated with greater weight-loss. Again the relationship between these variables seems to change with time (Lanyon & Maxwell 2007; Lanyon, et al., 2009).

Linde et al., (2004), explored the relationship between goal and dream BMI with weight-loss at 18-months in a large female sample. Whilst goal BMI was not associated with greater weight-loss, findings indicated that a higher dream BMI was. Almost in contrast to this, Linde et al., (2005), found an association between weight-loss expectations (which may approximate to goal BMI) and weight-loss at 24-months. However, this relationship was only observed in females. Lanyon, et al. (2009) found that, in gastric bypass patients, higher pre-operative expectations regarding self-confidence, self-esteem, and social life, were significantly related to weight-loss three years post-operatively.

In contrast, Teixeira et al., (2004), found that as expectations (specifically regarding 'happy' weight) increased, weight-loss achieved at 16-months reduced. The LOCF method was used in these analyses and so results should be interpreted cautiously. Finch et al., (2005), also found that higher weight-loss expectations, as measured at week four of an eight-week programme, were significantly associated with increased weight at 18-months, though this finding was no longer significant following further analyses.

Jeffery et al., (1997), found weight-loss goals and weight-loss at 30-months to be unrelated. Interestingly, whilst not significant, those with mid-range expectations tended to lose less weight than those with lower or higher expectations. Again, the measure used should be considered in interpreting these findings.

3.2d Weight regain and weight-loss maintenance

Overall, few studies have explored the relationship between expectations and weight regain and longer-term maintenance. These have consistently found there to be no relationship between expectations and regain or maintenance.

Ames et al., (2005), explored the relationship between weight regain 12-months after treatment commencement and expectations within their study groups. Whilst one group held more realistic expectations in comparison to the other, there were weight regains in both, which did not differ significantly between groups. Fabricatore et al., (2007), found that weight regain did not differ significantly between participants achieving expected weight-losses at 6-months and those not. Additionally, controlling for weight-loss at 6-months, there was no significant correlation between extent to which expectations were met at 6-months and weight change between 6 and 12 months. The findings of Zijlstra et al., (2009), support both of these studies as they found that, within a bariatric population one-year post-operatively, weight-loss maintenance was not correlated with pre-operative psychosocial expectations except for expectations of improved social networks. Additionally, unfulfilled expectations did not have an impact upon weight-loss maintenance. A limitation of all these studies is that follow-up was up to 12-months, which may not be long enough to define weight as being maintained.

Two studies have explored the impact of expectations upon longer-term maintenance and regain. Jeffery et al., (1998), found that weight regain 30-months after treatment commencement, did not differ as a function of initial desired weight-loss. Gorin et al. (2007), recruited participants who had lost at least 10% of initial body weight within 2 years prior to study start. They found that expected psychosocial benefits of weight-loss were not significantly related to weight-change at 6- or 12-month follow-up. Additionally, the discrepancy between expected and actual benefits experienced was not

significantly related to weight-loss at these time-points. However, one limitation was that they asked participants to retrospectively rate the benefits they had expected from weight-loss, and so these ratings are likely to be affected by bias.

3.3 Psychological factors

In comparison to weight-loss, fewer studies have explored relationships between initial expectations and psychological outcomes, therefore these studies will be examined together rather than being separated into different time-periods.

Five studies explored the relationship between expectations and psychological outcome. The majority failed to find any association. However, the findings of two studies (Ames et al., 2005; Gorin et al., 2007) suggest that further research may be beneficial to provide clarification.

Jeffery et al., (1998), found no association between depressive symptomology and initial expectations at a 30-month follow-up. However, no baseline measure of mood was taken so findings are questionable. Additionally, the question used to assess expectations may have been ambiguously interpreted by participants and so well-being may not have been affected by large goals/expectations as these may have been anticipated to be achieved in the future. Fabricatore et al., (2007), found that achieving expectations was not associated with motivation to continue weight-loss. Additionally, depressive symptoms reduced significantly from baseline to week 52, regardless of meeting expectations. Within the bariatric literature, White et al., (2007), found that initial goal weights were unrelated to improvement in depressive symptomology, body image dissatisfaction, or self-esteem.

Mixed results were found by Ames et al., (2005), within their two treatment groups, one of which had higher expectations. At the end of treatment, the group holding ‘more

realistic' expectations had significant improvements in self-esteem as compared with the group holding higher expectations. However, both groups reported significantly improved body areas satisfaction, and equivalent levels of depressive symptomology. At one-year follow-up, both groups reported increased body areas satisfaction, with only the 'more realistic' group reporting increased satisfaction with overall appearance. Both groups reported increases in self-esteem but this only reached significance for the group with higher expectations. Reduction in depressive symptomology was more significant for the 'more realistic' group, with reductions being marginally significant for the other group. Gorin et al., (2007) found that having expectations exceeding the actual benefits experienced was associated with reduced motivation to maintain current weight, and more depressive symptoms. However, expectations were assessed retrospectively.

3.4 Satisfaction

Five studies explored the relationship between expectations and outcome satisfaction. Overall, this relationship is unclear. Research looking at discrepancies between actual weight-loss and expected weight-loss suggests that unfulfilled expectations negatively impact upon satisfaction. However, the findings of two studies question this (Gorin et al., 2007; Finch et al., 2005).

Foster et al., (1997), explored the relationship between expectations and weight-loss satisfaction and found that greater discrepancy between actual weight and initial goal and defined weights was related to lower satisfaction. Wadden et al. (2003) also found weight-loss satisfaction to be significantly related to percentage of expected weight-loss achieved. This relationship was not significant at weeks 12 or 24. In agreement with these findings, Fabricatore et al., (2007), found a significant positive association between extent to which expectations were met at 6-months and satisfaction with

weight-loss and associated changes. All of these studies explored the relationship between the extent to which expectations were met and level of satisfaction, providing some idea of the impact of unfulfilled expectations upon outcome.

Gorin et al., (2007), also explored the relationship between the extent to which expectations were fulfilled and weight satisfaction. They found no association between either actual level of benefits achieved or the discrepancy between expectations and experience. Finch et al. (2005), whilst finding an association between expectations at week four of treatment and satisfaction in various domains at week eight, failed to find an association at other time-points.

3.5 Attrition/attendance

Eight studies explored the relationship between expectations and attrition/attendance. Overall, findings are mixed though the majority of studies suggest that higher expectations are related to attrition. However, limitations of studies and conflicting findings imply that this relationship is unclear.

Teixeira et al., (2004), found that non-completers over a 16-month period had higher weight-loss expectations and higher 'dream' weights. They also found that participants' 'happy' weight was one variable predictive of attrition. Dalle Grave, Calugi, et al., (2005), and Dalle Grave, Melchionda et al., (2005), found that expected one-year BMI loss was one of the strongest predictors of attrition both at 12 months (Dalle Grave, Calugi, et al., 2005) and 36 months (Dalle Grave, Melchionda et al., 2005). Additionally, as one-year expected BMI loss increased, time taken to discontinue decreased (Dalle Grave, Melchionda, et al., 2005). However, in both studies a large attrition rate was observed shortly after study commencement so other factors may account for findings.

In contrast, Oettingen and Wadden (1991), found that higher expectations were related to better attendance and lower attrition rate. However, within this study higher expectations were correlated with self-efficacy. Thus someone with lower expectations may have reduced attendance for other reasons.

Foster et al., (1997), found no association between defined and goal weights and treatment completion. This was replicated with regard to attendance by both Linde et al., (2004), in face-to-face sessions, and Linde et al., (2005), in mail or telephone sessions. Fabricatore et al., (2007), failed to find a relationship between extent to which expectations were achieved and attrition.

4. Discussion

In reviewing the literature around impact of pre-treatment weight-loss expectations upon actual outcome, several interesting findings have emerged. Firstly, literature exploring initial expectations in relation to weight-loss generally suggests that this relationship is changeable over time. Up to, and including, a year after treatment commencement, findings indicate that this relationship is mixed with some studies suggesting there to be an association and others finding no association. However, more than one year after treatment commencement this relationship becomes clearer with higher expectations appearing to be associated with higher weight-loss. Nonetheless, in considering weight regain and maintenance it is apparent that this relationship again becomes unclear, with the majority of research suggesting no relationship between expectations and weight regain and maintenance. This change in association may be due to a number of the studies investigating weight regain and maintenance doing so after just one-year, which may not be long enough to classify weight as being maintained.

Secondly, a weak association is suggested between initial expectations and psychological outcome, which varies depending on the specific factor under assessment.

Thirdly, the relationship between initial expectations and level of satisfaction is unclear with some studies suggesting there is no association, whilst others indicate that as discrepancy between expected and achieved outcome increases, level of satisfaction reduces. Finally, attrition/attendance has been explored in relation to initial expectations and this relationship is also unclear.

The relationships found between initial expectations with both weight-loss and psychological outcome appear contrary to what is suggested by cognitive behavioural therapy for weight-loss (Cooper and Fairburn, 2002). Findings from this review suggest there is more to the process of weight-loss and maintenance and that high expectations may serve as a powerful motivator to achieve more than realistically expected. Additionally, rather than negatively impacting upon psychological status, high expectations do not necessarily affect level of motivation to continue with weight-loss and maintenance. However, relationships between initial expectations with both level of satisfaction and attrition are unclear and are important to consider within weight-loss and maintenance. Satisfaction with outcome is suggested to be important in both weight-loss (Finch et al., 2005), and maintenance (Byrne et al., 2003). Likewise, discontinuing weight-loss treatment is considered to be a contraindication to weight-loss and maintenance, though further research is needed. Findings from this review appear to agree with Rothman's (2000) proposal that different beliefs govern behaviour initiation and maintenance. Thus whilst high expectations may provide an initial incentive to undertake weight-loss, when progress is reviewed it is level of satisfaction that may then be important in continuing weight-loss behaviours.

From reviewing the literature and looking at a number of outcomes other than just weight, it is suggested that expectations are not necessarily important with regard to weight-loss but rather their impact upon other factors. Indeed, Jeffery et al., (1998), found that individuals holding the lowest or highest expectations lost equivalent

amounts of weight whereas those holding mid-expectations lost less. This suggests that expectations are not the most important factor in weight-loss as there should be a trend for weight-loss to increase gradually as expectations reduce. Figure 2 illustrates a suggested relationship that initial expectations may have with other factors covered within this review.

It is proposed that initial expectations share some relationship with weight-loss and maintenance as some papers found associations. However, relationships also emerged between expectations with both level of satisfaction and attrition/attendance. From Figure 2 it is suggested that it is the impact that expectations have upon these factors

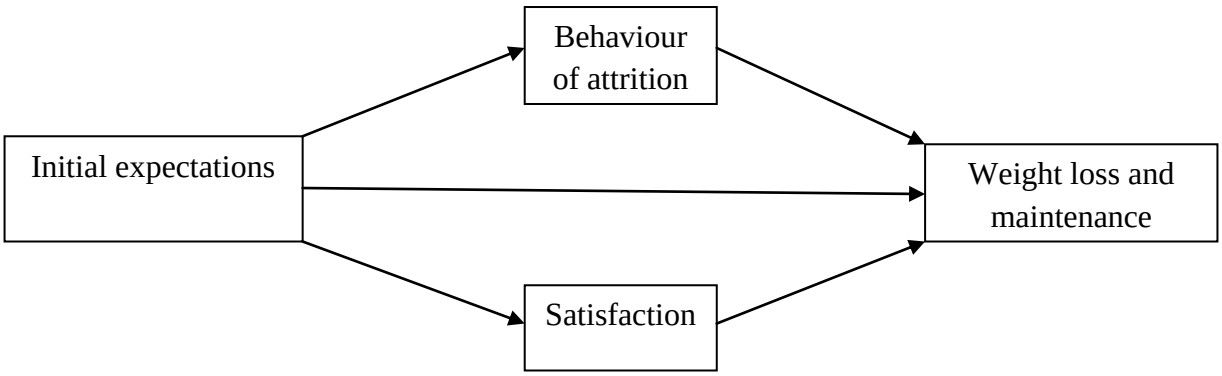


Figure 2. Figure to illustrate the proposed relationships between expectations and other factors.

that then act as mediators in the relationship between expectations and weight-loss. There is an assumption that attrition is negative, however it should be considered that this may be indicative of an individual believing they can achieve weight-loss alone, resulting in better outcome.

From considering other literature around weight-loss and maintenance, two additional factors could be added to this understanding: self-efficacy and thinking style. Figure 3 illustrates how these factors might interact with the other factors.

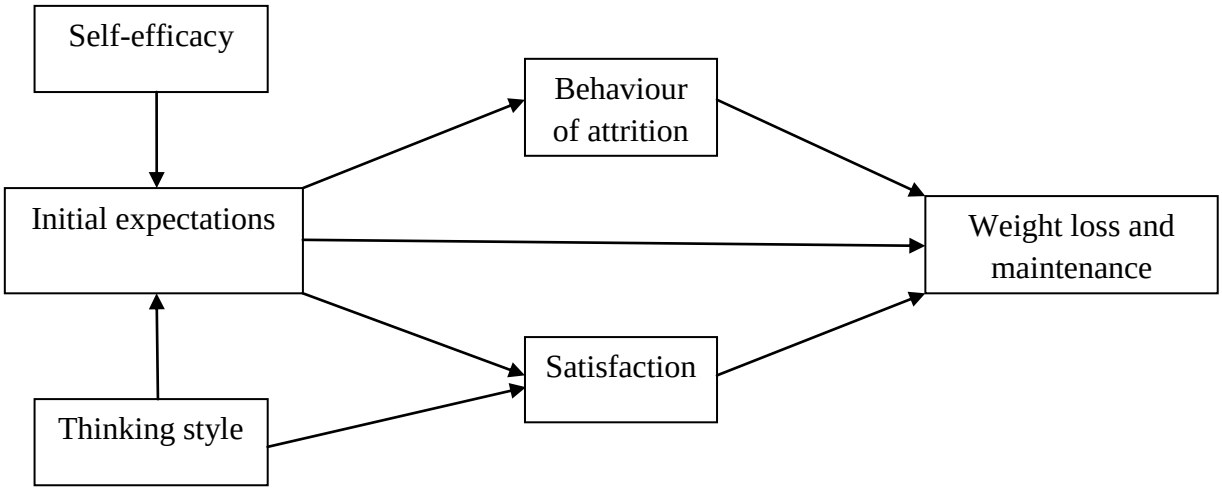


Figure 3. Figure to illustrate the proposed relationship between expectations and other factors.

Self-efficacy is an individual's confidence in their ability to perform specific behaviours when faced with perceived difficulties or challenging situations (Bandura,1977). Within Oettingen and Wadden's (1990) study, expectations were highly correlated with self-efficacy and they found a positive association between expectations and programme attendance. This could suggest that if people have high expectations but low self-efficacy then this may affect performance of weight-loss related behaviours, such as treatment attendance. This is supported by Fabricatore et al. (2007), who found that higher expectations were related to more weight-loss for participants receiving brief therapy alongside drug treatment. In contrast to the other groups they were given the information they needed and could take control of their own treatment whilst in the other groups there was higher professional involvement. This could suggest that people in the brief therapy group felt they had the skills to help themselves and this was a powerful factor in outcome.

From one of the excluded studies (Byrne et al., 2003), thinking style was suggested as important in weight-loss and maintenance, such that individuals with more dichotomous thinking styles tended to regain weight in comparison to those with more flexible thinking styles. Theoretically it could be suggested that thinking style is important in

moderating expectations. However, if thinking style is too rigid expectations may remain unchanged and be continually strived for, potentially leading to decreased satisfaction and negatively impacting upon weight-loss and maintenance (Cooper and Fairburn, 2002). However, this is not necessarily the case as Gorin et al. (2007) found that, despite dissatisfaction with outcome, this was unassociated with weight. Considering the information in Figure 3, further research exploring the complexity that may exist in the relationships between expectations and weight-loss is required

From this review an interesting point has emerged with regard to what is meant by 'expectations'. This is a hard concept to define precisely and has resulted in studies interpreting this differently, making comparison difficult. Some studies appeared to be measuring a construct closer to 'wishful thinking' (Ryden at al., 2001), which might be expected to differ from expectations. However, it is interesting to consider that some studies have found concepts such as 'dream BMI' to be associated with greater weight-loss (Linde, et al., 2004), suggesting that further research may be valuable.

This review has highlighted limitations in the current literature. Firstly, studies exploring expectations with regard to outcomes specifically in men were not identified and so further research would be beneficial in this area. Secondly, measures used to assess expectations may not be valid, meaning study findings need to be cautiously interpreted. Finally, Lanyon and Maxwell (2007) did not specifically report that they were measuring expectations and it was only in a later study that this was discussed (Lanyon, et al., 2009). It is understood that this was because a large number of variables were measured and so in reporting findings only those that were significant would be relevant to report. However, this means important information is lost and it becomes difficult to develop a clear picture about whether expectations are important because only significant findings are reported.

This review may have been limited by inclusion and exclusion criteria, meaning relevant studies were not considered. However, in systematically collating the included studies, a number of contradictions within the literature have been identified. Through exploring these contradictions further this has enabled development of understanding and highlighted possible areas for future research.

Table 1. Sample characteristics, aims, measures, and relevant findings of papers included within the review.

Authors	Sample characteristics	Main aim and measures	Main outcomes assessed	Relevant findings	Quality Rating
Ames, Perri, Fox, Fallon, De Braganza, Murawski, Pafumi, & Hausenblas (2005)	N = 26 females. Mean age of 21.5 years; mean weight of 84.2kg; mean BMI of 31.1kg/m^2.	To explore the association between expectations and outcome. Measures: ***Expectations.*** Part II of GRWQ[1]. ***Weight***. Calibrated balance beam scale. ***Body image.*** 'Appearance Scale'; 'Body Areas Satisfaction Scale' from Multidimensional Body-Self Relations Questionnaire (Cash, 1994). ***Self-esteem***. 'The Rosenberg Self-Esteem Scale' (Rosenberg, 1965). ***Depression.*** BDI[2].	• Short-term weight-loss. • Mid-term weight-loss. • Weight regain and maintenance. • Psychological factors.	***Weight loss.*** Despite differences in expectations between groups, both groups had equivalent weight reductions. ***Weight gain.*** No association with expectations. ***Psychological.*** There was variable association between expectations and psychosocial outcomes between groups.	19
Carels, Cacciapaglia, Douglass,	N = 44 females. Mean age 54.7years; mean	To explore correlates of outcome in a weight –loss programme. Measures: ***Expectations***. Rated how successful they	• Short-term weight-loss.	***Weight loss.*** Higher expectations of programme success associated with less weight loss.	18

[1] GRWQ is an abbreviation for the 'Goals and Relative Weights Questionnaire' (Foster et al., 1997).
[2] BDI is an abbreviation for the 'Beck Depression Inventory' (Beck, Steer, and Brown, 1996).

Rydin, & O'Brien (2003)	BMI 36.4kg/m^2.	thought programme would be. ***Percentage change in initial body weight.*** Last weight used for discontinuers.			
Dalle Grave, Calugi, Molinari, Petroni, Bondi, Compare, Marchesini, and the QUOVADIS Study Group[3] (2005)	N = 1785 (1393 females). Mean female age 44.8years; mean BMI 38.2kg/m^2. Mean male age 44.0 years; mean BMI 38.0kg/m^2.	Observational study exploring impact of expected 1-year BMI loss on attrition. Measures: ***Expectations***. Expected 1-year weight loss with treatment. ***Attrition***. Medical records examined.	• Attrition/ attendance.	***Attrition.*** Discontinuers had higher expected1-year BMI loss than continuers.	18
Dalle Grave, Melchionda, Calugi, Centis,	N = 1000 (785 females). Mean female age 45.3	Observational study to explore reasons for attrition over 36-months. Measures: ***Expectations.*** Same way as in Dalle	• Attrition/ attendance.	Attrition rate was 58% at 12-months. 15.7% of the initial sample continued treatment to 36-	18

[3] The QUOVADIS Study group is an observational study on the quality of life in obese patients seeking treatment at accredited medical centres throughout Italy.

Tufano, Fatati, Fusco, and Marchesini (2005)	years; mean BMI 37.5kg/m^2; mean male age 45.0 years; mean BMI 36.6kg/m^2.	Grave, Calugi, et al. (2005). ***Attrition***. Medical records examined.		months. ***Attrition.*** Discontinuers had significantly higher expectations regarding 1-year BMI loss than continuers.	
Fabricatore, Wadden, Womble, Sarwer, Berkowitz, Foster, and Brock (2007).	N = 180 (149 females). Mean age 43.8 years; mean weight 106.1kg; mean BMI 37.6 kg/m^2.	To explore relationships between goals and expectations to outcomes. Measures: ***Weight.*** Measured at baseline and all visits. ***Weight loss expectations and goals and weight loss experiences.*** Same questions as used in Wadden et al., (2003). ***Satisfaction***. Satisfaction with changes in different areas assessed. ***Depression.*** BDI. ***Motivation.*** Motivation to continue losing weight rated.	• Short-term weight-loss. • Mid-term weight-loss. • Weight regain and maintenance. • Psychological factors. • Satisfaction. • Attrition/ attendance.	***Weight loss.*** At 6- and 12-months higher expectations were related to higher weight loss for the brief therapy and drug treatment group but not for the full sample. ***Weight regain.*** No association with expectations. ***Attrition.*** No association with expectations. ***Satisfaction.*** The more that expectations met at 6-months, the greater was satisfaction. ***Psychological.*** No association	18

				with expectations.	
Finch, Linde, Jeffery, Rothman, King, & Levy (2005)	N = 349 (86.7% female). Mean age of 46.9 years; mean weight of 93.84kg; mean BMI of 35kg/m^2.	To explore mechanisms underlying aspects of behaviour. Measures: ***Expectations about weight loss outcome.*** How weight loss would affect varied aspects of life. ***Satisfaction with weight loss.*** How satisfied individuals were with weight change given effort exerted. Measured monthly post-treatment. ***Satisfaction with the changes afforded by weight loss.*** Change in several areas of their life following weight loss. ***Weight.*** Measured at baseline, weeks 4-8, at 6- and 18-months. Self-reported after week 8 if not attending follow-up.	• Short-term weight-loss. • Long-term weight-loss. • Satisfaction.	At week 4 the groups significantly differed in expectations; by week 8 this was not significant. ***Weight loss.*** Higher expectations at week 4 significantly associated with lower weight at week 8. Higher expectations at week 4 related to lower 18-month weight loss 18-months. Not significant after further analyses. ***Satisfaction.*** Greater expectations at week 4 associated with greater satisfaction at week 8. No association at other time-points.	17
Foster, Wadden, Vogt,	N = 60 females. Mean age 40.0	To increase understanding of goals and expectations of treatment. Measures:	• Satisfaction. • Attrition/	***Attrition.*** No association with expectations.	18

and Brewer (1997)	years; mean weight 99.1kg; mean BMI 36.3kg/m^2.	***Goal weights.*** Part I of the GRWQ. This asks participants what their goal weight is for the programme. ***Expectations and evaluations.*** Part II of the GRWQ. This asks participants to define (in pounds) four weight loss outcomes: dream ('A weight you would choose if you could weight whatever you wanted'); happy ('not as ideal as the first one...[but one] you would be happy to achieve'); acceptable ('A weight that you would not be particularly happy with, but one that you could accept'); and disappointed ('A weight less than current weight, but one that you could not view as successful in any way'). Rated how satisfied they would be with each of these weights (1 = very dissatisfied; 10 = very satisfied). ***Weight.*** Self-reported.	attendance.	***Satisfaction.*** Greater discrepancy between achieved weight and baseline defined weights, greater dissatisfaction.

		Satisfaction. Satisfaction with weight at end-of treatment rated on a 10-point scale.			
Gorin, Pinto, Tate, Raynor, Fava, and Wing (2007)	N = 314 (81% females). Mean age of 51.3; mean BMI of 28.6kg/m^2. Participants were required to have lost at least 10% of body weight within 2 years prior to study entry.	To explore outcomes of having a weight loss experience that lives up to expectations. Measures: ***Expected and Actual Benefits of Weight loss.*** Assessed retrospectively. Rated expected changes from weight-loss on a variety of items. Actual changes rated on same items. (Foster et al., 1997). ***Satisfaction with current weight.*** 5-point scale. ***Motivation to maintain weight loss.*** Rated on 8-point scale. ***Depression.*** BDI. ***Weight.*** Measured at various time-points.	• Weight regain and maintenance. • Psychological factors. • Satisfaction.	***Psychological.*** Discrepancy between expectations and actual benefits experienced related to lower motivation to maintain weight, and more depressive symptoms. ***Weight change.*** Expected benefits, and discrepancies between expected and actual benefits, not significantly related to weight change at 6- or 12-months. ***Satisfaction.*** Satisfaction with weight not associated with level of benefits achieved or discrepancy between expectations	18

				and experience.	
Jeffery, Mayer, and Wing (1998)	N = 130 (69 men; 61 women). Mean age 38 years; mean weight 90kg; mean BMI 30.9kg/m^2.	To explore the relationship between expectations and weight loss. Measures: ***Desired weight loss.*** 'How much would you like to weigh?'. ***Weight.*** Weighed at various time-points. ***Long-term weight loss.*** Baseline minus 30-month follow-up weight. ***Depression.*** BDI (30-months).	• Short-term weight-loss. • Long-term weight-loss. • Weight regain and maintenance. • Psychological factors.	***Weight loss.*** No association with expectations. ***Long-term weight loss.*** No significant association with expectations. ***Weight regain.*** No association with expectations. ***Psychological.*** No significant association between expectations and depressive symptomology.	16
Lanyon and Maxwell (2007)	N = 131. Mean age 43.1 years; mean pre-operative weight 134kg; 83%	To identify predictors of outcome after gastric bypass surgery. Measures: ***Expectations.***[4] Expectations of improved self-esteem, self-confidence, and social life were measured on three items.	• Mid-term weight-loss.	***Weight loss.*** Positive but insignificant correlation with expectations.	17

[4] No specific reference is made regarding expectations throughout this paper and it is only from a later paper (Lanyon, Maxwell, and Kraft, 2009) that the reader is made aware that expectations were assessed.

	female.	***Weight.*** Not specified.			
Lanyon, Maxwell, and Kraft (2009)	N = 79. Mean age 47.05 years; mean weight 84.41kg; mean BMI 30.18 kg/m^2; 84% female.	To explore predictors of long-term weight loss after gastric bypass surgery. Measures: ***Expectations.*** Data from earlier study used (Lanyon & Maxwell, 2007). ***Weight.*** Self-reported.	• Long-term weight-loss.	***Weight loss.*** Significant correlation with expectations.	18
Linde, Jeffery, Finch, Ng, and Rothman (2004)	N = 302 females. Mean age 46.7; mean BMI 33.9kg/m^2.	To explore relationships between weight goals and outcomes. Measures: ***Goal and Dream Weights.*** Adapted from the GRWQ. Goal and dream (ideal) weight reported. Likelihood that they would reach each goal and maintain it for 1 year rated. ***Weight.*** Assessed at baseline. If self-reported at follow-up then a +2kg correction applied to account for bias.	• Short-term weight-loss. • Long-term weight-loss. • Attrition/ attendance.	***Weight loss.*** No association of goal or dream weight with weight change up to 6 months. Dream weight was significantly associated with weight change at 18-months, such that more unrealistic dream weight was related to greater weight loss. ***Attendance.*** No association with goal or dream weight.	18

		Attendance. Session and follow-up attendance.			
Linde, Jeffery, Levy, Pronk, and Boyle (2005)	N = 1,801 (1293 females). Mean female age of 49.97; mean weight 90.19kg; mean BMI 33.86kg/m^2. Mean male age 54.14; Mean weight 104.39kg; Mean baseline BMI 33.10kg/m^2.	To explore the relationship between weight goals and outcomes. Measures: ***Weight goals***. Goals were how much weight participants expected to lose in the programme. Ideal weight loss was how much participants would like to weigh. ***Attendance***. Total completed sessions. ***Weight.*** Measured at baseline, self-reported at 12 months, measured at 24 months. Weight added to self-reported weights to account for bias.	• Mid-term weight-loss. • Long-term weight-loss. • Attrition/ attendance.	***Weight loss.*** No association with expectations at 12-months. Significant association between ideal weight and weight loss at 12-months for both men and women. Significant association with ideal weight at 24-months, for women only: greater weight loss associated with less realistic expectations. ***Attendance.*** No association with initial expectations.	17
Oettingen and Wadden (1991)	N = 25 females. Mean age 39.5 years; mean	To explore expectations and weight loss. Measures: ***Weight goals and expectations.*** How	• Short-term weight-loss. • Mid-term	***Weight loss.*** No association with expectations at week 17. Significant and positive	18

	weight 106.4kg; mean BMI 39.1kg/m^2.	much participants wished to lose in the programme and the likelihood of achieving this. ***Weight.*** Balanced scale.	weight-loss. • Attrition/ attendance.	association at week 52. ***Attendance.*** Significant and positive correlation with expectations.	
Teixeira, Going, Houtkooper, Cussler, Martin, Metcalfe, Finkenthal, Blew, Sardinha, and Lohman (2002)	N = 112 females. Mean age 47.8; 46 had BMI ranged from 24->34.9kg/m^2.	To identify baseline correlates of short-term changes in weight. Measures: ***Weight outcome evaluations.*** Part II of the GRWQ. ***Weight.*** Measured twice to nearest 0.1kg and average used.	• Short-term weight-loss.	***Weight loss.*** More realistic expectations were related to more weight loss using the Last-Observation Carried-Forward (LOCF) method. However, no significant relationship when only continuers included in analyses. 'Acceptable' weight outcome evaluation was significant predictor of group membership.	17
Teixeira, Going, Houtkooper,	N = 158 females. Completers (N =	To identify correlates of 16-month weight-loss. Measures: ***Weight outcome evaluations.*** Part II of	• Long-term weight-loss. • Attrition/	***Weight loss***. More realistic expectations were related to more weight loss using LOCF. 'Happy'	18

Cussler, Metcalfe, Blew, Sardinha, and Lohman (2004)	111) mean age 48.2; mean weight 83.2kg; mean BMI 30.4kg/m^2. Non-completers (N = 47) mean age 47.5; mean weight 87.9kg; mean BMI 32.7kg/m^2.	GRWQ. ***Weight.*** Unspecified (baseline).	attendance.	weight outcome evaluations was one variable that predicted weight loss success. When only completers included in analyses, no significant relationship with weight outcome evaluations. ***Attrition.*** Completers held significantly more realistic expectations for weight loss, including 'dream' weight. When baseline BMI was controlled for results were unchanged. 'Happy' weight outcome evaluations was one variable that predicted attrition.	
Wadden, Womble, Sarwer, Berkowitz,	N = 53 females. Mean age 47.2 years; mean weight 101.3kg;	Secondary aim to explore associations between expectations and outcomes. Measures: ***Weight***. Measured at various time-points.	• Short-term weight-loss. • Mid-term weight-loss.	LOCF method used in analyses involving weight data. ***Weight loss.*** No association with expectations.	18

Clark, and Foster (2003)	mean BMI 37.7kg/m^2.	***Expected weight loss.*** Participants recorded how much weight loss they expected by various time-points. ***Additional weight loss questions.*** How much weight they lost alone; how much lost on formal programmes; largest weight loss; lowest weight as an adult that they had maintained for one year. ***Satisfaction with weight loss***. Participants asked how satisfied they were with achieved weight loss. Rated on a 10-point Likert scale.	• Satisfaction.	***Satisfaction.*** Satisfaction with weight loss at week 52 was positively related to percentage of expected weight loss achieved at this time. No association at weeks 12 or 24.	
White, Masheb, Rothschild, Burke-Martindale, and Grilo (2007)	N = 139 (123 females). Mean age 42.4years; mean BMI 51.79kg/m^2.	To explore relationships between weight goals and outcome. Measures: ***Goal weights.*** Part II of the GRWQ ***Body image.*** 'The Body Shape Questionnaire', (Cooper et al., 1987). ***Depression.*** BDI. ***Self-esteem.*** 'The Rosenberg Self-Esteem	• Short-term weight-loss. • Mid-term weight-loss. • Psychological factors.	***Weight loss.*** No association with expectations at six-months post-operatively. 12-months post-operatively, more unrealistic 'acceptable' weights predicted greater weight loss. Marginally significant associations for	18

		Scale' (Rosenberg, 1979).		'Dream' and 'Happy' weights. ***Psychological.*** No association with expectations.	
Zijlstra, Larsen, de Ridder, van Ramshorst, and Geenen (2009).	N = 91 (77 females). Mean age of 45 years; mean BMI 47kg/m^2.	To explore expectations and outcome following gastric banding. Measures: ***Expected psychosocial state.*** The 'Obesity Psychosocial State Questionnaire' (Larsen et al., 2003).	• Mid-term weight-loss. • Weight regain and maintenance.	***Weight loss.*** No significant association with expectations. ***Weight loss maintenance.*** No association with expectations except with regard to improved social network.	18

Table 2. Information regarding length of study and the method of weight-loss used within reviewed studies.

Authors	Length of treatment/study	Method of weight loss
Ames, Perri, Fox, Fallon, De Braganza, Murawski, Pafumi, & Hausenblas (2005)	Treatment over six-months. Follow-up at 12-months.	Participants received either standardised behavioural or reformulated cognitive behavioural (RCB) weight-loss treatment for 20 sessions over 6-months. Both received the same treatment for the first 10 sessions: low-calorie diet; training in self-monitoring; goal setting; stimulus control; social support; relapse prevention; structured exercise. After 10 sessions, the RCB group focused on developing realistic goals; assumptions around outcome were considered.
Carels, Cacciapaglia, Douglass, Rydin, & O'Brien (2005)	Treatment was over 6-months.	The 6-month weight-loss programme was based on the LEARN program (Brownell, 2000). Random assignation to two groups: one group received weight loss and physical activity intervention; one group received weight loss and physical activity programme, which included self-control skills training.
Dalle Grave, Calugi, Molinari, Petroni, Bondi, Compare, Marchesini, and the QUOVADIS Study Group (2005a)	Observational study over 12-months.	The QUOVADIS study is observational and explores the quality of life in obese patients seeking treatment at medical centres accredited by the Italian Health Service. All centres were expected to treat patients depending on their specific programmes, including dieting, CBT, drugs, and surgery.

Dalle Grave, Melchionda, Calugi, Centis, Tufano, Fatati, Fusco, and Marchesini (2005b)	Observational study over 36-months.	Same as for Dalle Grave, Calugi, et al., (2005).
Fabricatore, Wadden, Womble, Sarwer, Berkowitz, Foster, and Brock (2007).	Treatment was over 12-months.	A balanced-deficit diet of 1200-1500 kcal/day and exercise for 30 minutes per day for a majority of the week was advised for all participants. Four treatment groups: **Sibutramine alone**: Dosage was gradually increased over 8 brief visits with the primary care provider. A leaflet offering advice on eating and activity was given. **Lifestyle Modification alone:** Participants attended weekly group meetings to week 18 and bi-weekly sessions from week 20-40, with follow-up at week 52. Up to 18 weeks, LEARN Program was followed (Brownell, 1998), and subjects completed home tasks. During weeks 20-40, sessions were conducted using the *Weight Maintenance Survival Guide* (Brownell & Rodin, 1990). **Combined Therapy:** Participants received sibutramine and lifestyle modification. **Sibutramine plus Brief Therapy:** Participants received sibutramine and both treatment manuals used in lifestyle modification group. Instructed to do home tasks.
Finch, Linde, Jeffery, Rothman, King, & Levy (2005)	Treatment was over 8-weeks. Follow-up	Participants were randomised to an ‘optimistic’ group or a ‘balanced’ group. Both groups were told they could expect to lose between 1-2lb per week. 8-weekly group

	Up to 18-months.	sessions comprised of a formal presentation and discussion. The first 4 sessions aimed to influence expectations so that participants were either optimistic or balance (seeing both negatives and positives of weight loss). Over sessions 5-8 participants encouraged to implement self-designed weight loss plans. Between sessions they completed condition-specific reinforcement tasks.
Foster, Wadden, Vogt, and Brewer (1997)	Treatment was over 48-weeks.	During the first 16 weeks: very low calorie diet. This was then replaced by a 1500kcal diet. From weeks 22-48 participants' calorie intake depended on desired weight change. Groups of participants met weekly from weeks 1-28 and bi-weekly from weeks 29-48 to undertake a CBT weight control programme. Random assignation to one of four conditions: diet alone; diet plus aerobic training; diet plus strength training; and diet plus aerobic and strength training.
Gorin, Pinto, Tate, Raynor, Fava, and Wing (2007)	The study was over 18-months.	Study intervention was based on a self-regulation approach to weight loss maintenance that emphasised daily weighing, self-reinforcement, and corrective actions for small weight gains. Participants were randomly assigned to intervention delivered either face-to-face, over the Internet, or to a control group receiving newsletters about healthy eating, activity, and weight control.
Jeffery, Mayer, and Wing (1998)	Active treatment	Random assignation to one of four active treatment groups or a no-treatment control

	over 18-months. Follow-up up to 30-months.	group. Active treatment groups received behavioural weight-loss counselling for 18-months and some also received food, incentives, or both, for weight-loss and maintenance. No treatment contact between 18-30 months.
Lanyon and Maxwell (2007)	Follow-up at 12-months.	Gastric bypass surgery.
Lanyon, Maxwell, and Kraft (2009)	Follow-up at 36 months.	Gastric bypass surgery.
Linde, Jeffery, Finch, Ng, and Rothman (2004)	Treatment was over 8-weeks. Follow-up up to 18-months.	Data taken from the Challenge study, a randomised clinical trial evaluating the effects of cognitive interventions designed to influence outcome expectations on weight loss (King et al., 2002). Treatment involved eight weekly group sessions.
Linde, Jeffery, Levy, Pronk, and Boyle (2005)	Treatment was offered up to 24-months. Follow-up up to 24-months.	Participants randomised to mail or telephone intervention, or usual care. Mail and telephone intervention were offered over 2 years but participation largely limited to the first year.
Oettingen and Wadden (1991)	Treatment was over	Random assignation to either a very low calorie diet or a balanced deficit diet . All

	12-months.	participants attended weekly treatment sessions for 52 weeks, focusing on CBT methods of weight control.
Teixeira, Going, Houtkooper, Cussler, Martin, Metcalfe, Finkenthal, Blew, Sardinha, and Lohman (2002)	Treatment was over 4-months.	Weekly sessions in which participants were encouraged to make changes to their lifestyle, gradually reducing calorie intake. CBT strategies used: self-monitoring, self-efficacy enhancement, cognitive restructuring, relapse prevention, problem-solving, stress management, and social support.
Teixeira, Going, Houtkooper, Cussler, Metcalfe, Blew, Sardinha, and Lohman (2004)	Treatment over 4-months. Follow-up up to 16-months.	Same as for Teixeira et al., (2002).
Wadden, Womble, Sarwer, Berkowitz, Clark, and Foster (2003)	Treatment over 12-months.	Random assignation to one of three treatment groups: **Drug-alone:** Brief visits with physician. Instructed to reduce calorie intake and increase exercise. **Medication and lifestyle modification group:** Received medication and attended weekly group sessions for first 20 weeks and monthly sessions from weeks 24-52. Sessions emphasised health benefits and other benefits of modest weight loss. **Combined treatment group**: Same as medication and lifestyle group but over the first 16 weeks individuals followed a very low calorie diet. Benefits of modest weight loss

		discussed regularly. Barriers to losing and maintaining large losses discussed.
White, Masheb, Rothschild, Burke-Martindale, and Grilo (2007)	Follow-up was up to 12-months.	Gastric bypass surgery.
Zijlstra, Larsen, de Ridder, van Ramshorst, and Geenen (2009).	Follow up was up to 24-months.	Laparoscopic adjustable gastric banding.

References

Ames, G.E., Perri, M.G., Fox, L.D., Fallon, E.A., De Braganza, N., Murawski, M.E., Pafumi, L. and Hausenblas, H.A. (2005). Changing weight-loss expectations: A randomized pilot study. *Eating Behaviors, 6,* 259-269.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191-215.

Beck, A. T., Steer, R. A., and Brown, G. K. (1996). Beck depression inventory-second edition manual. The Psychological Corporation: San Antonio.

Brownell, K.D. (1998). *The LEARN Program for Weight Control.* 7th edn. American Health Publishing: Dallas.

Brownell, K. (2000). The LEARN Program for weight management 2000. American Health Publishing: Dallas.

Brownell, K.D. and Rodin, J. (1990). *The Weight Maintenance Survival Guide.* Brownell & Hager: Dallas.

Buchwald, H., Avidor, Y., Braunwald, E., Jensen, M.D., Pories, W., Fahrbach, K. and Schoelles, K. (2004). Bariatric Surgery: A systematic review and meta-analysis. *Journal of the American Medical Association, 292,* 1724-1737.

Byrne, S., Cooper, Z. and Fairburn, C. (2003). Weight maintenance and relapse in obesity: a qualitative study. *International Journal of Obesity, 27,* 955-962.

Carels, R.A., Cacciapaglia, H.M., Douglass, O.M., Rydin, S. and O'Brien, W.H. (2003). The early identification of poor treatment outcome in a women's weight loss program. *Eating Behaviors, 4,* 265-282.

Carels, R.A., Darby, L.A., Rydin, S. Douglass, O.M., Cacciapaglia, H.M. and O'Brien, W.H. (2005). The Relationship between self-monitoring, outcome expectancies, Difficulties with eating and exercise, and physical activity and weight loss outcomes. *Annals of Behavioral Medicine, 30,* 182-90.

Cash, T. F. (1994). The multidimensional body-self relations questionnaire user's manual. Cash: Norfolk.

Cervone, D., Jiwani, N. and Wood, R. (1991). Goal setting and the differential influence of self-regulatory processes on complex decision-making performance. *Journal of Personality and Social Psychology, 61,* 257-266.

Cooper, Z. and Fairburn, C.G. (2001). A new cognitive behavioural approach to the treatment of obesity. *Behaviour Research and Therapy, 39,* 499-511.

Cooper, P.J., Taylor, M.J., and Fairburn, C.G. (1987). The development and validation of the body shape questionnaire. *International Journal of Eating Disorders, 6,* 485-94.

Dalle Grave, D., Calugi, S., Molinari, E., Petroni, M.L., Bondi, M., Compare, A. and Marchesini, G. (2005). Weight loss expectations in obese patients and treatment attrition: An observational multicenter study. *Obesity Research, 13,* 1961-1969.

Dalle Grave, R., Melchionda, N., Calugi, S., Centis, E., Tufano, A., Fatati, G., Fusco, M.A. and Marchesini, G. (2005). Continuous care in the treatment of obesity: an observational multicentre study. *Journal of Internal Medicine, 258,* 265-273.

Downs, S.H. and Black, N. (1998). The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *Journal of Epidemiology and Community Health, 52*, 377-384.

Fabricatore, A.N., Crerand, C.E., Wadden, T.A., Sarwer, D.B. and Krasucki, J.L. (2006). How do mental health professionals evaluate candidates for bariatric surgery? Survey results. *Obesity Surgery, 16*, 567-573.

Fabricatore, A.N., Wadden, T.A., Womble, L.G., Sarwer, D.B., Berkowitz, R.I., Foster, G.D. and Brock, J.R. (2007). The role of patients' expectations and goals in the behavioural and pharmacological treatment of obesity. *International Journal of Obesity, 31*, 1739-1745.

Finch, E.A., Linde, J.A., Jeffery, R.W., Rothman, A.J., King, C.M. and Levy, R.L. (2005). The Effects of Outcome Expectations and Satisfaction on Weight Loss and Maintenance: Correlational and Experimental Analyses – A Randomized Trial. *Health Psychology, 24*, 608-616.

Foster, G.D., Phelan, S., Wadden, T.A., Gill, D., Ermold, J. and Didie, E. (2004). Promoting more modest weight losses: A pilot study. Obesity Research, 12, 1271-1277.

Foster, G.D., Wadden, T.A., Vogt, R.A., and Brewer, G. (1997). What is a reasonable weight loss? patients' expectations and evaluations of obesity treatment outcome. *Journal of Consulting and Clinical Psychology, 65*, 79-85.

Gorin, A.A., Pinto, A.M., Tate, D.F., Raynor, H.A., Fava, J.L. and Wing, R. (2007). Failure to meet weight loss expectations does not impact maintenance in successful weight losers. Obesity, 15, 3086-3090.

Jeffery, R.W., Mayer, R.R. and Wing, R.R. (1998). Are smaller weight losses or more achievable weight loss goals better in the long term for obese patients? *Journal of Consulting and Clinical Psychology, 66,* 641-645.

King, C.M., Rothman, A.J. and Jeffery, R.W. (2002). The challenge study: theory based interventions for smoking and weight loss. *Health Education Research, 17*, 522–30.

Lanyon, R.I. and Maxwell, B.M. (2007). Predictors of outcome after gastric bypass surgery. *Obesity Surgery, 17*, 321-328.

Lanyon, R.I., Maxwell, B.M. and Kraft, A.J. (2009). Prediction of long-term outcome after gastric bypass surgery. *Obesity Surgery, 19*, 439-445.

Larsen, J.K., Geenen, R., van Ramshorst, B., Brand, N., de Wit, P., Stroebe, W., and van Doornen, L.J.P. (2003). Psychosocial functioning before and after laparoscopic adjustable gastric banding: a cross-sectional study. Obesity Surgery, 13, 629–636.

Linde, J. A., Jeffery, R.W., Finch, E.A., Ng, D.M. and Rothman, A.J. (2004). Are Unrealistic Weight Loss Goals Associated with Outcomes for Overweight Women? *Obesity Research, 12,* 569-576.

Linde, J. A., Jeffery, R.W., Levy, R.I., Pronk, N.P. and Boyle, R.G. (2005). Weight loss goals and treatment outcomes among overweight men and women enrolled in a weight loss trial. *International Journal of Obesity, 29,* 1002-1005.

Miller, W. C. and Eggert, K. E. (1992). Weight loss perceptions, characteristics, and expectations of an overweight male and female population. *Medicine, Exercise, Nutrition and Health, 1,* 42-47.

Oettingen, G. and Wadden, T. (1991). Expectation, Fantasy, and Weight Loss: Is the Impact of Positive Thinking Always Positive? *Cognitive Therapy and Research, 15,* 167-175.

Prochaska, J. O., DiClemente, C. C. & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist, 47,* 1102–1114.

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Rothman, A. J. (2000). Toward a theory-based analysis of behavioral maintenance. *Health Psychology, 19,* 64–69.

Ryden, A., Karlsson, J., Persson, L., Sjostrom, L., Taft, C. and Sullivan, M. (2001). Obesity-related coping and distress and relationship to treatment preference. British Journal of Clinical Psychology, 40, 177-188.

Teixeira, P.J., Going, S.B., Houtkooper, L.B., Cussler, E.C., Martin, C.J., Metcalfe, L.L., Finkenthal, N.R., Blew, R.M., Sardinha, L.B. and Lohman, T.G. (2002). Weight loss readiness in middle-aged women: psychosocial predictors of success for behavioral weight reduction. *Journal of Behavioral Medicine, 25*, 499-523.

Teixeira, P.J., Going, S.B., Houtkooper, L.B., Cussler, E.C., Metcalfe, L.L., Blew, R.M., Sardinha, L.B. and Lohman, T.G. (2004). Pretreatment predictors of attrition and

successful weight management in women. *International Journal of Obesity, 28*, 1124-1133.

Wadden, T.A., Berkowitz, R.I., Sarwer, D.B., Prus-Wisniewski, M.D. and Steinberg, C.. (2001). Benefits of Lifestyle Modification in the Pharmacologic Treatment of Obesity. A Randomized Trial. *Archives of Internal Medicine, 161*, 218-227.

Wadden, T.A., Butryn, M.L., Sarwer, D.B., Fabricatore, A.N., Crerand, C.E., Lipschutz, P., Faulconbridge, L., Raper, S.E. and Williams, N.N. (2006). Comparison of Psychosocial Status in Treatment-Seeking Women with Class III vs. Class I–II Obesity. *Obesity, 14*, 90S–98S.

Wadden, T.A. and Foster, G.D. (2000). Behavioral treatment of obesity. *Medical Clinics of North America, 84*, 441-462.

Wadden, T.A., Sarwer, D.B. and Berkowitz, R.I. (1999). Behavioural treatment of the overweight patient. *Balliere's Clinical Endocrinology and Metabolism, 13*, 93-107.

Wadden, T.A., Womble, L.G., Sarwer, D.B., Berkowitz, R.I., Clark, V.L. and Foster, G.D. (2003). Great expectations: "I'm losing 25% of my weight no matter what you say". *Journal of Consulting and Clinical Psychology, 71,* 1084-1089.

Wee, C.C., Jones, D.B., Davis, R.B., Bourland, A.C. and Hamel, M.B. (2006). Understanding patients' value of weight loss and expectations for bariatric surgery. *Obesity Surgery, 16*, 496-500.

White, M.A., Masheb, R.M., Rothschild, B.S., Burke-Martindale, C.H. and Grilo, C.M. (2007). Do patients' unrealistic weight goals have prognostic significance for bariatric surgery? *Obesity Surgery*, *17*, 74-81.

Wing, R.R. (2002). Behavioral weight control. In T.A. Wadden and A.J. Stunkard (Eds.), *Handbook of obesity treatment* (pp. 144-169). New York: Guilford Press.

Zijlstra, H., Larsen, J.K., de Ridder,D.T.D., van Ramshorst, B. and Geenen, R. (2009). Initiation and Maintenance of weight loss after laparoscopic adjustable gastric banding. The role of outcome expectation and satisfaction with the psychosocial outcome. *Obesity Surgery, 19*, 725-31.

Part Two: Empirical Paper

The Relationships between Self-efficacy and Illness Cognitions with Outcomes following Gastric Bypass Surgery.

Department of Clinical Psychology and Psychological Therapies,

Hertford Building, University of Hull, HU6 7RX

R.j.crawford@2007.hull.ac.uk

Rochelle Crawford

July 2010

This paper is written in the format ready for submission to the journal Obesity Surgery. Please see Appendix 2.2 for the Guideline for Authors.

Word count (including references and tables): 10,347

The Relationships between Self-efficacy and Illness Cognitions with Outcomes following Gastric Bypass Surgery.

ROCHELLE CRAWFORD[1], DR LESLEY GLOVER[1] & DR STELLA MORRIS[2]

[1]*Department of Clinical Psychology and Psychological Therapies, the University of Hull, Hull, HU6 7RX, England.* [2]*The Department of Psychological Medicine, Anlaby Road, Hull, HU3 2RT.*

Abstract

Background: Outcome following bariatric surgery is variable, and past research has attempted to identify psychological factors associated with this variability. Self-efficacy and illness cognitions are important in adherence to health-related behaviours in various health conditions. The current study explored associations between outcomes (weight-loss, mental and physical health status, and satisfaction) with illness cognitions and level of perceived self-efficacy. Hypotheses were: firstly, the different outcomes would correlate; secondly, individuals with higher self-efficacy, perceiving their weight as controllable, having serious consequences, and changing due to choices they made would have better outcome.

Methods: Ninety four people (84% female) undergoing gastric bypass surgery between two and six-years prior to study start participated. Self-report measures were completed, including the Illness Perception Questionnaire-Revised adapted for Weight, the Modified Weight Efficacy Lifestyle Questionnaire, the Short-Form 36v2, and a measure designed specifically for this study to measure outcome satisfaction.

Results: All outcome variables were correlated, though this was weak in the case of weight-loss and mental health status. Supporting the hypothesis, individuals perceiving to a lesser extent that their weight changed due to factors outside their control, who had

higher levels of Personal Control and self-efficacy, were found to have better outcome. However, contrary to the hypothesis, individuals perceiving more negative consequences and who attributed weight change to factors such as their own behaviour, had poorer outcome.

Conclusions: Significant predictor variables were identified and some of these were contrary to expectation. In consideration of these findings a number of important clinical, service, and research-related implications were identified.

Key words: Self-efficacy; illness cognitions; psychological factors; gastric bypass surgery; bariatric surgery; outcomes; weight-loss; health status; satisfaction.

Introduction

Obesity is becoming an increasing problem within the United Kingdom with it being estimated that by 2025 47% of males and 28% of females will be obese [1]. Additionally, obesity has been associated with greater morbidity rates and poorer health status than smoking, alcoholism, and poverty [2]. Further, it is associated with debilitating psychosocial consequences, such as low self-esteem and depression [3]. Gastric bypass surgery is a form of bariatric or weight-loss surgery. Weight-loss surgery is considered to be the treatment of choice for people who are morbidly obese[5] as traditional weight-loss techniques have generally been linked with poor weight-loss maintenance [4]. Nevertheless, it has been suggested that approximately 20-30% of individuals undergoing this treatment begin to regain weight around two years post-surgery [5]. 'Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children', highlights the need for comprehensive assessment and identification of 'any psychological or clinical factors that may affect adherence to postoperative care requirements, such as changes to diet' [6, page 56]. However, this guidance does not elaborate on which particular factors might be important in predicting adherence. Research to identify such factors has resulted in conflicting findings: 'the existing literature about potential predictors of success after bariatric surgery is far from conclusive; it is still uncertain which factors can predict success' [7, page 552]. Considering the concerns of weight regain and what clinicians should be assessing and identifying, it is important to explore which factors are related to outcome following surgery. Recognition of specific outcome-related factors may then have an impact upon clinical management of weight-loss post-operatively.

[5] A person is categorised as morbidly obese if they have a BMI of 40 or greater, or a BMI of 35 and over with related health co-morbidities [6].

Illness cognitions are the beliefs that an individual holds about their illness [8], and are proposed to have five dimensions: identity (their name for the illness and symptoms associated with it); timeline (how they perceive the temporal nature of the illness: i.e. whether it is acute or chronic, stable or cyclical); curability and controllability (how controllable the illness is perceived to be through personal, and treatment, control); causes (the factors perceived to be associated with illness change); and consequences (the perceived impact of the illness on various aspects of life). How illness is defined by an individual along these dimensions is suggested to influence how they then understand and cope with their illness. Self-efficacy is an individual's confidence in their ability to perform specific behaviours when confronted with perceived difficulties or challenging situations [9]. Levels of perceived self-efficacy are proposed to moderate an individual's efforts in undertaking these behaviours.

Illness cognitions have been found to be important in considering adherence to a number of health-related behaviours in chronic health conditions. For example, in those with hypercholesterolaemia, higher perceived consequences of the condition were related to better cholesterol control [10]. Likewise, within the cardiac rehabilitation literature, individuals who were more likely to attend cardiac rehabilitation perceived more consequences of their heart condition, believed their illness could be cured and controlled, and were more likely to perceive their lifestyle as having caused their heart problems in comparison to those not attending [11-12].

In the area of weight-loss it has been found that in people who were obese undergoing an 8-week weight-loss programme, those who felt more able to control their weight and believed their obesity was not due to physical/medical causes, such as poor medical care and genetics, tended to lose more weight [13]. With regard to long-term weight-loss it has been found that weight-loss maintainers were less likely to report that medical factors, such as genetics, were causes of their original obesity in comparison to a stable-

obese group and a group of individuals regaining weight [14]. Another study [15] found no relationship between specific illness cognitions and eventual weight-loss following laparoscopic banding[6], measured prior to surgery and a year later. They did, however, note that participants' attitudes towards prognosis became more positive and that they perceived fewer consequences of their weight, though this was not significantly correlated with amount of weight-loss. This suggests that whilst illness cognitions may not be useful in predicting outcome if measured pre-operatively, they may become important post-operatively in weight-loss. From all of this research it might be expected that people who feel that their weight is controllable, and who attribute original weight gain to lifestyle choices rather than physical causes may be more likely to lose weight following surgery.

In people undertaking traditional weight-loss interventions, such as diet and exercise, findings seem fairly consistent in suggesting a relationship between level perceived self-efficacy and amount of weight-loss achieved [e.g. 13; 16]. Within the surgical weight-loss literature it has been found that level of perceived self-efficacy measured pre-operatively is not associated with weight-loss a year later [15; 17]. However, levels of perceived self-efficacy measured post-operatively seemed to increase in proportion to the amount of weight-loss [15, 17]. These findings are in line with those from the traditional weight-loss literature. Thus, like illness cognitions, measuring self-efficacy pre-operatively may have limited use in predicting outcome due to post-operative changes, though this construct may be important in post-operative weight-loss at a later point. From the literature it would therefore be expected that individuals with higher levels of perceived self-efficacy would both achieve more weight-loss, and maintain this.

[6] Another form of weight-loss surgery

A limitation of the majority of research completed to date are short follow-ups, with factors being measured less than two years after surgery. As difficulties may start occurring after this point [5], this may be one reason why previous research has been unable to identify important factors related to surgical outcome. Additionally, following surgery certain psychological factors, such as style of coping [18], illness cognitions [13], and self-efficacy [13] can change, which may also explain why no firm conclusions regarding psychological predictors can be drawn. Taking these potential limitations into account, this study was cross-sectional and measured constructs between two and six years post-surgery. Another limitation of past research is that much of it has used amount of weight change as an indicator of outcome. However, overall physical and mental health status is also expected to improve following surgery [19] and this has been identified as an often neglected area in the literature [5]. Previous research suggests that there is an association between weight change and physical health status for people losing weight through traditional methods [20]. This association is less clear for those undergoing bariatric surgery, with one study finding that improvement in physical health status was greatest for those who had higher levels of pre-operative disability, rather than physical health status increasing in association with amount of weight-loss [21]. Physical health status is measured within the current study to overcome limitations and explore the relationship between health status and weight-loss further.

Mental health status is also important to explore. As mentioned earlier, links have been found between obesity and psychological difficulties, such as depression and low self-esteem [3]. The cause and effect relationship between obesity and psychological factors is unclear but it would be expected that as weight is lost and maintained, psychological functioning would be improved. Research supports this idea, with mental health functioning suggested to be better in samples of individuals 6-months and one-year

post-operatively in comparison with a sample of individuals assessed pre-surgically [22].

A final limitation of past research is that the way in which a patient views the operation as having impacted upon their life has seldom been explored and has been highlighted as important to consider [23]. This is important as potentially a patient could lose weight and have a good health status but feel unsuccessful overall in terms of their initial expectations regarding surgery. Thus, if only weight loss, physical health status and mental health status were assessed then potentially a falsely positive view of outcome could be obtained due to the specificity of the questions asked within the published measures. Therefore, assessing an individual's perceptions of outcome in different areas of their life since they had the operation is important to consider and would give a different quality of information to that obtained from the more objective measures. From the literature it is suggested that patients undergo surgery for a variety of reasons, including health, fitness levels, body image, and self confidence [24-25]. Additionally, expectations concerning amount of weight-loss achievable post-operatively may be unrealistic [24-26]. From studies exploring the effect of unrealistic expectations on outcome following traditional weight-loss intervention, it is suggested that there may be higher rates of attrition [27], and lower levels of satisfaction [28]. However, unrealistic expectations do not seem to necessarily lead to problems in losing weight and maintaining this [28-29], although there may be overall dissatisfaction with outcome. It is therefore important to see if individual perception of outcome, health status, and weight-loss correlate.

The Purpose of this Study

The purpose of this study was to:

(i) Explore the relationship between weight-loss, individual perception of outcome, physical health status, and mental health status post-operatively.

It was hypothesised that weight-loss would positively correlate with both physical and mental health status. Due to lack of research specifically exploring individual perception as an outcome no hypothesis could be made regarding correlations between this variable with weight-loss, physical health status, or mental health status.

(ii) Explore whether illness cognitions and level of perceived self-efficacy have an influence upon the four outcome measures post-operatively.

It was hypothesised that individuals with higher levels of perceived self-efficacy would have a higher degree of weight-loss, better physical and mental health status, and a more positive perception of outcome than someone with lower levels of perceived self-efficacy. Additionally, individuals holding illness cognitions suggesting that they perceive their weight as controllable, that their weight changes due to what they do, and who perceive it as having serious consequences, would have a higher degree of weight-loss, a better physical and mental health status, and a more positive perception of outcome, than those holding dissimilar cognitions.

Method

Design

This study was cross-sectional with quantitative questionnaires being administered to participants at one time-point.

Participants

Participants were recruited through postal invitation during March 2010, with research packs being sent to a total of 415 individuals identified by the direct healthcare team as eligible for this study. Ninety four individuals responded (22.7% response rate). Additionally, four individuals contacted the researcher (RC) as packs had been sent to individuals who were deceased or who had changed address.

Inclusion criteria were that participants had undergone gastric bypass surgery between two and six years prior to study start and were able to give informed consent for participation. Exclusion criteria included current pregnancy; having a current illness that could impact on weight-loss; and not having a good understanding of the English language as the measures used could not be translated into different languages whilst retaining their psychometric properties.

Measures

Demographics. The demographics identified were gender, age, ethnicity, marital status, and time since operation.

Current height and weight. These were self-reported.

The Illness Perception Questionnaire-Revised for Weight. The Illness Perception Questionnaire-Revised for Weight was adapted from the Illness Perception Questionnaire-Revised [30]. The original measure has been shown to have good internal

reliability, test-retest reliability, and discriminant validity [30], as well as being brief to complete. The authors of this measure state that they have *'always encouraged researchers to adapt the scale to their particular illness and research setting. We continue to believe this to be important because of the powerful influence unique characteristics of an illness and particular cultural factors can play in understanding patients' perceptions'* [30]. They do not comment on the effect changes might make upon Cronbach's alpha values.

Thus, adaptations were made in line with this guidance [30] so that it was relevant to the particular population under study. Namely, the term 'illness' was replaced throughout with the word 'weight' and statement wording adjusted where necessary. The 'Timeline cyclical' questions were removed as it was not possible to re-word these in a way that made clear what was being asked. Additionally, the 'Identity' sub-section was not included as this was not of direct interest within this study. These changes would not be expected to have an impact upon the psychometric properties of this measure [30]. Overall, these changes resulted in the 'Illness Perception Questionnaire-Revised for Weight' being created, which was composed of 53-items across seven sub-scales: Timeline chronic/acute; Consequences; Personal Control; Treatment Control; Illness Coherence; Emotional Representations; and Causes. Responses are rated along a five-point scale (one indicates that the individual strongly disagrees with an item and five indicates that they strongly agree with an item). High scores on the Timeline, Consequences, and Emotional Representations dimensions indicate strongly held beliefs about the chronicity, negative consequences, and negative emotions associated with weight. High scores on the Personal Control, Treatment Control, and Illness Coherence dimensions indicate positive beliefs about the controllability of weight, and that the individual perceives themselves to understand changes in their weight.

Cronbach's alpha for all of the subscales within the current study were found to be similar to those in another study [30], with the exception of the Treatment Control subscale, which was much lower within the current study. Cronbach's alpha ranged from .83 to .92 for the subscales of Timeline, Consequences, Personal Control, Illness Coherence, and Emotional Representations. For Treatment Control Cronbach's alpha was .34, suggesting low internal consistency for this subscale within the current study. Thus, whilst guidance around adapting this scale was followed, the psychometric properties of the Treatment Control scale may have been affected.

The Causes sub-scale provides information about what participants think causes weight change. The scoring guidance states that data from this sub-scale should be entered into a factor analysis to identify relevant factors [30]. In the current study, a principal components factor analysis with varimax rotation was conducted to identify causal factors. Following recommendations [31], factor loadings of .55 and greater were required for an item to reach significance given sample size. One item ('accident or injury') was removed from analysis as it did not load on any of the factors, and analysis was re-run. Five factors emerged: 'Psychological attributions'; 'External factors'; 'Risk factors'; 'Health behaviours'; and 'Other factors'. Individual items loading on each of these factors can be seen in Table 1. 'Psychological attributions' and 'Risk factors' had similar items loading on them as found in an earlier study [30]. Of interest was that the item 'diet or eating habits' loaded onto 'Psychological attributions'. This may indicate that rather than these items measuring 'Psychological attributions' they are in fact measuring some other construct. The 'Other factors' grouping has a low Cronbach's alpha and so it might be that these two items should not be grouped together but rather treated as individual items.

In addition, participants were asked at the end of the Causes sub-scale to identify the three most important causes of weight change for them. A number of causes not already

identified from the sub-scale emerged: past trauma; persistent hunger; lack of exercise (at times specified as due to pain, arthritis); low self-confidence; excess skin; lack of aftercare support; family problems unspecified to be due to their weight; relationship with food; and eating disorders (binge eating).

Table 1. Factor loadings of individual items on the Causal subscale of the IPQ-R for Weight.

	Factor loading	Mean response	Standard deviation
Psychological attributions (Cronbach's alpha = .790)			
My mental attitude e.g. thinking about life negatively	.760	3.73	1.17
Diet or eating habits	.756	4.23	0.86
My emotional state e.g. feeling down, lonely, anxious, empty	.735	3.92	1.11
My own behaviour	.719	4.11	0.88
Stress or worry	.624	3.83	1.14
External factors (Cronbach's alpha = .688)			
A germ or virus	.759	1.98	1.06
Chance or bad luck	.748	2.08	1.15
Pollution in the environment	.737	1.59	0.73
Poor medical care in my past	.554	2.42	1.26
Risk factors (Cronbach's alpha = .651)			
Ageing	.710	2.76	1.13
Overwork	.691	2.48	1.02
Family problems caused by my weight	.606	3.31	1.25
Hereditary – it runs in my family	.567	2.80	1.22
Health behaviours (Cronbach's alpha = .602)			
Alcohol	.841	2.24	1.36
Smoking	.787	1.59	0.96
Other causes (Cronbach's alpha = .284)			
Surgical intervention	.851	3.17	1.38
My personality	.521	3.22	1.26

The Modified Weight Efficacy Lifestyle Scale [32] was used in the measurement of eating and exercise self-efficacy. This scale consists of ten items, five of which measure eating self-efficacy ($\alpha = .87$) and five of which measure exercise self-efficacy ($\alpha = .91$).

Examples of items include: ‘How confident are you that you would be able to follow your eating plan when you are in a bad mood (e.g. anxious, depressed, irritable)?’; ‘How confident are you that you would be able to follow your exercise plan when you get very busy?’. These items are rated along a nine-point Likert scale (zero indicates that the individual is ‘not at all confident’ and eight indicates that an individual is ‘extremely confident’). A higher score indicates higher levels of perceived self-efficacy. Cronbach’s alpha for both of these subscales was equivalent to that found in another study [31], and was high for both eating (.87) and exercise (.89) self-efficacy.

Percentage of Excess Weight-Loss. Amount of excess weight is calculated by subtracting the patient’s ideal physical weight from their pre-operative weight [33]. Percentage of excess weight-loss is then calculated by dividing amount of weight-loss by amount of excess weight and multiplying by 100 [33]. A worked example is shown below for an individual who pre-operatively weighed 152kg, currently weighs 104kg and who has an ideal weight of 77kg. Overall, this individual has lost 62.34% of their excess weight.

Calculation

$$\text{Percentage of excess weight loss} = \frac{\text{preoperative weight} - \text{current weight}}{\text{preoperative weight} - \text{ideal weight}} \times 100$$

$$\text{Percentage of excess weight loss} = \frac{152 - 104}{152 - 77} \times 100 = 62.34\%$$

Percentage of excess weight-loss is the standard unit of report in the bariatric literature [34], and provides a standardised measure of goal attainment. Percentage of excess weight-loss was calculated for each participant at time of study inclusion. Additionally, two measurements of percentage of excess weight-loss were calculated for each

participant from weight measurements taken at clinic follow-up appointments from three to fifteen months post-operatively (where information was available). These measurements were collected in addition to each participant's current weight-loss measurement to give an indication of the rate of weight-loss within this particular population.

Individual Perception of Outcome. For Individual Perception of Outcome, thirteen Likert Scales measuring satisfaction in different areas were used. Examples of items included in this measure are: 'How satisfied are you with your level of weight loss since the operation?'; 'How satisfied are you with the effect that the operation has had upon your physical health?'. These items were rated along a nine-point Likert Scale (zero indicates that the individual feels not at all happy/satisfied/successful and eight indicates that they feel completely happy/satisfied/successful). A higher score indicated a more positive perception of outcome. See Appendix 5 for details regarding development of this scale.

A principal components factor analysis with varimax rotation was conducted to identify separate factors. Again, following recommendations [31], factor loadings of .55 and greater were required for an item to reach significance given sample size. From this analysis two factors seemed to emerge. However, there was some overlap between these factors with four items loading on both factors. Additionally, the full measure had a Cronbach's alpha of .994, suggesting very high internal consistency. Thus for this study this measure was yielded an overall score for perception of outcome though it should be considered that there may be two factors.

Short-Form 36v2. For health status, the Short-Form 36v2 was used [35] as it has been widely used in the assessment of health-status in a variety of health-related areas. It has eight subscales that assess the degree to which someone perceives their health as

impacting upon their life in different areas. From this, a physical composition score and a mental composition score can be yielded. The physical composition score provides an overall assessment of physical functioning and a maximum score of 71 can be achieved. A low score would indicate limitations in ability to perform physical activities. The mental composition score provides an overall assessment of mental health and has a maximum score of 74. A low score would indicate psychological distress and reduced well-being. Higher scores indicate better functioning. Group scores below 47 and individual scores below 40 on physical composition indicate impaired physical functioning. Group scores below 47 and individual scores below 40 on mental composition indicate poorer mental health status. The Short-Form 36v2 has been found to have good internal consistency, construct validity, and content validity [35].

Procedure

The study was approved by a local Research Ethics Committee. Research packs contained an introductory letter from the bariatric surgeons, an information leaflet giving details about the study, a consent form, measures, an information sheet on how to complete the measures, a freepost return-addressed envelope, a request form for a written summary of results, and a support sheet (see Appendix 5.2 to 5.12). If participants chose to participate they were advised to complete the measures and necessary forms and return them to the researcher.

Analysis of results

Mann-Whitney U comparisons were done to explore differences between groups on variables of interest, as data did not appear normally distributed. Pearson's correlations were performed to explore relationships between different variables. Hierarchical regression was then undertaken for each dependent variable due to there being no non-parametric alternative that could enable comparable analyses to be performed on data

that is not normally distributed. Central limit theorem states that if sample size is large enough this should overcome the limitation of non-normally distributed data [36]. However, it is difficult to define what sample size would be large enough and so findings from hierarchical regression should be interpreted cautiously. Time since operation was entered in the first block as it was expected that this would be important in considering outcome; age, gender, and pre-operative BMI were entered in the second block as these variables have been found to be important in weight-loss outcomes; and all remaining independent variables were entered in the third block to explore whether they increased prediction of the dependent variable.

With regard to the independent variables, where correlations between variables exceeded .60, one of the independent variables was removed from further analysis to avoid multicollinearity and overfitting. Pearson's correlations found that Consequences was significantly correlated with Timeline (r = .628, n = 94, p<.001), and Emotional Representations (r = .619, n = 94, p<.001). Eating self-efficacy was significantly related to Exercise self-efficacy (r = .656, n = 94, p<.001). Timeline, Emotional Representations, and Exercise self-efficacy were thus excluded from further analyses. To further reduce the number of independent variables entered into hierarchical regression, Treatment Control was removed due to its internal consistency being low (α = .34). Additionally, the causal attribution of 'Health Behaviours' was removed because the majority of participants responded at floor level and so it is unlikely that this would have given any findings of interest. Finally, the causal attribution of 'Other factors' was removed from further analysis as potentially the items loading on this factor should be treated individually.

Results

Missing data

There were minimal amounts of missing data. Data that was missing regarded weight information: current weight information was unavailable for one participant and pre-operative weight information was unavailable for one participant, meaning current percentage of excess weight-loss was unable to be calculated for two participants; information regarding weight at follow-up appointments between three and fifteen months was unavailable for 16 participants (17.02%), whilst weight for only one time-point was available for 28 participants (29.79%).

Additional comments

A number of participants wrote additional comments about their experiences of undergoing gastric bypass surgery. These transcripts can be seen in Appendix 5.13.

Preliminary analyses

Demographics

Participants had a mean age of 47.33 ± 9.70 years (range 21 - 68), a mean pre-operative weight of 132.65 ± 24.87 kg, a mean current BMI of 32.64 ± 6.76 kg/m^2, a mean current weight of 91.07 ± 20.12 kg, and had undergone gastric bypass surgery a mean of 40.95 ± 9.91 months ago. Eighty four percent of participants were female (n = 79), 97.9% were white British (n = 92), and 54.3% were married (n = 51).

Self-reported weight

There are limitations associated with the accuracy of self-reported weight [37]. Some studies [e.g. 38] have added weight to participants' self-reported weights to account for this bias. To ensure there were no effects of self-reporting bias in this study, a sub-

sample of participants (n = 12; 12.77% of the larger sample) attended a clinic to be weighed. The mean self-reported weight was 81.33kg (SD = 19.85), and the mean clinic-measured weight was 82.07kg (SD = 20.51). A Mann-Whitney U comparison showed that these measurements did not differ significantly (Z = -.115, *p* = .932). Figure 1 shows the relationship between participants' mean weight (the average of the clinic-measured and the self-reported weights) and the discrepancy between the two measurements. There was a trend for participants' self-reported weight to be less than the clinic-measured weight, however there is no clear relationship between those weighing more or less and the discrepancy between self-reported and clinic-measured weights. Sample size would need to be larger to ascertain this relationship with more confidence.

Responders and non-responders

Of the 415 patients who were contacted by post, 94 (22.7%) responded. To explore whether responders significantly differed from non-responders, comparisons were made between gender, age, and pre-operative weight (kg). Of non-responders 81.4% were female; non-responders had a mean age of 45.46 ± 9.95 years; and a mean pre-operative weight of 130.49 ± 23.32 kg. Mann-Whitney U comparisons found that responders and non-responders did not differ significantly for age (Z = -1.648, p = .099), or pre-operative weight (Z = -.800, p = .423). As these two groups did not differ on the aspects explored this suggests that the sample was not biased by low response rate in terms of gender, age, or pre-operative weight.

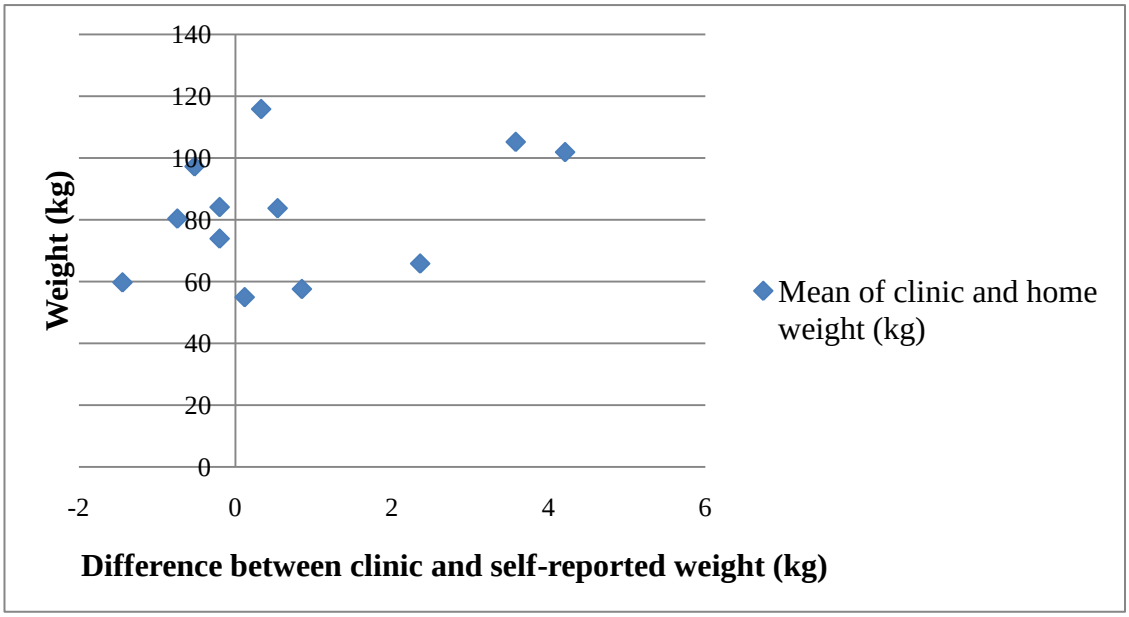


Figure 1. The relationship between mean weight (kg) and the difference between clinic and self-reported weight (n = 12). A positive difference indicates that a higher clinic-measured weight.

Weight-loss

Full weight information is presented in Table 2 for pre-operative weight, current weight, and current weight-loss. As can be seen, participants lost a mean of 41.68 ± 17.46 kg in weight and achieved a mean excess weight-loss of 67.07 ± 25.64%. Mann-Whitney U comparisons between participants having the operation at different time-points were undertaken to explore whether there were significant differences in percentage of excess weight-loss achieved. No significant differences were found between those having the operation 24-35 months ago and those having the operation 35-47 months ago (Z = -.993, p = .321); between those having the operation 24-35 months ago and those having the operation 48-72 months ago (Z = -1.464, p =.143); or between those having the operation 35-47 months ago and those having the operation 48-72 months ago (Z = -.435, p = .664).

Table 2. Weight loss (kg) and excess weight loss (%) information.

	N	Mean	Standard deviation	Minimum	Maximum
Start weight (kg)	93	132.65	24.87	85	224
Start BMI (kg/m^2)	93	48.60	8.72	29	77
Current weight (kg)	93	91.07	20.12	56	146.06
Current BMI (kg/m^2)	92	32.64	6.76	21.6	63.22
Total weight loss (kg)	92	41.68	17.46	9.17	90.64
Weight loss 24-35 months post-surgery (kg)	28	46.94	19.15	18	90.64
Weight loss 35-47 months post-surgery (kg)	44	39.70	18.22	9.17	84.05
Weight loss 48-72 months post-surgery (kg)	20	38.65	11.30	15.94	56.36
Excess weight loss (%)	92	67.24	25.08	15.63	133.44
Excess weight loss 24-35 months post-surgery (%)	28	71.60	22.39	31.58	126.62
Excess weight loss 36-47 months post-surgery (%)	44	66.26	26.57	23.87	133.44
Excess weight loss 48-72 months post-surgery (%)	20	63.27	25.62	15.63	122.52

Pearson's correlations between percentage of excess weight-loss achieved by the time of this study and that achieved between three and fifteen months post-operatively were undertaken and are shown in Table 3. Correlations with total percentage of excess weight-loss increase in strength and significance from six to nine months post-surgery. However, sample size should be taken into account in considering these findings.

Participants were grouped into those with a starting BMI of between 29 and 49 (n = 57) and those with a starting BMI of between 50 and 77 (n = 35). Participants were grouped in this manner because it has been found that rate of weight-loss differs between these groups [39]. Figure 2 illustrates percentage of excess weight-loss for the overall sample (N = 92) and for the two BMI groupings. It can be seen that those with a start BMI between 50-77 tend to lose a lower percentage of excess weight than those with a lower start BMI. For the group with a start BMI of between 29-49, percentage of excess weight-loss achieved by around six to nine months is approximately equivalent to that achieved between two to six years post-operatively. For the group with a start BMI between 50 and 77, percentage of excess weight-loss achieved by nine to twelve months is approximately equivalent to that achieved between two to six years post-operatively. For both groups, and the sample overall, there seems to be some fluctuation in weight following the point of maximum achieved weight-loss. These points of maximum achieved weight-loss are earlier than found in another study [39]. In considering these findings sample size needs to be kept in mind.

Table 3. Pearson's correlations between excess weight loss (%) at various time-points post-operatively.

		Time of study	3-6months	6-9months	9-12months	12-15 months
Time of study	Correlation	1				
	N	92				
3-6 months	Correlation	.684*	1			
	N	47	48			
6-9 months	Correlation	.805*	.853*	1		
	N	33	15	33		
9-12 months	Correlation	.831*	.915*	.957*	1	
	N	34	17	9	34	
12-15 months	Correlation	.795*	.978	.139	Uncalculated	1
	N	13	3	6		13

*p<.001. No other correlations reached a level of statistical significance (i.e. p<.01 or p<.05).

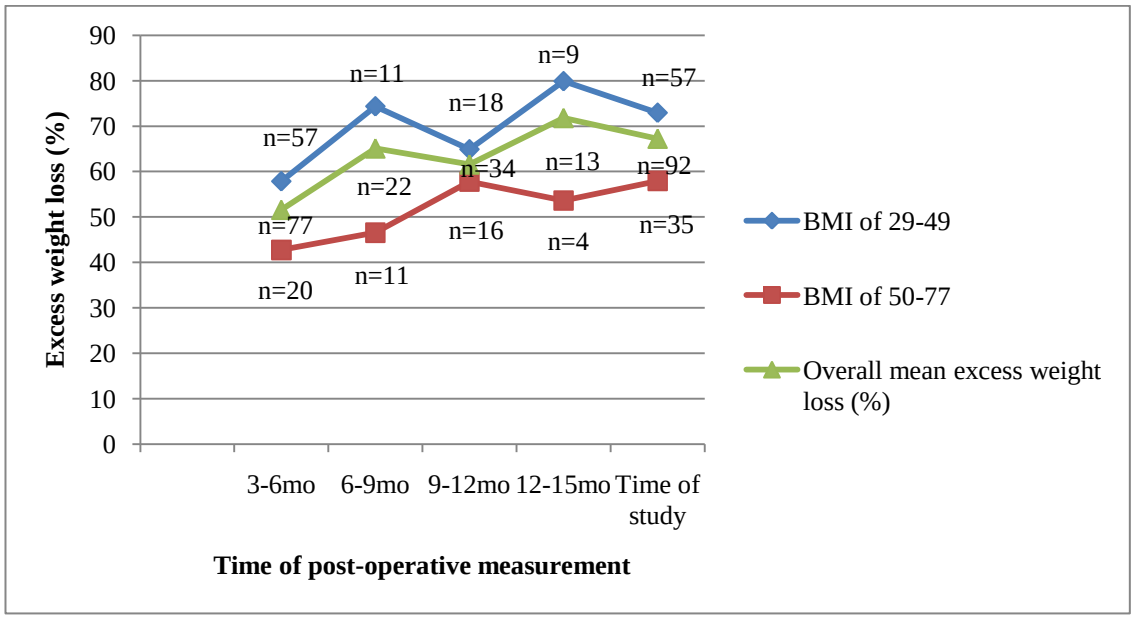


Figure 2. Mean excess weight loss at different time-points for the overall sample (N = 92), participants within the overall sample with a BMI of 29-49 (N = 57), and those with a BMI of 50-77 (N = 35). Sample sizes for each follow-up time-point is shown on the Figure.

Participants attended a mean of 3.21 follow-up appointments between 0 to 24 months post-operatively (SD = 1.24; range = 1 to 6). From Figure 3 it can be seen that number of follow-up appointments does not seem to influence percentage of excess weight-loss between two and six years post-operatively, though sample size needs to be considered.

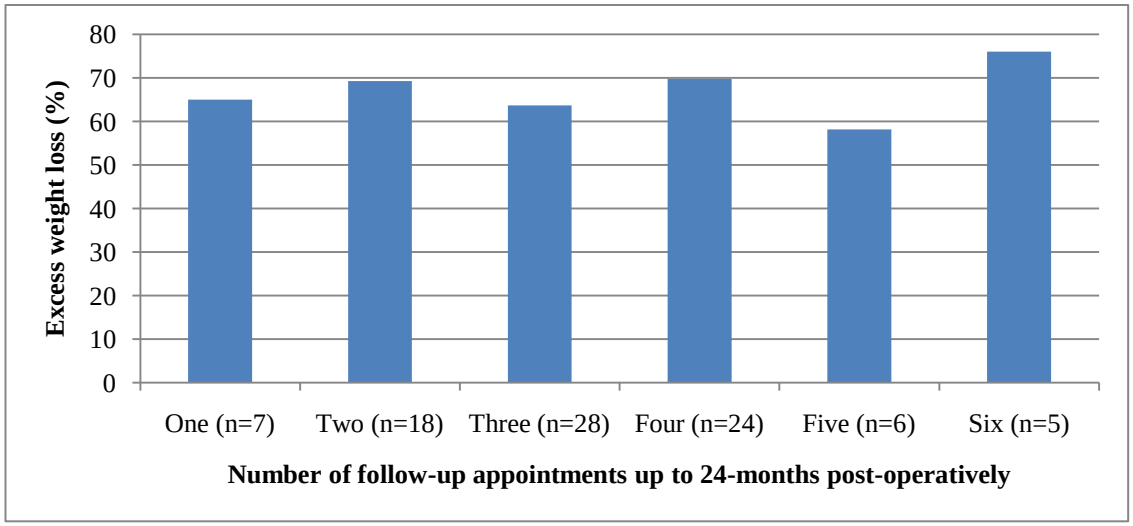


Figure 3. The relationship between number of follow-up appointments attended between 0 and 24 months and percentage of excess weight loss between two and six years post-operatively.

Responses on the independent and dependent variables

Table 4 displays participants' mean responses on the independent and dependent variables and Table 5 presents information on the mean responses on these variables in other studies. As the Individual Perception of Outcome measure was developed for the current study there are no comparisons available. However, the mean response suggests that satisfaction in different areas for the overall sample was fairly high. The full range of available responses was not used suggesting that no individual was completely satisfied or dissatisfied.

In comparison to other studies in which the IPQ-R has been used, responses for Timeline and Treatment Control are most similar to patients with chronic pain [30], and patients with diabetes [40]. Responses for Timeline and Treatment Control are fairly high, suggesting participants feel their concerns about their weight are likely to last a long time, and that treatment might be helpful in controlling weight. However, in considering responses on Treatment Control items it is necessary to note the low internal consistency of this subscale as this may indicate that items are not measuring the same construct. Participants' mean responses for Consequences and Emotional Representations most closely approximate those found in patients with chronic pain [30]. These responses are again fairly high, suggesting that participants perceive their weight to have negative consequences, and thinking about their weight is associated with negative emotions. Level of Personal Control is similar to that found in patients with acute pain [30], and patients with diabetes [40], and mean response suggests participants perceived themselves to have control over their weight. Illness Coherence for participants within the current study was higher than that found in patients with other conditions, suggesting that participants in the current study perceived themselves to have good understanding of their weight.

Table 4. Responses on independent and dependent variables

	N	Mean	Std. deviation	Minimum	Maximum	Available range
Independent Variables						
Eating Self-efficacy (Cronbach's alpha = .87)	94	19.45	8.27	0	40	0 to 40
Exercise Self-efficacy (Cronbach's alpha = .89)	94	15.43	8.42	0	36	0 to 40
Timeline (Cronbach's alpha = .83)	94	23.06	4.97	7	30	6 to 30
Consequences (Cronbach's alpha = .83)	94	21.84	4.84	10	30	6 to 30
Personal Control (Cronbach's alpha = .84)	94	23.56	4.29	10	30	6 to 30
Treatment Control (Cronbach's alpha = .34)	94	15.10	2.70	5	25	5 to 25
Illness Coherence (Cronbach's alpha = .92)	94	17.36	5.32	5	25	5 to 25
Emotional Representations (Cronbach's alpha = .89)	94	20.84	5.81	7	30	6 to 30
Psychological attributions (Cronbach's alpha = .79)	93	19.82	3.83	5	25	5 to 25
Risk factors (Cronbach's alpha = .65)	93	11.36	3.24	4	18	4 to 20
External factors (Cronbach's alpha = .69)	93	8.06	3.08	4	14	4 to 20
Health behaviours (Cronbach's alpha = .60)	93	3.83	1.99	2	10	2 to 10
Other factors (Cronbach's alpha = .28)	93	6.39	2.02	2	10	2 to 10
Dependent Variables						
Excess weight loss (%)	92	67.24	25.08	15.63	133.44	
Individual perception of outcome (Cronbach's alpha = .994)	94	67.31	23.02	12.00	103.00	0 to 104
Mental health status	94	39.29	14.46	7.09	61.47	2 to 74
Physical health status	94	44.61	13.33	15.53	62.82	4 to 71

Table 5. Means (and standard deviations) for responses on the independent and dependent variables for the current study and other studies.

Illness perception questionnaire – revised	This study (N = 94)	Chronic Pain (N = 63) [30]	Acute Pain (N=35) [30]	Diabetes (N = 39) [40]
Timeline	23.06 (4.97)	23.12 (4.41)	13.40 (5.38)	21.0 (4.6)
Consequences	21.84 (4.84)	23.45 (3.89)	14.23 (4.44)	17.7 (4.5)
Personal control	23.56 (4.29)	18.42 (4.01)	22.94 (3.52)	22.4 (3.8)
Treatment control	15.10 (2.70)	14.22 (3.36)	19.43 (3.28)	15.7 (2.9)
Emotional representations	20.84 (5.81)	19.75 (4.15)	16.12 (4.03)	15.7 (5.0)
Illness coherence	17.36 (5.32)	13.37 (4.78)	9.31 (3.00)	15.9 (4.6)

Modified Weight Efficacy Lifestyle Questionnaire	This study (N = 94)	Baseline (N = 349) [32]	Week 4 (N = 248) [32]	Week 8 (N = 233) [32]
Eating self-efficacy	19.45 (8.27)	21.47 (7.77)	20.76 (6.38)	20.06 (8.05)
Exercise self-efficacy	15.43 (8.42)	22.33 (8.58)	21.71 (7.71)	19.40 (9.03)

Short-form 36	This study (N = 94)	Pre-surgery (N = 80) [22]	1-year post-operatively (N=83) [22]	SF-36v2 norms [35]
Physical functioning	69.41 (32.49)	38.0 (22.4)	80.7 (21.8)	83.29 (23.76)
Role physical	66.29 (35.72)	32.2 (35.5)	83.8 (32.6)	82.51 (25.52)
Bodily pain	53.52 (36.29)	41.3 (21.7)	68.0 (21.4)	71.33 (23.66)
General health	51.76 (27.45)	34.5 (22.2)	73.7 (16.7)	70.85 (20.98)
Vitality	42.89 (25.33)	29.3 (19.6)	68.9 (16.6)	58.31 (20.02)
Mental health	58.51 (22.37)	57.9 (20.1)	78.2 (14.5)	74.99 (17.76)
Role emotional	64.27 (34.99)	53.3 (42.3)	87.7 (28.8)	87.40 (21.44)
Social functioning	61.17 (34.90)	49.2 (27.7)	85.5 (19.6)	84.30 (22.91)
Physical composition score	44.61 (13.33)			49.97 (9.98)
Mental composition score	39.29 (14.46)			49.90 (10.12)

Percentage of excess weight-loss	This study (N = 94)	Review study [34] (N = 4204)
	67.24% (25.08)	61.6%

On the Modified Weight Efficacy Lifestyle Questionnaire, participants responded similarly on the eating self-efficacy items to participants within another study [32]. Responses suggest that participants felt somewhat confident in following eating plans in difficult situations. For exercise self-efficacy, participants indicated lower efficacy than for participants in another study [32]. Mean response suggests that participants within the current study felt slightly less than confident in following exercise plans in difficult situations.

Mean percentage of excess weight-loss in the current study was 67.24%, which is slightly higher than that found within a large review study [34]. On the Short-Form 36v2 sub-scales, participants' responses were similar to a sample of pre-operative gastric bypass patients on the mental health subscale [22]. Their responses on the rest of the subscales suggested better health status than a sample of pre-operative gastric bypass patients [22] but reduced health status in comparison to a sample of one-year post-operative gastric bypass patients [22], and to a sample of the general population [35]. Physical composition scores and mental composition scores that are lower than 40 are indicative of impaired functioning within that area. Within this sample, 34 participants (36.17%) had a physical composition score of less than 40, and 45 participants (47.87%) had a mental composition score of less than 40.

Main analyses

Relationships between percentage of excess weight-loss, physical health status, mental health status, and Individual Perception of Outcome.

Pearson's correlations found that all dependent variables correlated positively with each other. As can be seen from Table 6, correlations were moderate, despite reaching

statistical significance. The lowest correlation was between percentage of excess weight-loss and mental health status.

Table 6. Pearson's correlations and significance values between the dependent variables.

		Excess weight loss (%)	Physical status	Mental status	Individual Perception of Outcome
Excess weight loss (%)	Correlation	1			
	N	92			
Physical status	Correlation	.242	1		
	N	92	94		
Mental status	Correlation	.073	.397*	1	
	N	92	94	94	
Individual Perception of	Correlation	.490*	.442*	.362*	1
Outcome	N	92	94	94	94

*p<.001. No other correlations reached a level of statistical significance (i.e. p<.01 or p<.05).

The impact of self-efficacy and illness cognitions upon outcome.

Hierarchical regression was undertaken for each dependent variable as described earlier in the Analysis of Results section. Table 7 presents the unstandardised coefficients (B and standard error) and the standardised coefficient (Beta) for each relationship.

Percentage of excess weight loss

After step 1, with time since the operation in the equation, R^2 = .005, $F_{1,89}$ = .483, p = .489. After step 2, with age, gender and start BMI added to the prediction of percentage of excess weight loss, R^2 = .165, $F_{4,86}$ = 4.245, p = .003. Addition of these variables significantly increased R^2. Within this equation, start BMI emerged as a significant predictor of percentage of excess weight loss. After step 3, with Consequences, Coherence, Personal Control, Psychological attributions, Risk factor attributions, External attributions, and Eating self-efficacy being added to the prediction of percentage of excess weight loss, R^2 = .362, $F_{11,79}$ = 4.068, p<.001. Addition of these variables significantly improved R^2. Within this step, start BMI remained a significant predictor variable, and Eating self-efficacy emerged as a significant predictor variable. These results suggest that individuals with a lower pre-operative BMI and higher eating self-efficacy achieved a higher percentage of excess weight-loss.

Individual Perception of Outcome

After step 1, with time since the operation in the equation, R^2 = .044, $F_{1,90}$ = 4.117, p = .045. Time since operation emerged as a significant predictor variable within this equation. After step 2, with age, gender and start BMI added to the prediction of percentage of excess weight loss, R^2 = .078, $F_{4,87}$ = 1.830, p = .130. Within this equation, time since operation

remained a significant predictor of Individual Perception of Outcome. After step 3, with Consequences, Coherence, Personal Control, Psychological attributions, Risk factor attributions, External attributions, and Eating self-efficacy being added to the prediction of physical health status, R^2 = .473, $F_{11,80}$ = 6.540, p<.001. Following addition of these variables into the equation, time since operation ceased to be a significant predictor variable of individual perception of outcome. However, Consequences, Personal Control, Coherence, Psychological attributions, and Eating self-efficacy emerged as significant predictor variables. These findings suggested that individuals perceiving their weight to change as a result of psychological factors and who perceived more weight-related consequences, had decreased Individual Perception of Outcome. As Personal Control, Illness Coherence, and eating self-efficacy increased, Individual Perception of Outcome increased.

Physical health status

After step 1, with time since the operation in the equation, R^2 = .023, $F_{1,90}$ = 2.091, p = .152. After step 2, with age, gender and start BMI added to the prediction of percentage of excess weight loss, R^2 = .168, $F_{4,87}$ = 4.384, p = .003. Addition of these variables significantly increased R^2. Within this equation, following addition of the other variables into the equation, time since operation emerged as a significant predictor of physical health status. After step 3, with Consequences, Coherence, Personal Control, Psychological attributions, Risk factor attributions, External attributions, and Eating self-efficacy being added to the prediction of physical health status, R^2 = .266, $F_{11,80}$ = 2.633, p = .006. Within this step, time since operation remained a significant predictor variable, and age, gender and Consequences emerged as a significant predictor variables. These results suggest that being male, being older, having the operation a longer time ago, and perceiving there to be

more weight-related consequences, are variables predictive of a lower physical health status post-operatively.

Mental health status

After step 1, with time since the operation in the equation, R^2 = .004, $F_{1,90}$ = .400, p = .528. After step 2, with age, gender and start BMI added to the prediction of percentage of excess weight loss, R^2 = .058, $F_{4,87}$ = 1.327, p = .266. Within this equation, gender emerged as a significant predictor of mental health status. After step 3, with Consequences, Coherence, Personal Control, Psychological attributions, Risk factor attributions, External attributions, and Eating self-efficacy being added to the prediction of physical health status, R^2 = .377, $F_{11,80}$ = 4.397, p<.001. Following addition of these variables into the equation, gender ceased to be a significant predictor variable of pre-operative mental health status. However, Psychological attributions and External attributions emerged as significant predictor variables. These results suggest that individuals who attribute weight change to Psychological and External factors are potentially more likely to have a lower mental health status post-operatively.

Table 7. Hierarchical regressions for each dependent variable (***$p \leq .001$; **$p \leq .01$; *$p \leq .05$).

Dependent variable		Unstandardised coefficients		Standardised coefficients
Percentage of excess weight loss		B	Std. Error	Beta
Model 1	(Constant)	74.08***	10.97	
	Time since operation (months)	-.18	.26	-.07
Model 2	(Constant)	145.65***	22.11	
	Time since operation (months)	-.18	.25	-.07
	Start BMI (kg/m^2)	-.98***	.29	-.35
	Age	-.34	.25	-.14
	Gender	-6.79	7.07	-.10
Model 3	(Constant)	135.44***	28.40	
	Time since operation (months)	-.06	.23	-.02
	Start BMI (kg/m^2)	-.94***	.27	-.34
	Age	-.43	.24	-.17
	Gender	-1.65	6.71	-.02
	Consequences	-1.01	.57	-.20
	Personal control	-.05	.66	-.08
	Illness coherence	1.02	.54	.22
	Psychological attributions	-.74	.71	-.12
	Risk factor attributions	.52	.85	.07
	External attributions	.54	.83	.07
	Eating self-efficacy	.61*	.30	.21

Note: R^2 for Model 1 is .005; R^2 for Model 2 is .165; R^2 for Model 3 is .362. *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$

Dependent variable		Unstandardised coefficients		Standardised coefficients
Individual perception of outcome		B	Std. Error	Beta
Model 1	(Constant)	87.35***	10.13	
	Time since operation (months)	-.49*	.24	-.21
Model 2	(Constant)	120.07** *	21.87	
	Time since operation (months)	-.49*	.25	-.21
	Start BMI (kg/m^2)	-.41	.28	-.15
	Age	-.21	.25	-.09
	Gender	-2.78	6.98	-.04
Model 3	(Constant)	88.16	24.24	
	Time since operation (months)	-.29	.20	-.12
	Start BMI (kg/m^2)	-.42	.23	-.16
	Age	-.37	.20	-.15
	Gender	1.42	5.72	.02
	Consequences	-1.24*	.48	-.26
	Personal control	1.73**	.56	.32
	Illness coherence	.99*	.46	.23
	Psychological attributions	-1.30*	.60	-.22
	Risk factor attributions	.89	.72	.12
	External attributions	-.03	.71	-.01
	Eating self-efficacy	.63*	.25	.23

Note: R^2 for Model 1 is .044; R^2 for Model 2 is .078; R^2 for Model 3 is .473. *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$

Dependent variable		Unstandardised coefficients		Standardised coefficients
Physical health status		B	Std. Error	Beta
Model 1	(Constant)	53.14***	5.80	
	Time since operation (months)	-.20	.14	-.15
Model 2	(Constant)	77.17***	11.77	
	Time since operation (months)	-.27*	.13	-.20
	Start BMI (kg/m^2)	.19	.15	.13
	Age	-.41**	.13	-.31
	Gender	-9.63*	3.76	-.27
Model 3	(Constant)	89.85	16.21	
	Time since operation (months)	-.29*	.13	-.22
	Start BMI (kg/m^2)	.26	.15	.17
	Age	-.42**	.14	-.31
	Gender	-7.70*	3.83	-.21
	Consequences	-.74*	.32	-.27
	Personal control	.04	.38	.01
	Illness coherence	.174	.31	.07
	Psychological attributions	.06	.40	.02
	Risk factor attributions	-.32	.48	-.08
	External attributions	-.24	.48	-.06
	Eating self-efficacy	-.01	.17	-.01

Note: R^2 for Model 1 is .023; R^2 for Model 2 is .168; R^2 for Model 3 is .266. *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$

Dependent variable		Unstandardised coefficients		Standardised coefficients
Mental health status		B	Std. Error	Beta
Model 1	(Constant)	43.08***	6.48	
	Time since operation (months)	-.10	.15	-.07
Model 2	(Constant)	55.20***	13.86	
	Time since operation (months)	-.16	.16	-.11
	Start BMI (kg/m^2)	.16	.18	.09
	Age	-.14	.16	-.09
	Gender	-9.18*	4.42	-.23
Model 3	(Constant)	81.60	16.53	
	Time since operation (months)	-.10	.14	-.07
	Start BMI (kg/m^2)	.13	.16	.08
	Age	-.17	.14	-.12
	Gender	-5.39	3.90	-.13
	IPQ consequences	-.60	.33	-.20
	IPQ personal control	.39	.38	.11
	IPQ coherence	.24	.31	.09
	Psychological attributions	-1.39***	.41	-.37
	Risk factor attributions	.61	.49	.13
	External attributions	-1.55**	.49	-.33
	MWEL eating	.13	.17	.07

Note: R^2 for Model 1 is .004; R^2 for Model 2 is .058; R^2 for Model 3 is .377 *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$

Summary of main findings

All the dependent variables were found to be positively and moderately correlated with one another, with the exception of percentage of excess weight-loss and mental health status, which correlated weakly. Significant models emerged for all dependent variables from hierarchical regression and suggested that illness cognitions and self-efficacy are important factors in outcome two to six years after gastric bypass surgery.

Discussion

A number of interesting findings have emerged and these shall now be discussed. Firstly, one initial research aim was to explore the relationships between percentage of excess weight-loss, mental health status, physical health status, and Individual Perception of Outcome. It was hypothesised that percentage of excess weight-loss would positively correlate with both mental and physical health status as shown in other research [20]. It was unclear whether Individual Perception of Outcome would correlate with the other outcome variables due to lack of research exploring this as an outcome. In support of the hypothesis it was found that there were positive correlations between percentage of excess weight-loss, mental health status and physical health status. However, in the case of mental health status this correlation was very weak. This is surprising as it might be expected that mental health status would increase with weight-loss as suggested in other studies [22]. Possible reasons for this contrary finding will be discussed shortly. Individual Perception of Outcome was found to be moderately correlated with all dependent variables, suggesting that it is important to consider.

In considering the second research aim of exploring whether illness cognitions and level of perceived self-efficacy would have an influence upon the different outcomes, there were

some interesting findings. It was initially hypothesised that higher levels of perceived self-efficacy would result in better outcome as shown by the dependent variables. This hypothesis was supported by increased eating self-efficacy being a significant predictor of increased weight-loss and satisfaction (as measured on the Individual Perception of Outcome measure). Additionally, it was hypothesised that illness cognitions suggesting weight to be perceived as controllable, having serious consequences, and changing due to lifestyle choices, would result in better outcome as shown by the dependent variables. In support of this and previous research, higher levels of perceived Personal Control were related with higher percentage of excess weight-loss and increased satisfaction. Additionally, individuals perceiving their weight to change as a function of 'External factors', were found to have poorer mental health status. However, contrary to the hypothesis, individuals perceiving more negative consequences of their weight had poorer outcome in terms of satisfaction and physical health status. Additionally, individuals perceiving their weight to change as a function of 'Psychological attributions' reported lower satisfaction.

Individuals indicating less satisfaction with outcome following surgery perceived more negative consequences associated with their weight and perceived their weight to change due to items grouped under 'Psychological attributions'. This is interesting because if an individual perceives negative consequences of their weight and believes factors such as their own behaviour contribute to this, then it might be expected that this would motivate them to act on this to reduce consequences, as found in other studies [10-14]. Thus individuals holding these particular illness cognitions would theoretically be expected to have higher levels of satisfaction. However, participants within this study may be prevented from doing this by other factors suggested to be significant. Thus, individuals reporting

lower satisfaction perceived lower Personal Control over their weight and reduced eating self-efficacy. Therefore, combination of these specific illness cognitions with low self-efficacy may leave an individual feeling overwhelmed and unable to act: a process similar to that suggested by the theory of learned helplessness [41]. The finding that lower mental health status was associated with perceiving weight changes to be caused by items on the factors of 'Psychological attributions' and 'External factors' may be assimilated with this idea. Thus, whilst individuals perceive certain factors to have an effect on their weight, if they feel there is little they can do about this then this may leave them feeling hopeless and result in reduction of mental health status. The findings around variables associated with satisfaction may have important implications as outcome satisfaction was found to be moderately related to weight-loss within the current study and to weight-loss maintenance in another study [42], though this relationship is unclear [28-29]. Thus it may be important to consider the significant variables associated with satisfaction within a wider framework of weight-loss. This is particularly important when the Transcripts are considered (Appendix 5.13), as these suggest that dissatisfaction with excess skin following weight-loss may result in weight regain. This is shown in the following extract:

> 'I had op ... I was promised my excess fat off. I asked twice after losing 10st still got turned down twice. Now I put 3 and a half stone back on, my confidence gone, my nerves have gone, I am a bloody mess. I wish I never bothered with it all'.

This may also explain why mental health status was only weakly correlated with percentage of excess weight-loss: the excess skin associated with rapid weight-loss may have an impact upon mental health status. Additionally, it is of interest to consider that within the particular geographical area that the study was conducted in, plastic surgery was funded for some individuals and not others, potentially placing them in a position whereby they

perceive themselves to have little control over decisions made about their body, adding a systemic factor to this understanding.

Pre-operative BMI and eating self-efficacy emerged as significant variables in predicting percentage of excess weight-loss. As pre-operative BMI increased, percentage of excess weight-loss between two and six years decreased. This is particularly interesting when it is considered that bariatric guidance suggests that surgery should be offered as a first-line treatment to people with BMI's over 50 [6]. Thus this finding may have important service provision implications as it suggests that people with higher BMI's may require multidisciplinary support pre-operatively to attain a lower BMI before undergoing surgery. The finding that eating self-efficacy is an important factor in percentage of excess weight-loss is of particular interest as previous bariatric research has suggested that self-efficacy becomes an important factor in post-operative outcome [15, 17], and the findings from this study support this idea.

Having the operation a longer time ago, being male, older in age, and perceiving more weight-related Consequences, were significant variables associated with poorer physical health status. It is unclear why having the operation a longer time ago is important. It may be that criteria for selecting bariatric candidates has changed over time within the geographical area and this is reflected in changes in physical health status. In explanation of why males may have lower physical health status than females, suggested differences in help-seeking behaviours between the genders should be considered, such that females are suggested to be more likely to seek professional help for physical difficulties [43]. Thus it may be that males have poorer initial physical health status than females before undergoing surgery due to delayed help-seeking and this has an impact upon extent to which physical health status can reasonably be improved. The relationship between higher Consequences

and reduced health status might be due to items on the measures used to explore these variables being similar. Thus, the Consequences subscale asks participants about the impact weight has on various aspects of their lives whilst the Short-Form 36v2 assesses how much physical health status impacts upon ability to perform tasks. The association between reduced physical health status and increased age may be due to normal processes of ageing.

In addition to the findings related to the main hypotheses a number of additional findings have emerged. Firstly, there were suggested to be no effects of self-reporting bias within this study, though sample size should be considered as should the possibility that there was some bias introduced in that individuals attending the weight-clinic may have been less likely to under- or over-report weight. However, it is interesting to consider that assumptions made within some research regarding bias may be inaccurate and have implications for reliability of findings. Further research within this area would be of interest.

Secondly, percentage of excess weight-loss achieved between six and nine months post-operatively correlated significantly with that achieved between two and six years post-operatively. Further exploration showed that this varied as a function of pre-operative BMI, such that for individuals with a pre-operative BMI over 50 this tended to be between nine and twelve months. Another study [39] found that weight-loss tends to plateau between 12 and 18 months in individuals with a pre-operative BMI of between 37.8 and 49.7 kg/m^2, and between 18 and 24 months in those with a pre-operative BMI of between 50 and 69.7 kg/m^2. Weight-loss plateau was not seen from the follow-up times measured within the current study and it is likely that this is because only follow-up information from between three and 15 months post-operatively was included, which is before the point of plateau suggestion [39]. However, it is interesting that weight-loss achieved at certain time-points

appears equivalent to weight-loss two to six years post-operatively. Findings also suggested that number of follow-up appointments has little impact upon percentage of excess weight-loss at two to six years post-operatively, though sample size should be kept in mind. These findings, when considered together, could suggest service and economic implications in that number of medical follow-up appointments could be reduced, unless clinically judged otherwise, and scheduled for between six and nine months post-operatively. This would then enable early identification of any problems regarding weight-loss so that further exploration could be undertaken and necessary support offered.

Thirdly, participants were found to have a lower physical and mental health status than both a sample of one-year post-operative gastric bypass patients [22], and a sample of the general population [35]. Interestingly, within this study participants' responses on the mental health sub-scale indicated that their functioning in this area most closely approximated that of a sample of pre-operative gastric bypass patients [22]. Possible explanations for why mental health status is lower than expected might be found within the Transcripts (Appendix 5.13). From these, possible reasons include general dissatisfaction with the operation in relation to expectations, there being perceived to be little aftercare support, possible reasons for initial weight gain not being explored prior to surgery, and problems encountered due to weight-loss, including excess skin. Additionally, the relationship with food suggested by some participants as an important cause in weight change is interesting to consider, particularly in light of literature suggesting that food can serve an important emotional regulatory function [44]. Thus whilst the physical nature of the gastric bypass operation may reduce the amount of food able to be consumed it does not take into account other important reasons that might contribute to initial weight gain and these may then become problems at a later point. The implications of this finding are that

there is strong support for the inclusion of psychologists within bariatric healthcare teams. Aspects of their role would be to offer psychological support in exploring expectations of treatment and reasons for initial weight gain, developing alternate coping strategies, and promoting adjustment to weight-loss through prior preparation. Additionally, in contrast to medical follow-up appointments, it may be necessary that longer psychology follow-up appointments be offered given that psychological difficulties are apparent a longer time after surgery. Within the wider team, psychologists would also provide an important role in supporting other members of the team in identifying psychological issues.

Possible reasons for poorer physical health status within the current study's participants may also be found within the Transcripts (Appendix 5.13) and from considering the additional causes that participants felt to be important in weight change. From these sources possible reasons for lower physical health status that emerge are poor physical mobility and lack of exercise due to difficulties with excess skin and physical health problems commonly associated with obesity, such as arthritis and pain. A possible implication of this is that a role for specialist obesity health facilitators could be created that would entail development of individualised exercise programmes that take into account the common physical problems associated with this population that can act as a barrier to accessing generic exercise programmes.

This study had a number of limitations. Firstly, response rate was low with only 22.7% of the larger identified sample responding to postal research information. This response rate is similar to that found in a study recruiting patients who had been referred to an exercise scheme following concerns regarding sedentary behaviour (20.9%) [45]. However, a systematic literature review exploring response rates for postal recruitment in studies published within medical journals found that mean response rate was 60% though this rate

varied depending upon the specific topic under study [46]. Due to participants being identified by the healthcare team from a large database, one reason for this low response rate might be that some identified participants were deceased or had moved address. Despite the low response rate the sample was shown to be unaffected by bias in terms of age, gender or pre-operative weight. Another limitation is that individuals choosing to participate may have done so because they had experienced an extreme outcome (i.e. really positive or really negative), as is possibly suggested from the Transcripts. Thirdly, it may be that items on the IPQ-R for Weight were not measuring what was expected. For example, Treatment Control had low internal consistency suggesting that the items were not measuring the same construct. Whilst wording of this measure complied with guidance [30], it is possible that this changed the meaning of some items. Alternatively, participants had already received treatment in the form of weight-loss surgery and so potentially this was less relevant as a concept. Additionally, it may be that illness cognitions around weight are more changeable than in other health conditions, making responses less reliable. For example, if an individual has lost a majority of their weight then this might mean that they perceive fewer negative consequences associated with their weight, whereas pre-operatively this may have been different. This is supported when it is considered that one study exploring self-efficacy following bariatric surgery suggested that individuals perceived lower Consequences after surgery [15]. Finally, the Individual Perception of Outcome measure was specifically designed for this study and there is no psychometric information regarding its reliability and validity. However, a strength of this measure is that it was shown to have very high internal consistency.

A number of strengths were also identified. Firstly, limitations of past research were taken into account and steps were taken to overcome these. Thus, two to six year post-operative

outcome was assessed and a number of outcomes were measured in addition to percentage of excess weight-loss. Secondly, the sample varied quite greatly on when they had undergone surgery, age, pre-operative weight and BMI, and current weight and BMI. This might suggest that the generalisability of results is fairly good. Finally, this study has raised a number of interesting findings that may have important service-related and clinical implications.

Further research should attempt to overcome bias in participation such that individuals with a range of experiences take part, rather than only those who have had very positive or negative experiences, though it is difficult to consider how this could feasibly be done. Additionally, there is a gap in qualitative research that has been done in this area and it is clear from the Transcripts that some individuals undergoing surgery are keen to relate their experiences. Finally, further research could potentially take the form of a randomised control trial and explore differences between individuals undergoing bariatric surgery following treatment as usual, individuals receiving psychological intervention before surgery, and individuals receiving multi-component intervention (involving psychological, dietary, and lifestyle support) prior to surgery. This research is suggested from the findings of the current study as in addition to surgery a number of psychological and systemic factors have been identified as important to consider. Findings from this research would then be informative in treatment planning and intervention.

Overall, the findings from this study are informative and a number of clinical implications have been identified, such as potential psychological issues that it would be useful to consider prior to surgery. Additionally, service-related implications have also been discussed, such as the structuring of follow-up appointments. A number of areas for further research have been identified.

References

1. McPherson, K., Marsh, T. and Brown, M. (2007). Tackling Obesities: Future Choices – Modelling Future Trends in Obesity and the Impact on Health. Foresight. Government Office for Science.
2. Sturm, R. and Wells, K.B. (2001). Does obesity contribute as much to morbidity as poverty or smoking? *Public Health, 115*, 229-235.
3. Friedman, M.A. and Brownell, K.D. (2002). Psychological consequences of obesity. In: Fairburn, C.G., and Brownell, K.D., eds. *Eating Disorders and Obesity: A Comprehensive Handbook,* 2nd ed. New York, NY: The Guilford Press; 2002, pp. 393-398.
4. Wadden, T.A. (1993). The Treatment of Obesity: an overview. In: Stunkard A.J. and Wadden, T.A. eds. *Obesity: Theory and Therapy*. 2nd ed. New York: Raven Press; 1993, pp. 197-217.
5. Hsu, L.K., Benotti, P.N., Dwyer, J, Roberts, S., Saltzman, E., Shikora, S., Rolls, B.J. and Rand, W. (1998). Nonsurgical factors that influence the outcome of bariatric surgery: a review. *Psychosomatic Medicine, 60,* 338-346.
6. National Institute for Health and Clinical Excellence (NICE). Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children. London. 2006.
7. van Hout, G.C.M; Verschure, S.K.M.; van Heck, G.L. (2005). Psychosocial Predictors of Success following Bariatric Surgery. *Obesity Surgery, 15*, 552-560
8. Leventhal, H., Meyer, D. & Nerenz, D. (1980). The common sense representation of illness danger. *Medical Psychology, 2*, 7-30.

9. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191-215.
10. Brewer, N.T., Chapman, G.B., Brownlee, S. and Leventhal, E.A. (2002). Cholesterol control, medication adherence and illness cognition. *British Journal of Health Psychology, 7,* 433 – 447.
11. Cooper, A., Lloyd, G., Weinman, J. and Jackson, G. (1999). Why patients do not attend cardiac rehabilitation: the role of intentions and illness beliefs. *Heart, 82,* 234-36.
12. Petrie, K.J., Weinman, J., Sharpe, N. and Buckley, J. (1996). Role of patients' view of their illness in predicting return to work and functioning after myocardial infarction: longitudinal study. *British Medical Journal, 312,* 1191-1194.
13. Wamsteker, E.W., Geenen, R., Iestra, J., Larsen, J.L., Zelissen, P.M.J. and Van Staveren, W.A. (2005). Obesity-related beliefs predict weight loss after an 8-week low-calorie diet. *Journal of the American Dietetic Association, 105*, 441-444.
14. Ogden, J. (2000). The correlates of long-term weight loss: a group comparison study of obesity. *International Journal of Obesity, 24*, 1018-1025.
15. Zijlstra, H., Larsen, J.K., van Ramshorst, B. and Geenen, R. (2005). The association between weight loss and self-regulation cognitions before and after laparoscopic adjustable gastric banding for obesity: A longitudinal study. *Surgery, 139,* 334-339.
16. Warziski, M., Sereika, S.M., Styn, M.A., Music, E. and Burke, L.E., (2008). Changes in self-efficacy and dietary adherence: the impact on weight loss in the PREFER study. *Journal of Behavioral Medicine, 31,* 81-92.
17. Batsis, J.A., Clark, M.M., Grothe, K., Lopez-Jimenez, F., Collazo-Clavell, M.L., Somers, V.K. and Sarr, M.G. (2009). Self-efficacy after bariatric surgery for obesity: A population-based cohort study. *Appetite, 52,* 637-645.

18. Ryden, A., Karlsson,J., Sullivan, M., Torgerson, J.S. and Taft, C. (2003). Coping and Distress: What Happens After Intervention? A 2-Year Follow-up from the Swedish Obese Subjects (SOS) Study. *Psychosomatic Medicine, 65*, 435–442.
19. World Health Organisation. Obesity Epidemic Puts Millions at Risk from Related Diseases. Geneva, Switzerland: World Health Organisation; 1997.
20. Kolotkin, R.L., Crosby, R.D., Williams, G.R., Hartley, G.G. and Nicol, S. (2001). The relationship between health status and weight loss. *Obesity Research, 9,* 564-571.
21. Dixon, J.B., Dixon, M.E. and O'Brien, P.E. (2001). Quality of Life after Lap-Band Placement: Influence of Time, Weight Loss, and Comorbidities. *Obesity Research, 9,* 713-721.
22. Dymek, M.P., le Grange,D., Neven,K. and Alverdy, J. (2002). Quality of Life after Gastric Bypass Surgery: A Cross-Sectional Study. *Obesity Research, 10,* 1135-1142
23. Ballantyne, G.H. (2003). Measuring outcomes following bariatric surgery: weight loss parameters, improvement in co-morbid conditions, change in quality of life and patient satisfaction. *Obesity Surgery, 13,* 954-964.
24. Kaly, P., Orellana, S., Torrella, T., Takagishi, C., Saff-Koche, L. and Murr, M.M. (2008). Unrealistic weight loss expectations in candidates for bariatric surgery. *Surgery for Obesity and Related Diseases, 4,* 6-10.
25. Wee, C.C., Jones, D.B., Davis, R.B., Bourland, A.C. and Hamel, M.B. (2006). Understanding patients' value of weight loss and expectations for bariatric surgery. *Obesity Surgery, 16,* 496-500.
26. Giusti, V., Suter, M., Heraief, E., Gaillard, R.C. and Burckhardt, P. (2003). Rising role of obesity surgery caused by increase of morbid obesity, failure of conventional

treatments, and unrealistic expectations: Trends from 1997 to 2001. *Obesity Surgery, 13*, 693-698.

27. Dalle Grave, D., Calugi, S., Molinari, E., Petroni, M.L., Bondi, M., Compare, A. and Marchesini, G. (2005). Weight loss expectations in obese patients and treatment attrition: An observational multicenter study. *Obesity Research, 13,* 1961-1969.
28. Fabricatore, A.N., Wadden, T.A., Womble, L.G., Sarwer, D.B., Berkowitz, R.I., Foster, G.D. and Brock, J.R. (2007). The role of patients' expectations and goals in the behavioural and pharmacological treatment of obesity. *International Journal of Obesity, 31*, 1739-1745.
29. White, M.A., Masheb, R.M., Rothschild, B.S., Burke-Martindale, C.H. and Grilo, C.M. (2007). Do patients' unrealistic weight goals have prognostic significance for bariatric surgery? *Obesity Surgery, 17*, 74-81.
30. Moss-Morris, R., Weinman, J., Petrie, K.J., Horne, R., Cameron, L.D. and Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology and Health, 17:* 1-16.
31. Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). Multivariate Data Analysis: A Global Perspective. Upper Saddle River, New Jersey: Pearson.
32. Linde, J.A., Rothman, A.J., Baldwin, A.S. and Jeffery, R.W. (2006). The impact of self-efficacy on behaviour change and weight change among overweight participants in a weight loss trial. *Health Psychology, 25,* 282-291.
33. Deital, Gawdat and Melissas (2007). Reporting Weight Loss 2007. *Obesity Surgery, 17,* 565-568.

34. Buchwald, H., Avidor, Y., Braunwald, E., Jensen, M.D., Pories, W., Fahrbach, K. and Schoelles, K. (2004). Bariatric Surgery: A systematic review and meta-analysis. *Journal of the American Medical Association, 292,* 1724-1737.

35. Ware, J.E., Kosinski, M., Bjorner, J.B., Turner-Bowker, D.M., Gandek, B. and Maruish, M.E. (2008). User's Manual for the SF-36v2 Health Survey. Quality Metric Health Outcomes Solutions.

36. Tabachnick, B.G. and Fidell, L.S. (2007). *Using multivariate statistics*. Boston, Massachusetts: Pearson.

37. Palta, M., Prineas, R.J., Berman, R. and Hannan, P. (1982). Comparison of self-reported and measured height and weight. *American Journal of Epidemiology, 115*, 223-230.

38. Linde, J. A., Jeffery, R.W., Finch, E.A., Ng, D.M. and Rothman, A.J. (2004). Are Unrealistic Weight Loss Goals Associated with Outcomes for Overweight Women? *Obesity Research, 12,* 569-576.

39. Suter, M., Giusti, V., Heraief, E., Zysset, F., and Calmes, J.M. (2003). Laparoscopic Roux-en-Y gastric bypass: Initial 2-year experience. *Surgical Endoscopy, 17,* 603-609.

40. Barnes, Moss-Morris and Kaufusi (2004). Illness beliefs and adherence in diabetes mellitus: a comparison between Tongan and European patients. *Journal of the New Zealand Medical Association, 117,* No 1188.

41. Maier, S.F. and Seligman, M.E.P. (1976). Learned helplessness: Theory and evidence. *Journal of Experimental Psychology: General, 105,* 3-46.

42. Byrne, S., Cooper, Z. and Fairburn, C. (2003). Weight maintenance and relapse in obesity: a qualitative study. *International Journal of Obesity, 27*, 955-962.

43. Galdas, P.M., Cheater, F. and Marshall, P. (2005). Men and health help-seeking behaviour: literature review. *Journal of Advanced Nursing, 49*, 616-623.

44. Van Strien, T., Schippers, G.M. and Cox, W.M. (1995). On the relationship between emotional and external eating behavior. *Addictive Behaviors, 20*, 585-594.

45. Harrison, R.A. and Cock, D. (2004). Increasing response to a postal survey of sedentary patients – a randomised controlled trial. *BioMed Central Health Services Research, 10*, 31-35.

46. Asch, D.A., Jedrziewski, M.K., and Christakis, N.A. (1997). Response rates to mail surveys published in medical journals. *Journal of Clinical epidemiology, 50*, 1129-1136.

Appendices

Appendix 1 –Reflective statement

Introduction

Reflecting back on the whole process of undertaking my research I never thought that I would be in a position at the end of it where I am enthusiastic to start it all over again but that is where I now find myself. There have been countless times throughout conducting my research that I have been filled with complete despair, having sleepless nights over issues that I perceived myself to have little control over and desperately trying to find solutions. There has been nothing in my life to date that has so tested my resilience, resourcefulness, optimism, and pure determination as much as this process has. So why then, you might ask, should I now be in a position where I find myself sad to be coming to an end of my research and keen to move on to further research? It seems that in giving 'birth' to my creation and seeing it in its full form I have somehow forgotten the full pain of the labour process. Within this reflective statement I aim to answer this question through considering various issues that I have encountered and decisions that I have made and how this has left me with a relationship with research that I will continue to cherish throughout my future career.

Finding a research question and study design

Thinking back to identifying a specific research question I remember how I wanted to explore everything and it was really difficult to focus this enthusiasm down to look at a defined number of specific variables. Whilst there had been a lot of previous research done within the area of traditional weight loss, literature related to bariatric surgery was mainly limited to studies attempting to identify psychological variables that were predictive of outcome following surgery. There is a strong rationale for these types of studies as guidance recommends that prior to surgery candidates should undergo assessment and

identification ‘of any...psychological factors that may affect adherence to post-operative care requirements’ (‘Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children’, NICE, 2006). However, within the time-limits of the Doctorate this would not have been feasible or likely to identify anything of interest as generally difficulties following surgery are identified from around two years post-operatively (Hsu, et al., 1998). Instead a cross-sectional design was chosen which was able to identify factors that might be linked with various outcomes following surgery. Considering that psychological factors have been found to change following surgery this study was hoped to be able to offer some interesting findings regarding the impact of psychological factors on outcome at a later point post-operatively.

The specific psychological variables that were selected for exploration were self-efficacy and illness cognitions. These were identified as of interest from doing literature reviews, speaking with members of the bariatric team, and in speaking with members of a Surgical Weight Loss Support group. From speaking with people it seemed important to explore these factors in relation to a variety of outcomes rather than solely weight-loss. This was because a lot of important information would not have been captured if no other outcomes had been explored. One thing that struck me was that there seems to be a general society and medical view that individuals should be in a better situation after losing weight than before they began to lose weight. However, individuals who were kind enough to share their experiences of the operation with me have not always found this to be the case and actually feel emotionally worse and more limited due to excess skin which is one result of rapid weight loss. Thus looking at a variety of outcomes was hoped to go part way in encapsulating some of these experiences.

Considering now my experiences of choosing a research question and selecting a design I could not imagine looking at multiple factors as I had initially been keen to do. This is because it would be impossible to report all the findings in a way that would do them justice, resulting in the research potentially being of lower quality.

Data collection

In the initial planning phases I had been under the impression that recruitment would be a fairly simple and painless experience. Thus I was not at all prepared for the anguish and despair experienced at times. Despite these negative experiences, the process of data collection also served as an timely reminder of why research is so important.

My research was planned over two years prior to recruitment taking place and within this time some important changes within the service I was recruiting from had taken place. Notably, service criteria regarding the time to which individuals were followed-up after bariatric surgery was reduced so that follow-ups where scheduled up to two years after surgery and then individuals were discharged if there were no identified problems. This had major implications for my recruitment method as this meant that individuals meeting my inclusion criteria would no longer be attending the clinics I planned to recruit from.

Whilst this meant a change to my recruitment method I found that being flexible and able to calmly approach the situation helped in overcoming this potential barrier and I was able to recruit participants by post. However, this also raised distressing and unexpected issues. Appropriate participants were identified by the healthcare team from the main database and postal information regarding the study was sent to them. However, the database was large and not completely up-to-date, resulting in a number of packs being sent to people who had died, sometimes directly due to the operation. I was shocked that this had happened and felt

awful that individuals close to the deceased had potentially undergone distress as a result of my research. This made me all the more aware of how important it was that my research had not put these individuals through pain for no reason and that the findings of this research would be beneficial in the impact that it has for other people.

In speaking with individuals who had been affected it was highlighted to me in a powerful way that bariatric surgery does not just have an impact upon the individuals who undergo it but rather it has implications on the systems around them as well, who seem to be relatively unconsidered within the whole process. It seems that both from this experience and from the findings of my research that there is a lot more to consider around bariatric surgery and the implications that it has both for the individual and for those around them.

Writing up

There have been many days and nights, particularly as hand-in has loomed, that I have worked solidly from one morning through to the next morning. This is a way of working that I have never before participated in as I could not have imagined staying awake when a comfortable bed was calling. However, I feel that I have been motivated in doing this because it feels like I have been given a big responsibility to do the individuals who have been involved in my research justice. Emotionally, this has been a rollercoaster of an experience, with moments of pure exhilaration when I felt the end was in sight, to moments of frustration when I found that actually there were miles of quicksand ahead.

Whilst I have been looking ahead to the point of hand-in for what feels to be forever and approaching this time with anticipation, I am also aware that these feelings are tinged with sadness that this process is now over. During write-up I have mused that metaphorically

this process is akin to that of a proud parent sending their child into the world, with hopes of what they might achieve but possibly being somewhat saddened by this at the same time.

Choosing journals

The decision to submit my empirical paper to Obesity Surgery was made because I considered it important that the findings are available to a multidisciplinary forum, including psychologists, psychiatrists, surgeons, nurses, and dieticians. A number of implications suggested by my empirical research are relevant to both psychologists and other professionals, such as surgeons and dieticians. This because it is often these members of the team who routinely see patients following bariatric surgery and who make the decision as to whether an individual should be referred to psychological services. Thus it is important that findings from empirical research are accessible to them so that these findings can be married with practical application and patients are able to benefit from them.

The British Journal of Health Psychology was selected for submission of my systematic literature review because this journal is available worldwide and provides a forum for discussion around health and illness. My review topic was specific with regard to the impact of expectations on outcomes from weight-loss treatments and I believe that the implications from this review require further research. This is particularly the case when it is considered that obesity is predicted to become an increasing problem in the future (McPherson, Marsh & Brown, 2007). I feel that selection of the British Journal of Health Psychology is the ideal forum within which further discussion and research around this topic of importance can take place.

Personal development

In undertaking this process I feel that I have learned a lot about myself and feel proud that I have overcome the barriers faced along the way. There were times when it was difficult to maintain a good working balance between the demands of research and those of clinical and I feel that this process has enabled me to further develop my time-management skills. It gave me an understanding of why few clinical psychologists undertake research though they would be ideally placed to do this given their training and skills. However, in undergoing this process, research as a concept has evolved from being something that I was required to do in order to pass the Doctorate and has become something that I can truly appreciate as worthwhile in hopefully improving the lives of the people to whom it relates. Thus it is important to make time where possible to undertake research so that this enables development of understanding that could further benefit individuals accessing psychological services.

Concluding remarks

Through braving the turbulent nature of research I feel that I have been swept swiftly from jubilation to despair before reaching a more balanced state in which to view this process. No other experience in my life to date has so tested me or offered such a sense of achievement and it is with enthusiasm that I look to the next challenge (possibly after small break!).

References

Hsu, L.K., Benotti, P.N., Dwyer, J, Roberts, S., Saltzman, E., Shikora, S., Rolls, B.J., and Rand, W. (1998). Nonsurgical factors that influence the outcome of bariatric surgery: a review. *Psychosomatic Medicine, 60*, 338-46.

McPherson, K., Marsh, T., and Brown, M. (2007). Tackling Obesities: Future Choices – Modelling Future Trends in Obesity and the Impact on Health. Foresight. Government Office for Science.

National Institute for Health and Clinical Excellence (NICE). Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children. London. 2006.

Appendix 2 – Guidelines for submissions to Journals

Appendix 2.1 – British Journal of Health Psychology Author Guidelines

Appendix 2.2 – Obesity Surgery Author Guidelines

Appendix 2.1. British Journal of Health Psychology Author Guidelines.

British Journal of Health Psychology (BJHP)

Notes for Contributors

The aim of the **British Journal of Health Psychology** is to provide a forum for high quality research relating to health and illness. The scope of the journal includes all areas of health psychology across the life span, ranging from experimental and clinical research on aetiology and the management of acute and chronic illness, responses to ill-health, screening and medical procedures, to research on health behaviour and psychological aspects of prevention. Research carried out at the individual, group and community levels is welcome, and submissions concerning clinical applications and interventions are particularly encouraged.

The types of paper invited are:

- papers reporting original empirical investigations;
- theoretical papers which may be analyses or commentaries on established theories in health psychology, or presentations of theoretical innovations;
- review papers, which should aim to provide systematic overviews, evaluations and interpretations of research in a given field of health psychology; and
- methodological papers dealing with methodological issues of particular relevance to health psychology.

1. Circulation

The circulation of the Journal is worldwide. Papers are invited and encouraged from authors throughout the world.

2. Length

Papers should normally be no more than 5000 words (excluding the abstract, reference list, tables and figures), although the Editor retains

discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length.

3. Editorial policy

The Journal receives a large volume of papers to review each year, and in order to make the process as efficient as possible for authors and editors alike, all papers are initially examined by the Editors to ascertain whether the article is suitable for full peer review. In order to qualify for full review, papers must meet the following criteria:

- the content of the paper falls within the scope of the Journal
- the methods and/or sample size are appropriate for the questions being addressed
- research with student populations is appropriately justified
- the word count is within the stated limit for the Journal (i.e. 5000 words)

4. Submission and reviewing

All manuscripts must be submitted via our online peer review system. The Journal operates a policy of anonymous peer review. **Authors must suggest three reviewers when submitting their manuscript, who may or may not be approached by the Associate Editor dealing with the paper.**

5. Manuscript requirement

- Contributions must be typed in double spacing with wide margins. All sheets must be numbered.
- Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript with their approximate locations indicated in the text.
- Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate sheet. The resolution of digital images must be at least 300 dpi.
- For articles containing original scientific research, a structured abstract of up to 250 words should be included with the headings: Objectives, Design, Methods, Results, Conclusions. Review articles should use these headings: Purpose, Methods, Results, Conclusions. Please see the document below for

further details:

British Journal of Health Psychology - Structured Abstracts Information

- For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full.
- SI units must be used for all measurements, rounded off to practical values if appropriate, with the imperial equivalent in parentheses.
- In normal circumstances, effect size should be incorporated.
- Authors are requested to avoid the use of sexist language.
- Authors are responsible for acquiring written permission to publish lengthy quotations, illustrations, etc. for which they do not own copyright.

For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association.

6. Publication ethics

All submissions should follow the ethical submission guidelines outlined the the documents below:

Ethical Publishing Principles – A Guideline for Authors

Code of Ethics and Conduct (2006)

7. Supplementary data

Supplementary data too extensive for publication may be deposited with the British Library Document Supply Centre. Such material includes numerical data, computer programs, fuller details of case studies and experimental techniques. The material should be submitted to the Editor together with the article, for simultaneous refereeing.

8. Copyright

On acceptance of a paper submitted to a journal, authors will be requested to sign an appropriate assignment of copyright form. To find out more, please see our Copyright Information for Authors.

Structured abstracts –

British Journal of Health Psychology

Authors should note that all papers submitted to the *British Journal of Health Psychology* **must include structured abstracts. Papers will not be considered for publication unless they have a structured abstract in the correct format.**

Articles containing original scientific research should include a structured abstract with the following headings and information:
Objectives State the primary objectives of the paper and the major hypothesis tested (if appropriate).
Design Describe the design of the study and describe the principal reasoning for the procedures adopted.
Methods State the procedures used, including the selection and numbers of participants, the interventions or experimental manipulations, and the primary outcome measures.
Results State the main results of the study. Numerical data may be included but should be kept to a minimum.
Conclusions State the conclusions that can be drawn from the data provided and their clinical implications (if appropriate).

Review articles should include a structured abstract with the following headings:

Purpose State the primary objectives of the review.
Methods State the method used to select studies for the review, the criteria for inclusion, and the way in which the material was analysed.
Results State the main results of the review.
Conclusions State the conclusions that can be drawn from the review and their clinical implications if appropriate.

Appendix 2.2. Obesity Surgery Guidelines for Authors.

Instructions for Authors

***

PLEASE NOTE: Effective January 2010, Obesity Surgery no longer accepts Case Report submissions for publication.

***

GENERAL

Obesity Surgery is published by Springer Science+Business Media LLC and is the official journal of the International Federation for the Surgery of Obesity and metabolic disorders (IFSO). Obesity Surgery publishes concise articles on clinical reports, clinical research, physiology research, basic science research, animal research, new concepts, technical innovations, case reports, editorials, reviews, current status, short communications, letters to the editor, invited commentaries, opinions, book reviews, guidelines, scholarly presentations, historical notes, medicolegal issues, and meeting abstracts. Requirements are in accordance with the "Uniform Requirements for Manuscripts submitted to Biomedical Journals," www.icmje.org.

Submitted papers will be subjected to peer review by members of the Editorial Board. Articles that are submitted for publication are done so with the understanding that they, or their substantive contents, have not been and will not be submitted to any other publication. The Editor and Publisher reserve the right to edit manuscripts accepted for publication to ensure conformity with the style of the Journal.

ELECTRONIC MANUSCRIPT SUBMISSION VIA EDITORIAL MANAGER

Submission of a manuscript implies: a) that the work described has not been published before; b) that it is not under consideration for publication anywhere else, and c) that its publication has been approved by all co-authors, if any, as well as by the responsible authorities – tacitly or explicitly – at the institute where the work has been carried out. The publisher and editors will not be held legally responsible should there be any claims for compensation.

Obesity Surgery electronically processes all submitted manuscripts through the online center, Editorial Manager (HTTP://OBSU.EDMGR.COM). All submissions are received, reviewed and decided upon through this website.

Original submissions are peer-reviewed, and not blinded.

SUBMIT ONLINE

AUTHOR ACCOUNTS

Authors entering the journal's Editorial Manager site for the first time can create a new account and then follow the online prompts in order to submit a manuscript. If you have previously logged into the system, you should use your existing account for ALL subsequent submissions. If this procedure is followed, and you use one primary account, then you will be able to track the status for all of your submitted manuscripts from the same page.

GETTING STARTED

Once you have logged into your account, Editorial Manager will lead you through a step-by-step submission process. When submitting through Editorial Manager, you will be required to enter data through several different screens. The requested information will include Article Type, Title, Authors, Abstract, Key Words, Classifications, Comments/Cover Letter, and so forth. A check-mark next to the submission step indicates that you have provided the necessary information for that step. If you must leave the site and return at a later time, you can click on the "Incomplete Submissions" link in your Author Main Menu to access and continue submitting the partially submitted manuscript by clicking "Edit Submission" under the Actions link.

UPLOADING FILES

During the final submission step ("Attach Files"), please include the following documents.

Your COMPLETE manuscript text. Make sure that your Title Page (with all contributing author and affiliation information), Abstract, Body Text, References, Figure Legends, and Tables (if any) are all included together in ONE DOCUMENT, in either Word or Rich Text Format.

If you prefer, you may instead submit your tables separately in Word, Rich Text, or Excel format.

The preferred format for submitted figures and/or graphics is either TIF or EPS format. For very large figure files, please compress them as much as possible before uploading to the website. MS Office files are also acceptable.

Any video or multimedia should be submitted in MPEG, RM, AVI, or MOV format. No video file should be larger than 2MB.

Any other documents that you believe are necessary for your submission.

After uploading the parts of your submission in this manner and clicking on "Build PDF for my Approval," the system will convert the files to PDF. Click on "Submissions Waiting for Author's Approval," and go to your Actions link to view the PDF. You will see the result of conversion with the Acrobat plug-in in your browser. Once you approve the PDF, your manuscript will be officially submitted.

At any point during your submission process, Help links and a "frequently asked questions" link are available to view common questions or search specific topics.

If you have any questions that are not found in the Help link, or you need assistance submitting your manuscript online via Editorial Manager, please contact the Obesity Surgery Managing Editor:

Deana Rodriguez

Managing Editor, OBSU Editorial Office

5437 Fairbrook Street

Long Beach, CA 90815, USA

Phone: +1 (562) 961-9928

Fax: +1 (562) 961-9929

Email: obsu.rodriguez@gmail.com

REQUIRED FORMS

Copyright forms are now handled online -after- an article is accepted for publication. While the article is being typeset, the author is contacted by the typesetter during the MyPublication stage and provided with a website address that will send the author through the copyright/offprints/color figures in print/Open Choice procedures. Please note the author will not receive proofs of their article until the MyPublication stage has been completed.

CONFLICT OF INTEREST DISCLOSURE

All potential benefits in any form from a commercial party related directly or indirectly to the subject of this manuscript or any of the authors must be acknowledged. For each source of funds, both the research funder and the grant number should be given. These details should be added in the "Conflict of Interest" section during online submission, and should also be included in a separate section of the manuscript document text, before the list of references.

If no conflict exists, authors should state the following note in a separate section of the manuscript document text, before the list of references: The authors declare that they have no conflict of interest.

The authors must fill out the “Author Disclosure of Relevant Financial Relationships” form which can be found below. If no author on the manuscript has any conflict of interest to disclose, the corresponding author may fill out the form on behalf of all co-authors. If any author has a conflict to disclose, all authors must fill out the form individually. The “Author Disclosure of Relevant Financial Relationships” form must then be uploaded at the time of manuscript submission. Submissions lacking a conflict of interest disclosure will not be accepted.

Author Disclosure of Relevant Financial Relationships

ORGANIZATION OF MANUSCRIPTS

Please type manuscripts (including references) double-spaced with one-inch wide margins. Number the pages consecutively and organize the manuscript in the order indicated below.

MANUSCRIPT FORMAT

Title Page. The title page should include:

The name(s) of the author(s)

A concise and informative title

The affiliation(s) and address(es) of the author(s)

The e-mail address, telephone and fax numbers of the corresponding author

Include a short title (not to exceed 30 characters in length, including spaces between words) for use as a running head

The authors must disclose any commercial interest that they may have in the subject of study and the source of any financial or material support

ABSTRACT. The Abstract for Research Articles and Clinical Reports must be not more than 250 words and should be written under the headings: Background, Methods, Results and Conclusions. The Abstract should not cite any references. Spell out each abbreviated term in full and follow with the abbreviation the first time a particular term is used. For example, ultrasound (US). Three to ten key words should follow the abstract. Where possible, the key words should be taken from the Medical Subject Headings (MeSH) of the Index Medicus.

The Abstract for Case Reports, Review Articles, Historical Notes, Modern Surgery: Technical Innovation, Medicolegal Issues, Opinions, Current Status, Scholarly Presentations, and New Concepts, should be not more than 250 words and should be written in one paragraph.

Abstracts are not required at the beginning of Letters to the Editor, Guidelines, Invited Commentaries, and Book Reviews.

Use only standard abbreviations and avoid abbreviations in the title. Define all abbreviations, except those in very common use (e.g. DNA), on their first mention in the text.

SHORT COMMUNICATIONS. are brief descriptions of a focused study with important, but very straightforward results. The short communication should be no longer than 1,800 words, have a maximum of 2 figures and tables, and have no more than 20 references. The abstract is optional. However, if the abstract is included, it should be divided into the headings of Background, Methods, Results and Conclusions and should not exceed 150 words.

TEXT. Since each of the manuscript types noted above can cover a great number of topics and concepts, word limits are difficult to set. We instead request that your article remain succinct and to-the-point, providing a detailed account of your findings and observations. The peer review process typically will verify whether or not the paper is too long or too brief.

The text should typically be organized into the following sections/headings: Introduction, Materials and Methods, Results, Discussion, References, Tables, Legends for Figures.

Use a normal, plain font (e.g., 12-point Times Roman) for text

Double-space the text

Use italics for emphasis

Use the automatic page numbering function to number the pages

Do not use field functions

Use tab stops or other commands for indents, not the space bar

Use the table function, not spreadsheets, to make tables

REFERENCES. The list of References should only include works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text. Do not use footnotes or endnotes as a substitute for a reference list. Reference list entries should be numbered consecutively.

Citations in the text should be identified by numbers in square brackets. Some examples:

1. Negotiation research spans many disciplines [3].

2. This result was later contradicted by Becker and Seligman [5].

3. This effect has been widely studied [1-3, 7].

For Journal Articles: The sequence for a journal article should be: author(s); title of paper; journal name abbreviated as in the Index Medicus, year of publication, volume number and first and last page numbers. When there are more than three authors, shorten to three and add ‘et al’, e.g.

Cadiere GB, Himpens J, Vertruyen M et al. The world's first obesity surgery performed by a surgeon at a distance. Obes Surg 1999; 9: 206-9.

For Chapters of a Book: The sequence for chapters of a book should be: author(s), chapter title, editors, book title, edition, place of publication, publisher, year, page numbers, e.g.

Angel A, Winocur JT, Roncari DAK. Morbid obesity – the problem and its consequences. In: Deitel M, ed. Surgery for the Morbidly Obese Patient. Philadelphia: Lea & Febiger 1989: 19-26.

Authors are responsible for ensuring that the list contains all references cited in the text, in order, accurately.

ACKNOWLEDGMENTS. Acknowledgments of people, grants, funds, etc. should be placed in a separate section before the reference list. The names of funding organizations should be written in full.

PERMISSIONS. Photographs in which a person is identifiable must either have the face masked out, or be accompanied by written permission for publication from the individual in the photograph. Authors wishing to include figures, tables, or text passages that have already been published elsewhere are required to obtain permission from the copyright owner(s) for both the print and

the online format and to include evidence that such permission has been granted when submitting their papers. Any material received without such evidence will be assumed to originate from the authors. Please be informed that we will not be able to refund any costs that may have occurred in order to receive these permissions from other publishers. Please be aware that some publishers do not grant electronic rights for free (an example is Thieme Publishers). In these cases we kindly ask you to use figures from other sources.

TABLES

All tables are to be numbered using Arabic numerals

Tables should always be cited in text in consecutive numerical order

For each table, please supply a table heading

The table title should explain clearly and concisely the components of the table

Identify any previously published material by giving the original source in the form of a reference at the end of the table heading

Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body

FIGURES (ILLUSTRATIONS)

Include the figure legends at the end of the manuscript text. Type the legends for figures double-spaced, and number the legends consecutively.

All figures are to be numbered using Arabic numerals

Figure parts should be denoted by lowercase letters

Figures should always be cited in text in consecutive numerical order

For each figure, please supply a figure caption

Make sure to identify all elements found in the figure in the caption

Identify any previously published material by giving the original source in the form of a reference at the end of the caption

For more information about preparing your illustrations, please follow the hyperlink to the artwork instructions below

STATEMENT OF HUMAN AND ANIMAL RIGHTS

When reporting experiments on human subjects, authors should indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised

in 2000. If doubt exists whether the research was conducted in accordance with the Helsinki Declaration, the authors must explain the rationale for their approach, and demonstrate that the institutional review body explicitly approved the doubtful aspects of the study. When reporting experiments on animals, authors should be asked to indicate whether the institutional and national guide for the care and use of laboratory animals was followed.

STATEMENT OF INFORMED CONSENT

Patients have a right to privacy that should not be infringed without informed consent. Identifying information, including patients' names, initials, or hospital numbers, should not be published in written descriptions, photographs, and pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) gives written informed consent for publication. Informed consent for this purpose requires that a patient who is identifiable be shown the manuscript to be published. Authors should identify Individuals who provide writing assistance and disclose the funding source for this assistance. Identifying details should be omitted if they are not essential. Complete anonymity is difficult to achieve, however, and informed consent should be obtained if there is any doubt. For example, masking the eye region in photographs of patients is inadequate protection of anonymity. If identifying characteristics are altered to protect anonymity, such as in genetic pedigrees, authors should provide assurance that alterations do not distort scientific meaning and editors should so note.

GUIDELINES FOR ELECTRONICALLY PRODUCED FIGURES AND ILLUSTRATIONS

For detailed instructions about the submission of artwork, figures, graphics and illustrations, click on the following link:

Artwork Instructions

AUTHOR PROOFS

After a submission is accepted and processed through production, a proof of the article is made available to the author. The purpose of the proof is to check for typesetting errors and the completeness and accuracy of the text, tables and figures. Substantial changes in content, e.g., new results, corrected values, title and authorship, are not allowed without the approval of the Editor.

The article will be published online after receipt of the corrected proofs. This is the official first publication citable with the DOI. After release of the printed version, the paper can also be cited by issue and page numbers. After online publication, further changes can only be made in the form of an Erratum, which will be hyperlinked to the article.

AFTER ACCEPTANCE

Upon acceptance of your article you will receive a link to the special Springer web page with questions related to:

Copyright Transfer Statement: Authors will be asked to transfer copyright of the article to the Publisher (or grant the Publisher exclusive publication and dissemination rights). This will ensure the widest possible protection and dissemination of information under copyright laws. Open Choice articles do not require transfer of copyright as the copyright remains with the author. In opting for open access, they agree to the Springer Open Choice License.

Offprints/Reprints: can be ordered.

Color in Print: Online publication of color illustrations is free of charge. For color in the print version, authors will be charged for the costs.

Open Choice: In addition to the normal publication process (whereby an article is submitted to the journal and access to that article is granted to customers who have purchased a subscription), Springer now provides an alternative publishing option: Springer Open Choice. A Springer Open Choice article receives all the benefits of a regular subscription-based article, but in addition is made available publicly through Springer's online platform SpringerLink. We regret that Springer Open Choice cannot be ordered for published articles. Please go to: http://springer.com/openchoice or click on the below link for more information

Open Choice

REQUESTING PERMISSION TO RE-USE OBESITY SURGERY CONTENT

Permission to re-use Obesity Surgery content can be requested online using the Copyright Clearance Center by following the below instructions:

1. Go to www.SpringerLink.com and locate the article which contains the material you would like to re-use

2. Click on the "Permissions & Reprints" link located in the right hand corner of the page

3. Select the way you would like to reuse the content

4. Fill out the necessary information

5. Create an account if do not already have one

6. Accept the terms and conditions

If you encounter any difficulties while requesting permission, please contact:

Copyright Clearance Center Customer Support

Tel: +1 (877) 622-5543 (toll free) OR +1 (978) 777-9929

Email: customercare@copyright.com

For any other questions, please contact the Publishing Editor at:

Anna Uger

Telephone: +1 (212) 460-1540

E-Mail: anna.uger@springer.com

Appendix 3 – Ethical and Research Governance Approval for empirical study

Appendix 3. Ethical and Research Governance

South Humber Research Ethics Committee

06 August 2009

Dear Miss Crawford

Study Title:	**The Relationships among Level of Perceived Self-efficacy and Illness Cognitions with Outcome Following Gastric Bypass Surgery for Morbid Obesity.**
REC reference number:	**09/H1305/37**
Protocol number:	**Version 2**

Thank you for your letter of 6 August 2009, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk. *Where the only involvement of the NHS organisation is as a Participant Identification Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.*

Sponsors are not required to notify the Committee of approvals from host organisations.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*	
Information Sheet for completing measures	Version 3	14 May 2009	
Support Sheet	Version 3	30 April 2009	
Summary of Results Request form	Version	14 March 2009	
Non validated questionnaire - Individual Perception of Outcome Questionnaire	Version 2	30 April 2009	
CV - Supervisor	Version 1	28 March 2009	
Participant Consent Form	Version 2	14 April 2009	
Participant Information Sheet	Version 4	28 March 2009	
Letter of invitation to participant	Version 2	01 May 2009	
Advertisement	Version 2	01 May 2009	
Questionnaire: Short form 36v2	Version 1	22 May 2009	
Questionnaire: Revised Illness Perception Questionnaire	Version 1	22 May 2009	
Questionnaire: Modified Weight Efficacy Lifestyle Questionnaire	Version 1	22 May 2009	
Peer Review	Version 1	09 April 2009	
Protocol	Version 12	29 April 2009	

Investigator CV	Version 1	28 March 2009	
Application	Version 2.2	22 May 2009	
Contact form (for consent to contact)	Version 1	14 March 2009	
Participant Information Log (for staff)	Version 1	28 March 2009	
Completing the Number Scales (information sheet)	Version 1	30 April 2009	
Participant Consent Form	Version 4	06 August 2009	
Participant Information Sheet	Version 6	06 August 2009	
GP/Consultant Information Sheets	Version 1	06 August 2009	
Covering Letter	Version 3	06 August 2009	
Completing the number of scales	Version 2	26 June 2009	
Individual Perception of Outcome Measure	Version 3	26 June 2009	
Introductory Leaflet	Version 3	13 July 2009	
Participant Consent Form	Version 3	25 June 2009	
Participant Information Sheet	Version 5	25 June 2009	
Advertisement	Version 3	01 August 2009	
Questionnaire: The Illness Perception Questionnaire for Weight	Version 2	03 August 2009	
Covering Letter	Version 2	03 August 2009	

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

09/H1305/37	**Please quote this number on all correspondence**

Yours sincerely

Dr Ian G Woollands

Chair – South Humber REC

Email: karen.waltham@humber.nhs.uk

Enclosures: "After ethical review – guidance for researchers" *[SL-AR1 for CTIMPs, SL-AR2 for other studies]*

Copy to: *Mr Stephen Walker*

[R&D office for NHS care organisation at lead site]

Appendix 4 – Supplementary materials for

Systematic Literature Review

Appendix 4.1 – Quality control checklist (adapted for Downs and Black (1998)

Quality Checklist Criteria	Yes (1)	No (0)
Reporting		
1. Is there a clear description of the theoretical framework and background literature?		
2. Is the hypothesis/ aim/ objective/ research question of the study clearly described?		
3. Do the hypotheses or questions follow from the theoretical background, and literature review?		
4. Are the main outcomes to be measured clearly described in the Introduction or Method section? *If the main outcomes are first mentioned in the Results section the answer should be no.*		
5. Are characteristics of participants included in the study clearly described?		
6. Did the report adequately describe the measures used?		
7. Are the procedures/methods clearly described?		
8. Are the distributions of principal confounders in each group of participants clearly described? E.g. gender, age, education		
9. Are the main findings of the study clearly described? *Simple outcome data reported so the reader can check main analyses and conclusions (this question does not cover statistical tests).*		
10. Have actual probability values been reported for main outcomes (e.g. 0.035 rather than <0.05) except where the probability value is less than 0.001?		
External Validity		
11. If a clinical population took part, was an appropriate, standardised screening measure used (e.g. BMI)?		
Internal Validity		
12. Where suitable, was an appropriate control or comparison group used?		
13. If any of the results of the study were based on "data dredging" was this made clear? *Any analysis that had not been planned at the outset of the study should be clearly indicated. If no retrospective unplanned subgroup analyses were reported, then answer yes.*		
14. Were appropriate statistical procedures employed to test the main outcomes/ hypotheses?		
15. Where appropriate, does the research describe attempts made to assess the validity and reliability of the data analysis e.g. inter-rater reliability?		
16. Were raters measures blind to the participant group if applicable?		
17. Were the main outcome measures used accurate? (Valid and reliable)?		
18. Were participants randomised into groups? *Studies that state participants were randomised should be answered yes except where methods of randomization would not ensure random allocation e.g. alternate allocation would score no because it is predictable. If the study did not have separate conditions to which participants could be randomly assigned score yes.*		
Power		
19. Is the power calculation reported?		
20. If the effect size is reported, did the study have sufficient power to detect a clinically important effect where the probability value for a difference being due to chance is less than 5%? If the effect size was not reported this question should be answered unable to determine.		
TOTAL SCORE		

Appendix 5 – Supplementary materials for the Empirical Paper

Appendix 5.1 – Individual Perception of Outcome Pilot Information

Appendix 5.2 – Short-Form 36v2

Appendix 5.3 – Illness Perception Questionnaire-Revised for Weight

Appendix 5.4 – Modified Weight-Efficacy Lifestyle Questionnaire

Appendix 5.5 – Individual Perception of Outcome Measure

Appendix 5.6 – Demographics Form

Appendix 5.7 – Participant Information Leaflet

Appendix 5.8 – Information Sheet

Appendix 5.9 – Completing the number scales sheet

Appendix 5.10 – Summary of results request sheet

Appendix 5.11 – Consent form

Appendix 5.12 – Support sheet

Appendix 5.13 – Transcripts

Appendix 5.1 – Individual Perception of Outcome pilot information

Development of the Individual Perception of Outcome Measure

From the literature, Individual Perception of Outcome has been identified as important to consider in bariatric outcome (Ballantyne, 2003). As no such measure was identified one was devised for the current study.

Literature review

The Individual Perception of Outcome measure was initially developed by considering important reasons why individuals undertake weight-loss interventions identified within the literature. From this it was found that individuals are suggested to undertake weight-loss interventions to improve physical health and fitness levels, to improve perception of body image, to improve self-confidence, and to improve level of social contact (Kaly et al., 2008; Wee et al., 2006; Giusti et al., 2003).

Stage one: initial question and scale composition

Eight questions assessing satisfaction in these areas were then composed and were rated along nine-point Likert scales (0 indicated that an individual was not at all satisfied with a particular are; 8 indicated that an individual was extremely satisfied with a particular area). The rationale for choosing nine-point Likert scales was to maintain consistency as another measure used within this study also incorporated nine-point Likert scales (The Modified Weight Efficacy Lifestyle Questionnaire, Linde et al., 2006).

Stage two: pilot with surgical weight-loss patients

The measure was then piloted with 12 members of a surgical weight-loss support group. No demographic information about participants was collected. Participants completed the questionnaire and then gave verbal feedback to the researcher (RC) about their experience of completing it and recommendations for improvement.

Participants suggested a number of changes:

1. Question three should be split into two questions such that one question assesses diet and one assesses lifestyle. This is because satisfaction with both of these areas may differ.
2. Question three should be re-phrased to use the word ‘satisfied’ rather than ‘successful’ so that this is consistent with the rest of the measure.
3. Question four should be split into four questions to assess satisfaction with:
    - Body image when dressed
    - Body image when undressed
    - Appearance when dressed
    - Appearance when undressed

4. Participants discussed that their levels of satisfaction in some areas had remained the same since having the operation and how responding the measure would therefore wrongly suggest that satisfaction in that area had reduced rather than staying constant. One way of overcoming this problem would be to re-phrase appropriate questions to account for this.

Mean responses on items

The quantitative responses on the questionnaire items were explored. Descriptive information for each item can be seen in Table 8.

Table 8. Descriptive information for responses on the Individual Perception of Outcome measure

Item number	N	Mean	Standard deviation	Minimum	Maximum
1	12	6.75	1.71	4	8
2	12	7.17	1.11	5	8
3	12	5.83	1.85	3	8
4	11	4.36	1.63	2	8
5	12	6.00	2.04	1	8
6	12	5.92	1.78	2	8
7	12	6.50	1.31	5	8
8	12	7.25	1.14	5	8

As can be seen from Table 8, participants completing the Individual perception of outcome measure were more than somewhat satisfied on all items assessed. The full range of responses available was not used. In viewing these responses it is important to consider that the sample that the measure was piloted with were recruited from a surgical weight-loss support group and so responses may be biased.

Cronbach's alpha for the overall scale was .872. Whilst sample size was small this could be considered as an indication that the scale had good internal consistency.

Stage three: developing the final Individual Perception of Outcome

The suggestions of the participants within this pilot were taken into account in development of the final Individual perception of outcome scale used within the current study. The final version can be seen in Appendix 5.5.

Appendix 5.2 – Short-Form 36v2

Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. ***Thank you for completing this survey!***

For each of the following questions, please tick the one box that best describes your answer.

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

2. <u>Compared to one year ago</u>, how would you rate your health in general <u>now</u>?

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

3. The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?

		Yes, limited a lot	Yes, limited a little	No, not limited at all
a	<u>Vigorous activities</u>, such as running, lifting heavy objects, participating in strenuous sports	☐ 1	☐ 2	☐ 3
b	<u>Moderate activities</u>, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐ 1	☐ 2	☐ 3
c	Lifting or carrying groceries	☐ 1	☐ 2	☐ 3
d	Climbing <u>several</u> flights of stairs	☐ 1	☐ 2	☐ 3
e	Climbing <u>one</u> flight of stairs	☐ 1	☐ 2	☐ 3
f	Bending, kneeling, or stooping	☐ 1	☐ 2	☐ 3
g	Walking <u>more than a mile</u>	☐ 1	☐ 2	☐ 3
h	Walking <u>several hundred yards</u>	☐ 1	☐ 2	☐ 3
i	Walking <u>one hundred yards</u>	☐ 1	☐ 2	☐ 3
j	Bathing or dressing yourself	☐ 1	☐ 2	☐ 3

4. During the <u>past 4 weeks</u>, how much of the time have you had any of the following problems with your work or other regular daily activities <u>as a result of your physical health</u>?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Cut down on the <u>amount of time</u> you spent on work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b <u>Accomplished less</u> than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c Were limited in the <u>kind</u> of work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d Had <u>difficulty</u> performing the work or other activities (for example, it took extra effort)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

5. During the <u>past 4 weeks</u>, how much of the time have you had any of the following problems with your work or other regular daily activities <u>as a result of any emotional problems</u> (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Cut down on the <u>amount of time</u> you spent on work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b <u>Accomplished less</u> than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c Did work or other activities <u>less carefully than usual</u>	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

6. During the <u>past 4 weeks</u>, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?

Not at all	Slightly	Moderately	Quite a bit	Extremely
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

7. How much <u>bodily</u> pain have you had during the <u>past 4 weeks</u>?

None	Very mild	Mild	Moderate	Severe	Very severe
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

8. During the <u>past 4 weeks</u>, how much did <u>pain</u> interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

9. These questions are about how you feel and how things have been with you <u>during the past 4 weeks</u>. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the <u>past 4 weeks</u>…

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Did you feel full of life?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Have you been very nervous?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c Have you felt so down in the dumps that nothing could cheer you up?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d Have you felt calm and peaceful?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
e Did you have a lot of energy?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
f Have you felt downhearted and low?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
g Did you feel worn out?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
h Have you been happy?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
i Did you feel tired?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

10. During the <u>past 4 weeks</u>, how much of the time has your <u>physical health or emotional problems</u> interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

11. How TRUE or FALSE is <u>each</u> of the following statements for you?

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
a I seem to get ill more easily than other people	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b I am as healthy as anybody I know	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c I expect my health to get worse	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d My health is excellent	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Thank you for completing these questions!

Appendix 5.3 – Illness Perception Questionnaire – Revised for Weight

We are interested in your views of what you believe about your weight and how you manage it (i.e. the things you do to achieve the weight you want).

When using the term 'weight', this refers to the idea that we all have a 'weight' and this includes all of the things that you might do that make your weight stay the same, increase, or decrease. Even if you have lost as much weight as you wanted/expected please complete this questionnaire in terms of your **current beliefs**.

Please indicate how much you agree or disagree with the following statements about your weight by ticking the appropriate box.

There are two parts to this questionnaire. There are 34 questions in the first part and 19 questions in the second part that is called 'Causes of my weight'.

The questionnaire begins here.

	Views about your weight	**Strongly Disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly Agree**
IP1	My concerns* around my weight will only last for a short time					
IP2	My concerns* around my weight are likely to be permanent rather than temporary					
IP3	My concerns* around my weight will last for a long time					
IP4	My concerns* around my weight will be gone shortly					
IP5	I expect to have concerns* around my weight for the rest of my life					

* For questions number one to five, the term 'concerns' means any worries that you might have about your weight. For example, having worries that your weight might increase, decrease, or stay the same would be a 'concern'. It might be that you do not have any problems with your weight at the moment but that you may worry that this might not remain the case.

	Views about your weight	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
IP6	My weight is a serious concern					
IP7	My weight has major consequences on my life					
IP8	My weight does not have much effect on my life					
IP9	My weight strongly affects the way others see me					
IP10	My weight has serious financial consequences					
IP11	My weight causes difficulties for those who are close to me					
IP12	There is a lot which I can do to control my weight					
IP13	What I do can determine whether my weight increases or decreases					
IP14	Whether my weight increases or decreases depends on me					
IP15	Nothing I do will affect my weight					
IP16	I have the power to influence my weight					
IP17	What I do will have no effect on my weight					
IP18	My weight will be as I want it in time					
IP19	There is very little that can be done to manage my weight					
IP20	Only treatments from doctors will be/are effective in helping me manage my weight					
IP21	Problems with my weight can only be prevented by treatments from doctors					
IP22	Only treatments from doctors can manage my					

	weight					
	Views about your weight	**Strongly Disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly Agree**
IP23	There is nothing which can help in managing my weight					
IP24	Increases and decreases to my weight are puzzling to me					
IP25	My weight is a mystery to me					
IP26	I don't understand why my weight increases or decreases					
IP27	My weight doesn't make any sense to me					
IP28	I have a clear understanding of why my weight is as it is					
IP29	I get depressed when I think about my weight*					
IP30	When I think about my weight I get upset*					
IP31	My weight makes me feel angry*					
IP32	My weight does not worry me*					
IP33	My weight makes me feel anxious*					
IP34	My weight makes me feel afraid*					

* For questions 29 to 34 it may be that the way you feel regarding your weight changes depending upon your mood, etc. Please answer these questions in terms of how you feel when thinking about your weight for the majority of the time.

Causes of my weight

We are interested in what you think may be the causes of your own personal weight changes since having the gastric bypass operation. As people are very different there is no correct answer for this question.

We are most interested in the factors that you feel may contribute to these changes, rather than what others, including friends, family, and doctors, may have suggested to you.

Below is a list of possible causes. Please indicate how much you agree or disagree that they were causes for you by ticking the appropriate box. If something is not applicable to you, for example if you have never drunk alcohol, then please tick the 'strongly disagree' box.

	POSSIBLE CAUSES	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
C1	Stress or worry					
C2	Hereditary – it runs in my family					
C3	A germ or virus					
C4	Diet or eating habits					
C5	Chance or bad luck					
C6	Poor medical care in my past					
C7	Pollution in the environment					
C8	My own behaviour					
C9	My mental attitude e.g. thinking about life negatively					
C10	Family problems/worries caused by my weight					
C11	Overwork					
	POSSIBLE CAUSES	Strongly	Disagree	Neither	Agree	Strongly

		Disagree		agree nor disagree		Agree
C12	My emotional state e.g. feeling down, lonely, anxious, empty					
C13	Ageing					
C14	Alcohol					
C15	Smoking					
C16	Accident or injury					
C17	My personality					
C18	Surgical interventions					

In the table below please list in rank-order the three most important factors that you believe have an impact upon your weight. You may use any of the items from above or you may have additional ideas of your own.

C19. The three most important 'causes' for me:

1. _____
2. _____
3. _____

Appendix 5.4 – Modified Weight Efficacy Lifestyle Questionnaire

Modified Weight Efficacy Life-style Questionnaire (Linde et al., 2006)

Following are a set of questions regarding how confident you feel you would be in following your eating and exercise plans in certain situations. Please indicate how confident you feel you would be by circling the number that corresponds best (0 indicates 'not at all confident'; 8 indicates that you feel 'extremely confident').

1. **How confident are you that you would be able to follow your eating plan when you are in a bad mood (e.g. anxious, depressed, irritable)?**

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

2. **How confident are you that you would be able to follow your eating plan when you are bored?**

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

3. **How confident are you that you would be able to follow your eating plan at weekends?**

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

4. **How confident are you that you would be able to follow your eating plan when you are at a party or out to dinner with friends or family?**

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

5. How confident are you that you would be able to follow your eating plan when many appealing high-calorie foods are available?

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

6. How confident are you that you would be able to follow your exercise plan when you get very busy?

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

7. How confident are you that you would be able to follow your exercise plan when it interferes with spending time with your friends or family?

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

8. How confident are you that you would be able to follow your exercise plan when you are sore or tired?

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

9. How confident are you that you would be able to follow your exercise plan when you are in a bad mood (e.g. anxious, depressed, irritable)?

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

10. How confident are you that you would be able to follow your exercise plan when your exercise workout is not enjoyable?

0	1	2	3	4	5	6	7	8
Not at all confident				Somewhat confident				Extremely confident

Appendix 5.5 – Individual Perception of Outcome Measure

Individual Perception of Outcome

Below are thirteen questions regarding your overall level of satisfaction in a number of areas. Please indicate how you feel in each of the areas by circling the number that best sums up how you feel (0 indicates 'not at all'; 8 indicates 'extremely'). **Please note that for questions 5-11 there is a change in the way that these are scored.**

An example of how to complete this measure is given on the 'Completing the Number Scale' sheet.

1. How satisfied are you with your level of weight loss since the operation?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Somewhat satisfied				Extremely satisfied

2. How satisfied are you with the effect that the operation has had upon your physical health?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Somewhat satisfied				Extremely satisfied

3. How satisfied are you that you have made the changes to your diet required after surgery?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Somewhat satisfied				Extremely satisfied

4. How satisfied are you that you have made the changes to your lifestyle required after surgery?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Somewhat satisfied				Extremely satisfied

For questions 5-11, you are asked how satisfied you are in a number of areas in comparison with how satisfied you felt before the operation.
For these questions a rating of 0-3 would mean that your satisfaction has gone down; a rating of 4 would mean that your level of satisfaction is the same; a rating of 5-8 would mean that your satisfaction has gone up since having the operation.
For more information on how to complete the following questions please see the sheet on 'Completing the number scales'.

5. How satisfied are you with your diet now in comparison to before the operation?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Same				Extremely satisfied

6. How satisfied are you with your lifestyle now in comparison to before the operation?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Same				Extremely satisfied

7. How satisfied are you with your body image now in comparison to before the operation?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Same				Extremely satisfied

8. How satisfied are you with your appearance now when dressed in comparison to before the operation?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Same				Extremely satisfied

9. How satisfied are you with your appearance now when undressed in comparison to before the operation?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Same				Extremely satisfied

10. How satisfied are you with your level of self-confidence now in comparison to before the operation?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Same				Extremely satisfied

11. How satisfied are you with your level of social contact now in comparison to before the operation?

0	1	2	3	4	5	6	7	8
Not at all satisfied				Same				Extremely satisfied

For questions 12 and 13 please indicate your overall level of satisfaction so that 0 indicates ‘Not at all’, 4 indicates ‘Somewhat’, and 8 indicates ‘Completely’.

12. Overall, how has the result of the operation matched your initial expectations?

0	1	2	3	4	5	6	7	8
Not at all				Somewhat				Completely

13. Overall, how successful do you feel that the operation has been?

0	1	2	3	4	5	6	7	8
Not at all				Somewhat				Completely

Appendix 5.6 – Demographics Form

Details Sheet

Please complete the following details on this sheet and return it with the other contents of the study pack. **These details will not be used to identify you** – they will only be used to consider who the results of this study might be relevant to. Thank you for your time in completing this sheet.

Age: _____

Gender: _____

Ethnicity: _____

Marital status: _____

Date of having had gastric bypass surgery (month and year): _____

Current weight: _____

Current height: _____

Appendix 5.7 – Participant Information Leaflet

Participant Information Sheet

Psychological Factors Affecting Outcome Following Gastric Bypass Surgery for Obesity

You are being invited to take part in a research study. However, before you decide whether you would like to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

- Part 1 describes the purpose of this study and what taking part will involve.
- Part 2 provides further details on issues such as confidentiality agreements and complaints procedures.

Please ask the researcher any questions you may have about the information provided or if there is anything else you would like to know about the study.

Part 1

What is the purpose of the study?

This study is about (i) the beliefs people hold around weight and (ii) the confidence that they have in performing certain behaviours. The purpose of the study is to see whether, following gastric bypass surgery, these two factors have an impact upon extent of weight loss, health status, and individual perception of how successful the operation has been overall.

Research in this area may help to contribute to our understanding of why there is a varying outcome following gastric bypass surgery. This research may help in development of services for people who are currently thinking about having the operation and may also have an impact upon the services available to people who have had the operation.

This study is being conducted by a Trainee Clinical Psychologist as part of their training.

Why have I been chosen?

You have been invited to participate in this study because you have had gastric bypass surgery at Hull Royal Infirmary or Castle Hill Hospital between two and six years ago.

We are aiming to recruit a total of 150 participants.

Do I have to take part?

No. It is up to you to decide whether or not to take part, though the more people who do take part the more accurate our results will be. After reading this information sheet if you do decide to take part you will be free to withdraw at any time and without giving a reason. In this instance, your data will be destroyed and not used in the research. If you decide not to take part, or to withdraw during the study it will not in any way affect the standard of care that you receive.

What will I have to do if I choose to take part?

- The study may take up to 1 hour to complete.
- You will be asked to fill out some questionnaires, which can be returned in the addressed freepost envelope.
- The researcher will have to access your medical records. This will only be done with your consent and so you will need to indicate on the consent form that you agree to this.
- We will be contacting a sample of the people who take part in this study to ask them if they are able to attend one of the bariatric clinics to be weighed. This is for quality purposes and will be thoroughly discussed with you if you are contacted.
- **All information will be anonymised. This means that your results will not be connected to you as an individual.**
- Once you have finished the questionnaires you will not be required to complete any further tasks for this research project.

Why do my medical records have to be accessed?

As weight loss will be compared with the responses that you give on the questionnaires, it is necessary that the researcher is able to view information about your weight loss from when you had the operation to the present time. The researcher will only be accessing this information and will not access any other information from your medical records. If you do not feel that you can consent to this then you will not be able to take part in this study.

Will my GP be informed about my participation?

Yes. Your GP will be informed about your participation within this study but will not have access to your individual responses on the questionnaires. All information will be anonymised. However, if the researcher has any concerns about your levels of distress throughout your participation in this study, they will need to contact your GP to ensure you get the necessary support. This will only be done after discussion with you.

Will my surgical healthcare team know that I am participating within this study?

Your surgical healthcare team will not be informed of your participation in this study and will not have access to any information that you give to the researcher.

Expenses and payments

Return postage of the questionnaires will be pre-paid.

What are the possible disadvantages of taking part?

This study involves filling out a set of questionnaires on one occasion. There are therefore no foreseen risks involved in taking part in this study. It is possible however that you may feel temporarily low in mood as a result of reflecting upon any negative effects of the surgery. A support sheet outlining contact numbers that might be helpful in the event of you feeling lower is included within the study pack.

What are the possible benefits of taking part?

There is no intended clinical benefit to participants taking part in this study. However, the research being conducted may help us to understand more about outcome following gastric bypass surgery for obesity, which could help improve services available for people who have undergone, or who are currently undergoing, surgery. Some people might find it interesting to reflect upon their experiences in relation to the operation.

This is the end of Part 1. If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making a decision.

Part 2

Confidentiality

- All information that you return to the researcher will be kept confidential. This means that the information you give will only be available to the researcher and will not be accessed by anybody else.
- Only the researcher will have access to identifiable data.
- Data will be held for 5 years in a secure place before it is disposed of securely.
- The procedures for handling, storage and destruction of data are in line with the Data Protection Act 1998.

Complaint Procedure

If you have any concerns about this study, you should contact the chief investigator who will try to answer your questions (telephone: 01482 464117). If you wish to make a formal complaint, you can do this through the NHS Complaints Procedure (Telephone: 01482 303966).

Harm

In the event that you are harmed and this is due to someone's negligence then you may have grounds for a legal action for compensation against Humber Mental Health Teaching NHS Trust but you may have to pay your legal costs.

What will happen to the results of this study?

Once information has been collected from participants, it is intended that the results of the study will be published in a peer-reviewed journal. You will not be identified in any report/publication.

It is intended that a summary of the findings will be given at the Hull Support Group for Weight Loss Surgery.

Within the study pack there is a form offering you the opportunity to receive a brief summary of the findings of this study to your contact address. If you do wish to receive this then please indicate this on the form and return it with the other materials.

If you have any questions that are not answered in the Information Sheet please don't hesitate to contact me by post, telephone or email.

Contact details:

Rochelle Crawford

Trainee Clinical Psychologist

Department of Clinical Psychology

Hertford Building

University of Hull

Hull

HU6 7RX

Telephone: [redacted]

Email: [redacted]

Thank you for considering taking part in this study and taking the time to read this information sheet.

Appendix 5.8 – Information sheet

Information Sheet

Thank you very much for agreeing to take part in this study. Your time is very much appreciated and your input is valuable to us.

This leaflet gives some information about the contents of this research pack but if you have any questions at all please do not hesitate to contact us on [redacted] or at [redacted].

The contents of this pack are as follows:

Consent form

To show that you agree with each part of this study it is important that you read each sentence on this form, put your initials in each box and sign in the space at the bottom of the form. Please return this form with the rest of the measures in this pack.

Details Sheet

It is useful for us to know who the results of this study might be useful for. The details that are asked for on this sheet will not be used to identify you as an individual. Please complete this sheet and return it with the rest of the measures in this pack.

Measures

In total there are four measures included within this research pack, which sounds like a lot but they mostly involve circling answers. These measures are: 'The Revised Illness Perception Questionnaire for Weight'); the 'Individual Perception of Outcome Measure'; the 'Short-Form 36' (entitled 'Your Health and Wellbeing'; and the 'Modified Weight Efficacy Life-style Questionnaire.'

Filling them all in can take about 45 minutes which seems like a long time but generally once people get started they find that it does not take this long. We know that you are giving up your valuable time to take part in this study and we very much appreciate it. **On the top right-hand corner of each measure the number of pages is shown. Please make sure you complete each page.**

For the 'Individual Perception of Outcome Measure' and the 'Modified Weight Efficacy Life-style Questionnaire' there is an extra sheet giving more information about how to complete these. This sheet is called 'Completing the number scales'.

Support sheet

On occasion people can find that answering some questions raise difficult issues and can even be upsetting. If you do become upset, it is very important to us that you receive the support that you might need and this sheet offers contact numbers that may be useful.

Please turn over for more information.

Summary of results form

If you would like to know the results of this study when it has finished, we will send you a summary of the main findings. If you would like to receive this then please complete and return this form.

Addressed freepost envelope

Upon completion of the measures, consent form, and details sheet please return them to the researcher in the addressed freepost envelope included in this research pack. If you wish to receive a summary of the results please return this also.

If you have any queries at all concerning anything contained within this research pack please do not hesitate to contact the researcher on [redacted] or at [redacted]

Summary of what to return

There are a lot of forms in this pack. Below is a list of which forms to return to the researcher. You might find it helpful to tick each form off on the list as you put it into the envelope.

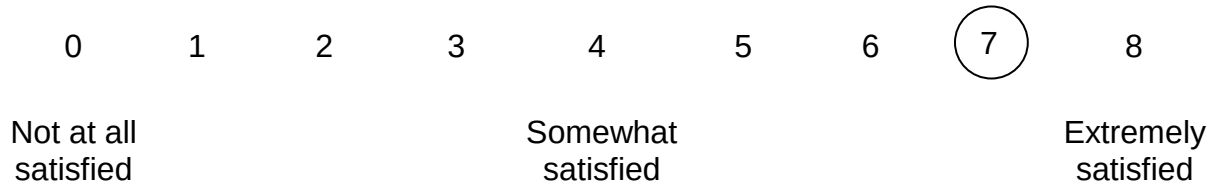
- ☐ Consent form
- ☐ Details Sheet
- ☐ Modified Weight Efficacy Life-style Questionnaire
- ☐ The Revised Illness Perception Questionnaire for Weight
- ☐ Individual Perception of Outcome Measure
- ☐ Short-Form 36
- ☐ Summary of results form (only if you want to hear about the findings of this study)

Appendix 5.9 – Completing the number scales sheet

Completing the number scales

This section gives information on how to complete the number scales that are on the 'Individual Perception of Outcome measure' (**for questions 1-4 and 12-13**) and **all** of the questions on the 'Modified Weight-Efficacy Lifestyle Questionnaire.' An example of how to complete these measures is given below:

Example: How satisfied are you with the colour of this room?



In this example the person has indicated that on a scale of 0 to 8, where 0 shows that the person is not satisfied at all and 8 shows that they are extremely satisfied, that they feel satisfied at a level of 7. They have shown this by circling the 7.

A rating of 7 on this scale suggests that they are highly satisfied with the colour of the room but not as totally satisfied as they could be as this would be shown by them circling the 8 on the scale.

In completing the questions on the measures please circle the number that best sums up how you feel in each of the different areas.

Please turn over for more information.

Information for completing items 5-11 on the 'Individual Perception of Outcome' Measure.

Items 5-11 on the 'Individual Perception of Outcome' measure are completed in a different way from the other items. An example of how to complete these is given below.

Example: How satisfied are you with the colour of this room in comparison to the colour it was before being decorated?

0	1	(2)	3	4	5	6	7	8
Not at all satisfied				Same				Extremely satisfied

On this scale, 0 shows that the person is not at all satisfied in comparison to how the room used to be, and 8 indicates that they are extremely satisfied in comparison to how the room used to be.

On this scale the person has indicated that they feel satisfied to a level of 2, which suggests that in comparison to how the room was before being decorated they are not very satisfied. If they felt that decorating the room had not changed their level of satisfaction in any way then they would have circled the 4.

In completing these questions please circle the number that best sums up your current level of satisfaction in relation to how satisfied you felt in the different areas measured before having the operation.

Appendix 5.10 – Summary of results request sheet

Summary of Results

If you would like to receive a brief summary of the results once this study is completed (September 2010), please fill out this form and return with the completed measures. If you do not wish to receive a summary of the results, please do not return this form.

Name:

Address/Email address to send results to:

Appendix 5.11 – Consent form

Centre Number:
Study Number:
Patient Identification Number for this study:

CONSENT FORM

***Title of Project**:* Psychological factors affecting outcome following gastric bypass surgery for obesity.

***Name of Researcher**:* Rochelle Crawford

Please carefully read each statement and initial each of the corresponding boxes to show that you consent to each part and then please sign in the space below.

1. I confirm that I have read and understand the information sheet dated 18/01/2010 (version 7) for the above study. ☐
2. I have had the opportunity to consider the information, and if I have asked questions I have had these answered satisfactorily. ☐
3. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected. ☐
4. I understand that my GP will be informed about my participation in this study. ☐
5. I understand that the researcher will have to access my medical records for information about my weight-loss since having the operation. I give permission for this individual to have access to my records. ☐
6. I agree to give my telephone number and be contacted. The number that I agree to be contacted on is: _____ ☐
7. I understand that if the researcher has any concerns about my levels of distress that they will inform my GP to make sure that I receive the necessary support. ☐
8. I agree to take part in the above study. ☐

_____	_____	_____
Name of Patient	Date	Signature

Appendix 5.12 – Support Sheet

Support Sheet

In taking part in this study you may find that you are thinking more about the operation and the effect that it has had on your life and this can sometimes make people feel upset.

It is very important to us that you receive the support that you need. This sheet contains some ideas on how you might best look after yourself if this does happen and also some support numbers of local agencies should you wish to discuss how you are feeling.

Ideas on how to look after yourself when taking part in this study

- Talk to people that you feel comfortable with about how you are feeling.
- If you continue to feel upset after a couple of weeks then it is important that you see your GP to ask for further advice.
- Unfortunately the researcher will not be available to offer further support but if you have any queries at all about any aspects of this study please do not hesitate to contact them on [redacted].

Support agencies

Hull Support Group for Weight Loss Surgery

- This is a patient-based and led support group who meet monthly in Hull. All members have undergone forms of weight-loss surgery or are in the process of undergoing surgery.
- They offer support and advice both pre-operatively and post-operatively.
- They offer support with any problems that are related to weight-loss surgery.

[redacted]**Telephone**: [redacted]
[redacted]**Email**: [redacted]

The Samaritans

- This agency offer 24 hour confidential emotional support.

[redacted]**Telephone**: [redacted]

Appendix 5.13 - Transcripts

My op has never worked my food gets stuck - always has. My self-esteem is at a low point because of this. I feel there's no hope for me. My surgery hasn't helped me and I haven't had much follow-up help.

I had op ... I was promised my excess fat off. I asked twice after losing 10st still got turned down twice. Now I put 3 and a half stone back on, my confidence gone, my nerves have gone, I am a bloody mess. I wish I never bothered with it all.

My mental attitude for a long time has been questionable but have sorted a lot of things out so relieved my stress levels and now at a point where i can apply myself to my weight problems. Had a wakeup call that has made me address my depression and am now dealing with this head on thus helping me reduce my stress levels overall.

At first I was very good but now my head is in bits have a lot of crying days. It is a good operation but you need to have the plastic surgery after. Despite this I would have it again knowing what I know but it is a big change. There is no support and I have become depressed and put the weight back on.

I would like to stress that many people who have had weight loss surgery (and have lost weight) re now given the hope sapping blow from the PCT who is refusing to fund follow up operations. It feels unfair that people are denied the chance to unlock the prison which is their body. The surgery is fine. The PCTs refusal to award follow up surgery (abdominoplasty) is the problem. The loose skin makes me feel sick.

The most important factor for my weight problems stem from physical and sexual abuse as a child and into my teens. I put on the weight so I could hide behind it and not have to interact so much with people. I, still in my mind feel big, so my mind is still my worst enemy!

It has been hard caring for my mother and I notice that my diet gets worse the more stressed I am. When I have just myself to care for I do stick to my diet plan, but I am struggling with my mobility so much, that I get defeated by pain and having someone else whose needs I have to meet.

I feel I must add that I waited 11 years for surgery. I then had the bypass and after being extremely ill recovered to find my dress size only altered 3 sizes lower when I was too ill to eat after losing 7 stone. Later as I resumed eating I put on 2 stone and have an enormous hernia. Apart from my face and neck I do not feel my overall body shape changed much and most of my depression is due to the fact that I could not have the apronectomy as promised.

My weight has been increasing due to depression since I was turned down for plastic surgery by the PCT. I am hideous. I have lost my fiancée. I cannot bear the sight of myself. Every day getting by is a struggle. It's like you've fixed my house but not put a

roof on it and I feel utterly let down by the system. I am built like a bull and will never get below the BMI required. But in the end I'm alive and just number .....

I had my op it saved my life. I did not have a life 5 kids and food that was killing me. Now I have a job, a social life. I am not skinny – size 14/16 – but I am average size. I can buy clothes in any shop not 34-36 out of a book. I have loose skin but good knickers help. I hate my arms but I have the funding when I am ready. This was my miracle and gave me a life. I was fat all my life as a child to adult now I feel I am happy with what I see. I can't change my looks nor do I want to. What you see is what you get and I am very very happy. Thanks to my bypass team.

My bypass is being looked into due to my stomachs size is the same size as the opening of my stomach to bowels, therefore I have no appetite suppressant, so I can continually eat all day at a slow pace. My weight loss stopped after I lost 4 stone and since this I have not lost anymore weight and have not gained any either, though I can over eat if not controlled.

Can I just say it's the best thing to happen to me.

My emotional questions are based upon the fact that I have been sexually harassed at work. I feel this is important for you to know, as at 26 stone this man would not have looked twice at me.