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GROUP THERAPY FOR OVERWEIGHT INDIVIDUALS

Section A: What are the effectiveness and acceptability of longer-term group based psychological interventions for overweight people?

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Section B: Series of single cases looking at body image, psychological distress, shame and disordered eating in patients in a Tier-3 weight management service receiving online delivered, Compassion Focused Therapy (CFT) based group intervention

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Summary of the MRP Portfolio

Section A reviews the literature for longer-term group therapy for overweight people. A systematic literature search identified relevant research papers; a narrative review of these papers was conducted. Section A considers how helpful psychological interventions are in supporting overweight individuals, what psychological factors interact with maintenance of larger weight and intervention effects, and what identified papers suggest about the effective format of psychological interventions for this population. Research implications, limitations, and gaps in the literature were also considered.

Section B reports on a compassion-focused therapy (CFT) based, online-delivered group intervention for adults in Tier-3 weight management service. This mixed-methods multiple-case study tested the hypotheses that participants' scores of shame, general distress, disordered eating, and body image would improve following the intervention and the improvements would be maintained at the follow-up. Also, participants were predicted to improve in the single-item measures of the impact food-related thoughts had on their self-esteem, the love they felt for their bodies, and their sense of shame.

This study also explored the experience of CFT-based group intervention, what participants valued about it, and how it impacted their relationship with food and their bodies.

Section C contains Appendixes of supporting material.

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Section A

What are the effectiveness and acceptability of longer term group based psychological interventions for overweight people?

A narrative review

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Abstract

Background: The impact of obesity is not limited to physiological consequences but extends to psychological ones, intertwined with cultural and social narratives about overweight people. Psychological difficulties may be linked to the development or maintenance of large body weight, suggesting a complex bidirectional relationship.

Aim: This review aimed to assess the effectiveness and acceptability of longer-term group based psychological interventions for overweight people

Methods: A systematic literature search was carried out. Twelve papers were identified and reviewed. Narrative review format was employed.

Results: Most papers investigated CBT and third wave therapies. Longer-term group therapy was found to be effective for people who are overweight. Acceptability of the interventions was less clear. The CBT approach had the most support.

Implications: Psychological factors interact with the maintenance of larger weight and with intervention effects.

Further research, particularly more mixed methods, large-scale studies with a strong emphasis on subjective participants' experiences of the intervention, and samples representative of men, is crucial to deepen understanding and improve interventions for overweight individuals.

Conclusion: Longer-term group therapy holds promise for overweight people in helping improve their psychological well-being and aiding their physical health.

Keywords: Overweight, Obesity, Group therapy, longer-term

Introduction

The National Institute for Health and Care Excellence (NICE, 2014) differentiates weight classes (Table 1). A similar classification is used in the National Health Service (NHS), except obesity I and II are merged into "obesity" and obesity III is classified as "severe obesity" (2019). In this review "overweight" will be used to describe people whose BMI is ≥ 25, which is consistent with both classifications. 'Larger weight' in the current review refers to individuals who are overweight or heavier.

Table 1

Weight classification based on body mass index (BMI) by NICE (2014)

Classification	BMI
healthy weight	18.5 kg/m^2 to 24.9 kg/m^2
overweight	25 kg/m^2 to 29.9 kg/m^2
obesity I	30 kg/m^2 to 34.9 kg/m^2
obesity II	35 kg/m^2 to 39.9 kg/m^2
obesity III	40 kg/m^2 or more.

Eating behaviours are influenced by multiple internal and external factors: hunger, hormones, previous life experiences, stress, social and cultural context. (Wardle, 2007). The Behavioural Susceptibility Theory (BST) suggests that genetic factors are linked to lower responsiveness to satiety signals and higher responsiveness to food cues, which makes people with this genetic makeup more vulnerable to becoming obese(Llewellyn & Fildes, 2017). The theory was supported by epidemiological studies, twin studies and genomic analyses (Llewellyn & Wardle, 2015; Herle et al., 2020). Genetic make-up only explains part of the difficulty managing weight. The BST does not take into consideration the emotional aspects of eating.

The term ‘emotional eating’ is used to refer to increased food intake in response to strong negative emotions. ‘Emotional eating’ is found to be highly prevalent in adult women who are overweight or obese (Strien, Herman & Verheijden, 2009; Strien, Herman & Verheijden, 2012). Additionally, research shows that ‘emotional eating’ in overweight people is linked to depression and emotional dysregulation (Strien, 2018). It is recommended that weight management should focus not on calorie restriction but on emotional regulation skills as supported by empirical evidence(Konttinen, 2020; Strien, 2018). A randomised control trial (RCT) with overweight women found flexible dietary restraint in combination with decreased emotional eating constituted the maintenance of weight loss (Teixeira et al., 2010). Similar positive outcomes were found in the study with overweight adults that incorporated distress tolerance and emotional regulation skills (Frayn & Knauper, 2018). Based on the findings, overweight adults have psychological needs that need addressing to support them with weight loss.

Findings from a meta-analysis suggest 7% and 32% higher lifetime prevalence of depression in overweight and obese individuals, respectively, compared to non-overweight people (Pereira-Miranda et al. 2017). Additionally, more than half of patients in weight management services in the UK have experienced childhood trauma and/or adversities in later life, and almost half score highly on anxiety and/or depression (Brewerton & ONeil, 2015; Felitti et al., 1998; Hemmingsson, Johansson & Reynisdottir, 2014; Tuthill et al., 2006). Other psychological difficulties linked to being overweight include impaired body image, depression, low self-esteem, eating disorders, and poor quality of life (Chu, 2019). Evidence suggests that overweight individuals are likely to have complex psychological needs.

Stress has been found to interact with larger weight in bidirectional ways. Stress affects executive function and self-regulation, triggers higher food consumption and higher calorie food choices, physiological changes in brain reward processing and changes in hormonal balance (Tomiyama, 2019). Additionally, overweight people are affected by weight stigma from wider sociocultural networks and immediate environments, which generates internalised stigma and evoking shame (Ueland, 2019). In addition, to mental health difficulties associated while being overweight, overweight individuals can struggle during or after weight loss. The fear of losing weight, worries about what would happen after weight loss and negative self-evaluation linked to excessive loose skin following weight loss have been documented in overweight people (Alegria & Larsen, 2015; Leach, 2006). Thus, distress is a significant element in overweight people and should be addressed alongside weight management. Moreover, treatment-seeking overweight people and people with eating disorders are similar in experiencing external shame, weight concern and shape concern (Franks, 2011). Considering how mental health sciences are utilised to understand and treat eating disorders, a similar approach may benefit people who struggle with managing weight.

It is important to acknowledge that not all people with weight management difficulties struggle with their psychological well-being, and an attentive assessment is needed to establish what kind of support is helpful for these individuals (Fabricatorne & Wadden, 2004). However, a volume of evidence suggests that overweight people may experience psychological as well as physical hardships that may have a complex role in the development and maintenance of a larger weight. Hence, psychological aspects of being overweight may be just as significant as physiological in planning and providing holistic care for people with weight management difficulties.

The rates of people clasified as overweight in the UK have been and continue to increase (Keaver et al., 2018; Keaver et al., 2020). The national report published in 2023 (Baker)

provided insight on the recent trends by summarising data from surveys in counties in the UK: in England, 32% of women and 43% of men are overweight. In Northern Ireland, 71% of men are overweight compared to 60% of women. Similar trends were reported in Wales and Scotland. Recent COVID-19 pandemic also had an impact on larger weight rates. Self-reported data from 2002 individuals in the UK, during the COVID-19 lockdown, showed negative changes in eating habits and physical activity, especially among people with higher BMI (Robinson et al., 2021). These findings suggest a growing need for effective treatment strategies to support overweight individuals.

Being overweight has been linked to a number of physical health consequences, including type 2 diabetes, cardiovascular disease, hypertension, cancer, dyslipidaemia and reproductive disorders. (Chu et al., 2018). Larger weight has been linked to worse COVID-19 outcomes and weaker vaccine effects (Popkin et al, 2020).

Due to the numerous physical health issues linked to being overweight, larger weight has been viewed largely through medical lenses (Chang & Christakis,2002). Therefore, mental health aspects linked to larger weight might be overlooked or considered as less relevant in managing weight. Furthermore, evidence suggests a lack of mental health support in weight management programs (Rand et al., 2017).

In the UK a 4-tier model is widely used in larger weight management (Capehorn, Haslam & Welbourn, 2016). The four tiers represent different intensity of interventions, Tier-4 services offering the most complex support for people with the most complex needs (Figure 1).

Figure 1

The tiered weight management system in the NHS England (Wilding, 2018)

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According to published evaluations, weight management services in the NHS achieve moderate weight loss by employing methods of evidence-based diet, physical activity, behavioural approaches, and psychological care (Jennings et al., 2014; Logue et al., 2014; Morrison et al., 2012). However, comprehensive evaluation of weight management services in the UK is challenging due to a lack of follow-up data and medical and psychological complexity observed in patients in these services (Hughes, 2015). Additionally, there is a limited description of psychological components in the interventions in specialist weight management services (Jennings et al., 2014; Logue et al., 2014; Morrison et al., 2012).

NICE guidelines recommend all weight management interventions include psychological input but no specific recommendations exist to date (NICE, 2014; Ojo et al., 2018). NICE recommends assessing overweight adults for "psychological distress" and "psychological problems", especially before starting them on a low-calorie diet and offering surgical weight management interventions. According to the guidelines, "counselling" should be considered before starting patients on a low-calorie diet, and "specialist psychological support" tailored to individual needs should be offered before and after surgical intervention (BPS, 2019; Ogden, Ratcliffe & Snowdon-Carr, 2019). The lack of definition of

psychological interventions in the NICE guidelines points out a gap that needs to be addressed.

According to the British Psychological Society (BPS), overweight people should be offered psychological therapy alongside medical interventions (BPS, 2019). The BPS suggests that psychological interventions should shift the view of one's weight problem, address self-esteem, coping with stress, unhelpful thoughts and beliefs about oneself. However, the BPS has also recognised that psychological input in real-life weight management settings is most likely to be focused on supervision, training and consultation rather than direct clinical work with patients (BPS, 2019). The BPS has recognised that the NICE guidelines lack clarity on effective evidence-based interventions in weight management services for the treatment of larger weight ("Weight management", n.d.), and recommend these to be updated to include psychological evidence for interventions and setback management as well as evidence of the role psychological factors play in larger weight, physical activity, and dealing with stigma. The recommendation points to the existing gap in empirical evidence in psychological interventions for overweight people. There seem to be a strong need to understand what type and what format therapy should be recommended for this population.

Since the emergence of group therapy in the 1940s, it became a popular therapy format and many types of groups have been developed (Yalom, 1995). Group therapies vary in the therapeutic approach they adopt, how long they run, can be adjusted to specific populations and difficulties. Group therapy offers several benefits, like an opportunity to shift between the roles of help receiver and help provider and opportunities for social connections (Guttmacher & Birk, 1971; Yalom & Leszcz, 2005).

It has been found that group therapy for overweight people produces greater results in psychological outcomes and weight loss than individual therapy, even when individuals who had group therapy initially expressed a preference for individual therapy (Renjilian et al., 2001). A similar conclusion was reached in a systematic review with meta-analysis comparing the longer-term effectiveness of weight loss in individual and group therapies for people with obesity (Paul-Abhohimhen & Avenell, 2009); greater statistical significance was found in favour of the group format. The review was replicated over a decade later and achieved the same conclusion (Street & Avenell, 2022). It is important to note that systematic reviews used weight loss as the primary outcome, and as previously discussed, larger weight is a complex multidimensional phenomenon that includes psychological consequences, which were not the focus of the reviews. Nevertheless, the group format seems to be a promising format for delivering therapy for overweight individuals. Additionally, drop-out rates were found to be lower in group therapy compared to individual therapy in supporting overweight people (Minniti et al., 2007). Moreover, Drapkin, Wing & Shiffman (1995) found that behavioural coping strategies occur more naturally and are easier learned in group weight loss formats than in individual ones. These findings suggest that psychological therapy delivered in group may have significant benefits for this population.

Arguably due to financial pressures on the NHS and therapy being "cost-effective", brief therapy is more likely to be offered. Whilst there is no unanimous agreement on long-term and short-term therapy definitions, short-term therapy can range from1-20 or 4-20 sessions, depending on the length of sessions and type of therapy (Kaduson, 2006; Kaduson & Schaefer, 2016). According to statistics released on talking therapies in England, the average length of therapy received by patients in Increasing Access to Psychological Therapies (IAPT) services was 7.5 sessions in 2020-2021 (NHS Digital, 2021). The characterisation of "cost-effective" should be considered with caution in this context as relapses after brief

psychological therapies often result in a “revolving door” effect in services, meaning patients require repeat interventions (Lorimer et al., 2024; Toner, Ali & Mikocka-Wallus, 2021). The revolving door effect could be considered a strong argument against not only cost effectiveness but also the overall effectiveness of therapies being offered in a brief format.

Short-term therapies have been found to be effective when compared to a waiting list or no treatment control groups (Jager et al., 2020; Maina, Forner & Bogetto, 2005; Wolfling et al., 2019). However there are fewer studies comparing the effectiveness of longer-term therapy and brief therapy. A study comparing interventions for anxiety and depressive symptoms found that symptom reduction was stronger after longer-term interventions compared to brief interventions (Knekt et al., 2007). Similarly, treatment outcomes improved when therapy's length was increased from 1 month to 10 months (Mintz et al., 1992). An RCT found short-term therapies resulted in quicker improvement in the ability to work, but that longer-term therapies were more beneficial for patients long-term (Knekt et al., 2008). Importantly, it has been suggested that longer-term therapy is more efficient than short-term for people with complex difficulties (Leichsenring et al, 2013).

It is essential to acknowledge that helpful length of therapy depends on multiple factors like the type of therapy, patients' readiness for therapy, their circumstances, presenting difficulties and preferences. Short-term and longer-term therapy may present different opportunities for therapeutic work and encompass different mechanisms of change. However, there is a point to be made that shorter interventions in services, under pressure due to high demand, may not always be an answer, particularly when patients’ needs are put first.

Aims

Weight management difficulties are growing in prevalence. Empirical evidence points to overweight being complex, multifaceted condition linked to psychological factors in addition to the physiological ones. Psychological consideration and interventions have been recommended by NICE guidelines to support people with weight management difficulties. However no specific recommendations for psychological therapies for this population exist.

This review aims to breach the gap in the existing evidence base for recommendations for psychological therapies for overweight people. Specifically to evaluate the acceptability and effectiveness of longer-term group-based psychological therapies for this population. For the purpose of this review, a minimum of six sessions are considered longer-term therapy.

Methods

The narrative review format was chosen because it is comprehensive, includes a debate on the topic, and informs about the lack of knowledge on it. The narrative review process followed steps defined by Sukhera (2022). After the research questions and rationale for it were defined, relevant databases were searched. The pertinent papers identified through databases were screened for suitability to finalise a sample of the papers. The sample was examined using descriptive and interpretative analyses. The present narrative review took a critical approach to interpretative analysis. Finally, the strengths and limitations of the review were discussed, following the conclusion of the research question.

The narrative review format was approached by applying strategies more frequently associated with systematic reviews, like clearly defined questions, predefined search methods, and inclusion/exclusion criteria. Borrowing methodologies used in systematic

reviews aimed to reduce bias in literature search and article selection has been recommended to improve the quality of narrative reviews (Ferrari, 2015).

Search

An electronic database search was conducted in June 2022 (Table 2).

The search terms used were: (obes* OR overweight OR weight and psychol* and therap* OR interven* and group*). Reference lists in identified papers were also searched. The search based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)(Page et al., 2021) (Figure 2).

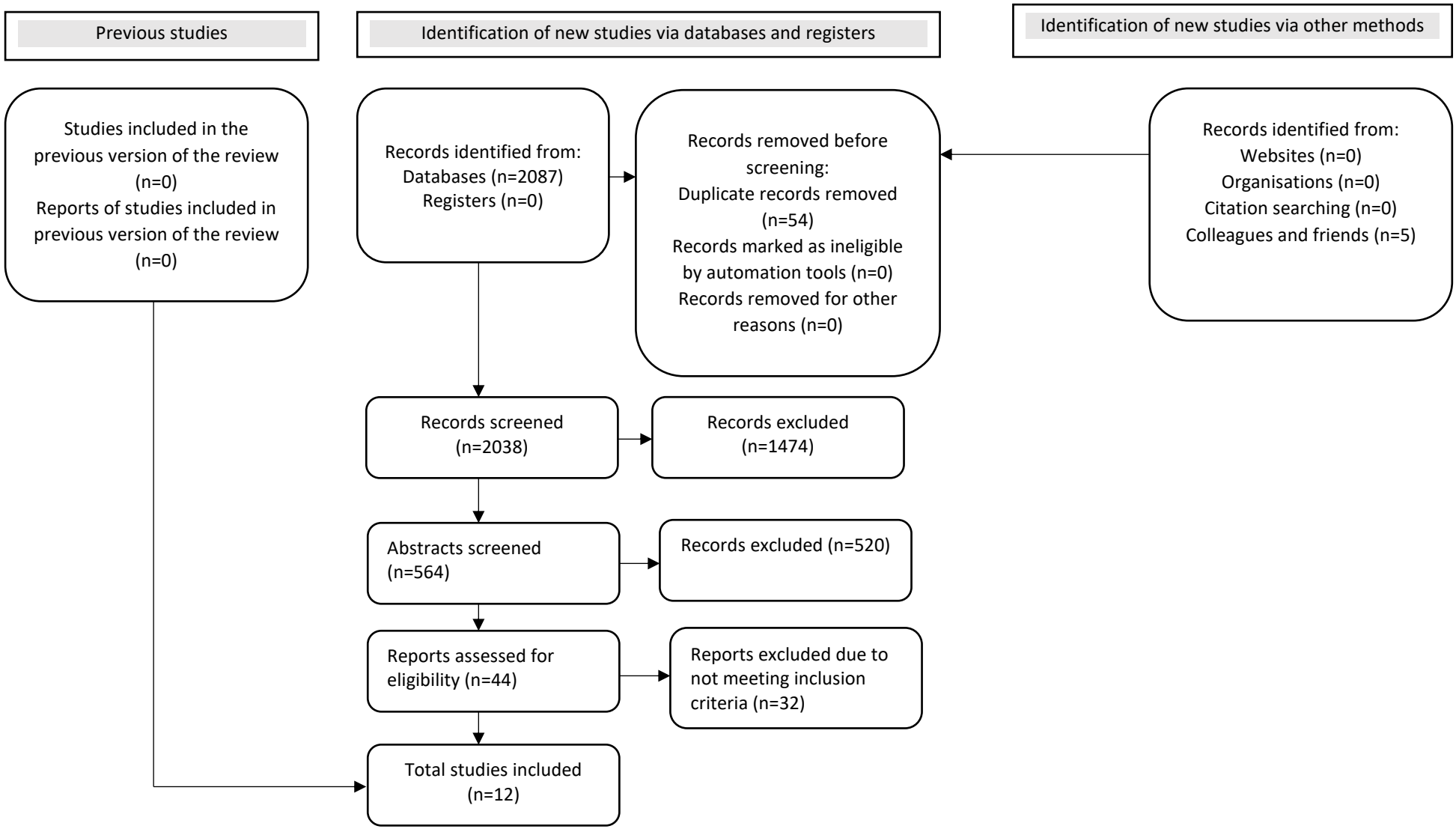
Table 2

The databases searched and their features

Database	Fields covered	Estimated number of journals covered
PsychInfo	Psychology	2296
Medline	Medicine, nursing, pharmacy, dentistry, veterinary medicine, and health care.	5200
Assia	Applied social sciences and health	500

Figure 2

PRISMA 2020 flow diagram



The selection criteria for the studies are presented in Table 3.

Papers on open group interventions were excluded because this format might require less therapeutic commitment from participants, it could be challenging for group processes to take place, and this format may defer too significantly from more conventional group therapy, where the same group of people embarks on the therapeutic journey together.

Table 3

Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
• Adult participants	• People who are on the waiting list for bariatric surgery
• Overweight individuals with BMI ≥25	• People with diagnosed binge eating disorder* or other comorbid acute mental health conditions
• Group based psychological intervention, face to face or online delivered	• Combined group interventions where psychological therapy is one of the elements in it
• At least 6 sessions of the intervention	• Open group interventions
• Papers available in English	• Combined individual and group psychological intervention
• Semi open group interventions*	• Studies that do not use psychological outcome measures
• Closed group interventions	• Psychological group interventions with treatment as usual

* Binge eating refers to consuming of large quantities of food in a short period of time, typically as part of an eating disorder.

*Semi-open refers to groups where new participants are allowed to join groups at specific time points

The literature search identified 12 quantitative studies (Table 4). Appendix A provides a more detailed description of each paper.

Table 4

Summary of study characteristics

No.	Authors, year of publication and countries where the study was conducted	Title	Intervention	Delivery	Design	Participant's gender	Intervention sample (completers)	Follow up	Psychological measurement instruments
1	Beaulac, Sandre & Mercer (2019), Canada	Impact on mindfulness, emotion regulation, and emotional overeating of a DBT skills training group: a pilot study.	DBT skills building group	12 sessions 1x week (1h 45min each)	Single group, pre- and post-test design	3 men, 15 women	18	3 months	The Outcome Questionnaire-45 (OQ-45), The Emotional Overeating Questionnaire (EOQ), The Difficulties with Emotion Regulation Scale (DERS), The Five Facet Mindfulness Questionnaire (FFMQ), The Client Satisfaction Questionnaire (CSQ-3).
2	Cancian, Souza, Liboni, Machado & Oliveira (2019), Brazil	Effects of a dialectical behavior therapy-based skills group intervention for obese individuals: a Brazilian pilot study.	Adapted DBT skills training group	10 sessions 2x week (2h each)	RCT	Majority women	14	-	The Difficulties in Emotion Regulation Scale (DERS), The Depression Anxiety Stress Scales-21 (DASS-21), The Emotional Eating Scale (EES), The Intuitive Eating Scale-2 (IES-2).
3	Carter, Gilbert & Kirby (2020), Australia	Compassion-focused therapy for body weight shame: A mixed methods pilot trial	Compassion focused therapy (CFT) group	12 sessions 2x week (2h each)	Single group, pre- and post-test design	4 women, 1 man	5	3 months	The Body Image Shame Scale (BISS) The Compassion Engagement and Action Scale (CEAS) The Other as Shamer Scale (OAS) The Social Comparison Scale (SCS) The Eating Attitudes Test (EAT-26) The International Physical Activity Questionnaire (IPAQ) The Participant Satisfaction Questionnaire (modified) (PSQ)
4	Dalen, Smith, Shelley, Sloan, Leahigh & Begay (2010), USA	Pilot study: Mindful Eating and Living (MEAL): Weight, eating behavior, and psychological outcomes associated with a mindfulness-based intervention for people with obesity	Mindfulness based group	6 sessions 1x week (2h each)	Single group, pre- and post-test design	7 women, 3 men	10	3 months	Three-Factor Eating Questionnaire (TFEQ), Binge Eating Scale (BES), Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Perceived Stress Scale (PSS), The 20-item Positive and The Negative Affect Schedule (PANAS), The Kentucky Inventory of Mindfulness Skills (KIMS).

5	Daubenmier, Kristeller, Hecht, Maninger, Kuwata, Jhaveri, Lustig, Kemeny, Karan & Epel (2011), USA	Mindfulness intervention for stress eating to reduce cortisol and abdominal fat among overweight and obese women: An exploratory randomized controlled study	Mindfulness based group	9 sessions 1x week (2h30min each) +1 (7h) day of guided meditation practice after class 6.	RCT	women	24	-	The Kentucky Inventory of Mindfulness Skills (KIMS), The Wheaton Chronic Stress Inventory, The Dutch Eating Behavior Questionnaire (DEBQ), The Body Responsiveness Scale.
6	Genis, Kayalar, Donmez & Cosar (2022), Turkey	Effect of structured cognitive-behavioral group therapy on body weight, mental status and the quality of life in obese and overweight individuals: A 16-week follow up study	CBT group	8 sessions 1x week (50-60 min each) + 2 follow up sessions	Single group, pre- and post-test design	32 women, 3 men	35	-	The Sociodemographic Questionnaire, The Beck Depression Inventory (BDI), The Beck Anxiety Inventory (BAI), The Dutch Eating Behavior Questionnaire (DEBQ), The Obesity Quality of Life Scale (OQOLS), The Diet Related Dysfunctional Attitudes Scale (DRDAS), The Rosenberg Self-Esteem Scale (RSES), The International Physical Activity Questionnaire (IPAQ).
7	Meekums, Vaverniece, Majore-Dusele & Rasnacs (2012), Latvia	Dance movement therapy for obese women with emotional eating: A controlled pilot study	Dance movement therapy group	10 sessions 2x week (1h 30min each)	RCT	Women	24	-	The Dutch Eating Behaviour Questionnaire (DEBQ), The Clinical Outcomes in Routine Evaluation – Outcome Measure (CORE-OM), The Situational Inventory of Body Image Dysphoria (SIBID), The Rosenberg self-esteem scale (RSES).
8	Palmeira, Cunha, & Pinto-Gouveia (2019), Portugal	Processes of change in quality of life, weight self-stigma, body mass index and emotional eating after an acceptance-, mindfulness- and compassion-based group intervention (Kg-Free) for women with overweight and obesity	Acceptance, mindfulness and compassion-based group intervention	10 sessions 1x week (2h 30min each) +2 booster fortnightly sessions	Single group, pre- and post-test design	Women	53	3 months	The Weight Self-Stigma Questionnaire (WSSQ), The Obesity Related Well-Being Questionnaire (ORWELL-97), The Three Factor Eating Questionnaire–21R (TFEQ-R21), The Acceptance and Action Questionnaire for Weight-Related Difficulties–Revised (AAQW-R), The Other as Shamer Scale (OAS), The Self-Compassion Scale (SCS), The Five Facet Mindfulness Questionnaire – 15 (FFMQ-15).
9	Rapoport, Clark & Wardle (2000), UK	Evaluation of a modified cognitive behavioural programme for weight management	Modified Cognitive Behavioural Therapy (CBT)	10 sessions 1x week (2h each)	RCT	Women	31 (MBCT) & 32 (SCBT)	6 and 12 months	The General Health Questionnaire (GHQ), The Beck Depression Inventory (BDI), The Rosenberg's Self-Esteem scale (RSE), The Perceived Stress Scale (PSS),

			group & standard CBT group						The Binge Eating Scale (BES), The Three Factor Eating Questionnaire (TFEQ), The Body Satisfaction Scale (BSS), The Body-Image Avoidance Questionnaire (BIAQ).
10	Rosen, Orosan & Reiter (1995), USA	Cognitive behavior therapy for negative Body image in obese women	Cognitive behavioral body image therapy group	8 sessions 1x week (2h each)	RCT	Women	27	4.5 months	The Body Dysmorphic Disorder Examination (BDDE), The Body Shape Questionnaire (BSQ), The Brief Symptom Inventor (BSI), The Rosenberg Self-Esteem Scale (RSE), The Eating Disorder Examination (EDE).
11	Sairanen, Tolvanen, Karhunen, Kolehmainen, Järvelä-Reijonen, Lindroos, Peuhkuri, Korpela, Ermes, Mattila & Lappalainen (2017), Finland	Psychological flexibility mediates change in intuitive eating regulation in acceptance and commitment therapy interventions	ACT group	6 sessions 8-week period (90min each)	RCT	Majority women	70 (face-to face group) & 78 (mobile group)	6 months	The Intuitive Eating Scale (IES), The Five Facet Mindfulness Questionnaire (FFMQ), The Acceptance and Action Questionnaire II (AAQ-II), The Orientation to Life Questionnaire (SOC-13).
12	Tanco, Linden & Earle (1998), USA	Well-being and morbid obesity in women: A controlled therapy evaluation	Cognitive treatment group based on cognitive, feminist, systemic, dynamic, and behavioral principles	8 sessions 1x week (2h each)	RCT		18	6 months	The Beck Depression Inventory (BDI), The Rosenbaum Self Control Schedule (SCS), The Eating Disorders Inventory (EDI), The State Trait Anxiety Inventory (STAI).

Quality evaluation

The quality and biases was evaluated using Cochrane quality assessment tools, RoB 2 and ROBINS-I, for randomised and non-randomised studies respectively (Sterne et al., 2016; Sterne et al. 2019) (Table 6 &7). ROBINS-I includes a structured approach to assessment of risk of bias within seven domains and RoB 2 within five domains. Both tools have been developed by methodological experts and systematic review authors and editors, and were revised based on substantial piloting and user feedback. The comprehensive evaluation of the papers is available in Appendixes B & C.

Four papers were randomly selected for quality evaluation by two independent parties. Their evaluations were compared to the author's. The differences were resolved by the author by considering rationales for differences in judgments. The initial disagreements may suggest that quality evaluation by the author may not be reliable and, therefore, should be viewed critically. The quality evaluation tools may have been too complicated and difficult to use. This is supported by the author's impression and the independent assessors' feedback.

Nine papers were evaluated to contain "low risk of bias" and three- "some concerns". None of the included studies fully satisfied all quality criteria, but no domains across the studies were evaluated as "high risk of bias", suggesting the papers included in the review were moderate to high quality and reliability.

Table 5

The summary of papers quality assessment using revised Cochrane risk-of-bias tool for randomized trials (RoB 2.)

	Paper-2 - Cancian et al. (2019)	**Paper-5**- Daubenmier et al. (2011)	**Paper-7**- Meekums et al. (2012)	**Paper-9**- Rapoport, Clark & Wardle (2000)	**Paper-10**- Rosen, Orosan & Reiter (1995)	**Paper-11**- Sairanen et al. (2017)	**Paper-12**- Tanco, Linden & Earle (1998)
Domain 1: Risk of bias arising from the randomization process							
Risk-of-bias judgement	Low risk of bias	Low risk of bias	Some concerns	Low risk of bias	Low risk of bias	Some concerns	Some concerns
Domain 2: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)							
Risk-of-bias judgement	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns
Domain 2: Risk of bias due to deviations from the intended interventions (effect of adhering to intervention)							
Risk-of-bias judgement	Low risk of bias	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Some concerns	Some concerns
Domain 3: Missing outcome data							
Risk-of-bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Some concerns	Low risk of bias
Domain 4: Risk of bias in measurement of the outcome							
Risk-of-bias judgement	Low risk of bias	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Domain 5: Risk of bias in the selection of the reported result							
Risk-of-bias judgment	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
The overall risk of bias							
Risk-of-bias judgment	Low risk of bias	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Some concerns	Low risk of bias

Table 6

Summary of papers quality assessment using the risk of bias in non-randomized studies of interventions (ROBINS-I) assessment tool

	Paper-1- Beaulac, Sandre & Mercer (2019)	**Paper-3**- Carter, Gilbert & Kirby (2020)	**Paper-4**- Dalen et al. (2010)	**Paper-6**- Genis et al. (2022)	**Paper-8**- Palmeira, Cunha,& Pinto-Gouveia (2019)
Bias due to confounding					
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Bias in selection of participants into the study					
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Bias in classification of interventions					
Risk of bias judgement	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias
Bias due to deviations from intended interventions					
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Bias due to missing data					
Risk of bias judgement	Low risk of bias	Low risk of bias	Some concerns	Some concerns	Some concerns
Bias in measurement of outcomes					
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Bias in selection of the reported result					
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Overall bias					
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias

Answer options: Y=Yes; PY=Probably yes; N=No; NI=No information.

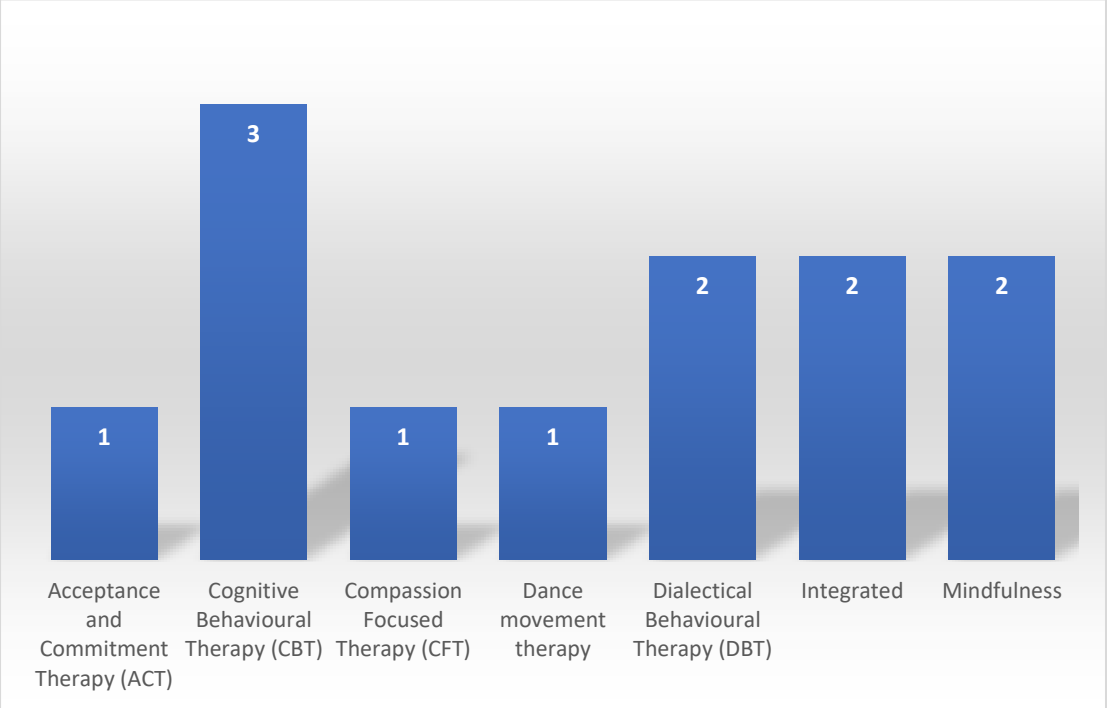
Bias judgement options: Low risk of bias; Some concerns; or High risk of bias.

Characteristics of studies

Six out of twelve studies investigated third-wave therapies: Acceptance and Commitment Therapy (ACT), Dialectical Behavioural Therapy (DBT), Compassion Focused Therapy (CFT), and Mindfulness-based interventions (Figure 3). Cognitive Behavioural Therapy (CBT) was the second most common approach and was explored in three papers.

Figure 3

Frequencies of therapeutic approaches in the studies

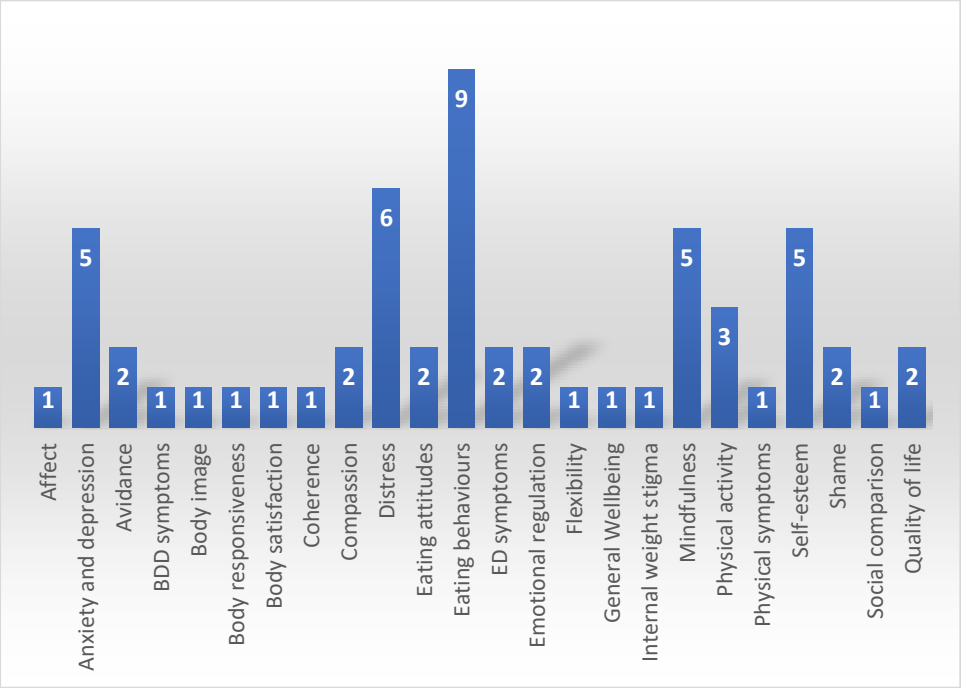


Although the population of interest in the reviewed studies were overweight people, not all studies monitored outcomes of weight or BMI, namely the studies that employed DBT and CFT based groups, chose not to focus on body physicality as an outcome.

Altogether the 12 studies looked into multiple outcomes (Figure 4). The most frequently measured outcomes were eating behaviours in nine studies, distress in six studies, mindfulness, anxiety and depression and self-esteem in five.

Figure 4

Frequencies of measured outcomes in the studies



Results

The results are discussed based on the therapeutic approach investigated and include a description of theoretical rationales, evidence on effectiveness and acceptability, drop-out rates, and participants' feedback. Effectiveness was assessed by considering intervention outcomes. Acceptability was estimated using the theoretical framework of acceptability (TFA), specifically its seven components: affective attitude, burden, ethicality, intervention coherence, opportunity costs, perceived effectiveness and self-efficacy (Sekhon, Cartwright & Francis, 2017). Drop-out rates were converted into percentages if they were provided, in order to enable a comparison.

Acceptance and Commitment Therapy (ACT)

Paper-11 that studied ACT group focused on intuitive eating. Intuitive eating follows the natural occurrences of an individual's perception of physical hunger and satiety cues rather than emotional or environmental cues. Overeating can be conceptualised as difficulty to self-regulate and consuming food in response to emotional distress. ACT focuses on increasing psychological flexibility, which helps combat experiential avoidance that trigger emotional eating. Mindfulness, an element of ACT, helps people connect with inner experiences, such as physiological hunger and emotional needs.

Paper-11 did not provide data on group dropout rates and feedback. Thus intervention's acceptability could not be assessed.

The findings of the study pointed to some significant improvements following the group in mobile and face to face ACT groups in mindfulness, psychological flexibility (weight-related, specifically), and intuitive eating. No significant findings were found in weight or comparing baseline to the six-month follow-up, except for eating for physiological rather than emotional reasons . The findings are promising but the effect sizes were small. Therefore, despite statistical significance, the clinical significance of the intervention is unclear.

Paper-11, also explored mechanisms of change. The findings suggest ACT interventions increase psychological flexibility, which in turn promotes weight loss and eating based on physiological cues of hunger and satiety. Due to multiple mediation analyses performed, the risk of type-1 error should be considered. However, because face-to-face and mobile modalities were compared and these modalities were found to have similar effects

when compared to the control group, the reliability of *paper-11* findings in support of ACT seems strong.

The effectiveness of ACT intervention is considered in relation to the study's limitations. Firstly, the quality assessment of the paper suggested "some concerns." There was insufficient information regarding the randomisation process, the effect of assignment to intervention, the effect of adhering to intervention, and missing outcome data. Secondly, the sample was mainly composed of highly educated women, limiting the generalisability of the findings.

ACT appears to be a promising intervention that can be delivered in group format as part of weight management in remote and face-to-face formats. ACT-oriented interventions may improve overweight people's ability to engage in valued activities when facing negative emotions and thoughts related to weight. This process appears to mediate changes in eating regulation and weight. However, more studies should be conducted to establish more clarity on intervention effectiveness for this population, particularly in the longer term and in more diverse samples.

Cognitive Behavioural Therapy (CBT)

Paper-6 evaluated standard CBT, *paper-9* compared modified CBT with an emphasis on self-acceptance to standard CBT, and *paper-10* examined CBT focused on negative body image.

None of the three papers offered a specific theory of why CBT-based intervention was expected to be helpful for overweight people. The authors of *paper-6* reviewed existing evidence and explained that CBT has been found to be effective by using behavioural techniques and helping to increase awareness of unrealistic and dysfunctional cognitive

processes. *Paper-9* reviewed empirical evidence supporting the non-dietary approach, which facilitates self-acceptance, positive changes in body image, and overall psychological well-being, which have positive, longer-term outcomes. This approach was employed to modify the traditional CBT approach by shifting focus away from weight loss to lifestyle changes. By comparing modified and non-modified CBT, the authors of *paper-9* not only assessed the effectiveness of the CBT approaches for overweight people but also offered insight into the value of modifications in this intervention.

The authors of *paper-10* explored the complexity of body image in overweight people. They argued that successfully implementing intervention focused on negative body image for overweight people improves psychological adjustment.

The dropout rate of the experimental group in *paper-6* was 12.5%, of the standard and modified CBT groups in *paper-9*- 16 % and in *paper-10*- 7.4%.

Paper-6 did not report participants' feedback. In *paper-9*, both standard and modified CBT groups were evaluated as equally acceptable using self-reported questionnaires and individual semi-structured interviews. The criteria for acceptability included enjoyment, interest, relevance, helpfulness, satisfaction, and acquired new skills. Both approaches were compared favourably with previous interventions participants received. However, a few things are important to note. Firstly, only the first out of three total cohorts that received intervention were invited to participate in the assessment of acceptability of the intervention. Secondly, several participants from the standard group(i.e. weight loss focused) asked for topics addressed in the modified group (i.e. lifestyle changes focused) to be covered, suggesting that something about the modified group approach resonated with the participants. Additionally, five participants in the modified group reported that changes in their family's lifestyles occurred due to the group intervention.

The participants in *paper-10* rated their satisfaction after treatment on a scale of 1 to 7 (seven = "completely satisfied" and "recommend enthusiastically"). Participants' satisfaction rating on average was 5.44 (SD = 1.5) and the degree to which they would recommend the program was 6.0 (SD = 1.35). 88% of participants said they would recommend the intervention. Also, following the first session, participants rated their expectation of benefiting from therapy on a scale of 1 to 7; the mean was 5.74 (SD = 1.29). Participants completed an average of 86% of homework assignments. This data support the TFA acceptability criteria for affective attitude, burden, and perceived effectiveness.

All three papers reported positive outcomes. *Paper-6* found significant improvements across all measured outcomes: BMI, body weight, depression, anxiety, quality of life, dysfunctional attitudes about diet, physical activity, self-esteem and eating behaviours, including emotional eating, restrained eating and external eating from the start of the intervention to the various stages of it.

The authors of *paper-6* reported that participants with less depression and less restrained eating behaviour lost more weight, and these variables had a significant predictive value for weight reduction. Moreover, the results of *paper-6* indicate a vicious cycle where depression is linked with dysfunctional attitudes about eating, which are associated with anxiety and eating disorders, which, in turn, are associated with depression. An intervention directed at one of the elements can unlock various improvements across the cycle.

Although *Paper-6* was evaluated to have a "low risk of bias", it had a few limitations. The sample was majority women, and thus, results may not be reflective of men. Importantly, the participants were actively seeking weight management support, and therefore, they may have had high levels of motivation, which might not represent all people with weight management difficulties. Finally, the study did not include a control group.

Paper-9 demonstrated significant gains across all measured outcomes, but one. No significant weight loss was found in the modified CBT group at the end of the intervention, but it was found in the standard CBT group. By 12 months follow-up, weight loss was significant in both groups. Significant changes in both groups were found in cholesterol and blood pressure after the intervention and at the 12-month follow-up. Weight loss and cholesterol improved more in the standard CBT group, but changes in blood pressure were the same in both groups. Similar between the two groups, significant improvements as time went on were also found in general well-being, depression, self-esteem, stress, binge eating, eating style, body satisfaction, body image avoidance, nutrient intake, and physical activity. No significance was found in the fitness levels of the groups.

Whilst *paper-9* was assessed to have a "low risk of bias", there are limitations worth noting. Participants were predominantly white, married, and had non-manual occupations. The same therapists were running both groups to avoid therapist effects, but as time went on, therapists became more and more committed to the message promoted in the modified CBT group, which suggests some drift occurred in the standard CBT group making it harder to compare group effects.

Paper-10 findings demonstrated the effectiveness of the intervention across all outcomes, but weight. Compared to baseline, participants in the intervention group improved significantly after intervention and at the 4.5-month follow-up in body dysmorphia, eating disorder symptoms, body image, perception of body size, psychological distress, and self-esteem. At the follow-up group participants returned to the baseline levels in dietary restraint. Large effect sizes in the treatment group suggest participants experienced substantial improvement in body dysmorphia symptoms and body image. The study findings suggest improvements in body image are independent of changes in weight.

Unfortunately, these are not generalisable to overweight men as the study had mostly female participants. However, *paper-10* was assessed to have "low risk of bias" supporting reliability of findings.

Based on the three papers, group CBT can be considered acceptable and effective for overweight people. Although findings in weight reduction are inconsistent, CBT in its standard and modified formats appears to be effective across multiple psychological outcomes. Findings suggest that a message promoting a healthy lifestyle may be more appealing to participants and facilitating clinicians alike than a weight loss message alone.

Compassion Focused Therapy (CFT)

Paper-3 discussed social comparison, social rank, and social mentality theories. Social comparison and the drive to be accepted by others were identified as sources of threat for overweight people that resulted in experience of shame and self-criticism. CFT focused explicitly on the experience of shame, self-criticism and improvement of self-compassion, was argued to be a worthwhile treatment for people with obesity.

All participants in the study completed the intervention. Participants' feedback was collected using self-reported measures and focus groups. Their responses showed satisfaction with the intervention and indicated that they would do the intervention again as needed. Thematic analysis of interviews revealed importance of safety in the group, connectedness, generating and accepting compassion, awareness of criticism and the programme "sticking" with participants. The intervention seemed to meet TFA criteria for acceptability, specifically: affective attitude, ethicality, intervention coherence, perceived effectiveness, and self-efficacy.

A reliable change was found in several participants at the end of the intervention and at the follow-up in body weight shame, compassionate engagement and action, external shame, eating attitudes, and physical activity. Significant effects across time were found in body weight shame and external shame. No significant effect was found in social comparison.

Paper-3 was evaluated to have a "low risk of bias" despite the very small and demographic homogeneity.

The results of *paper-3* suggest that a CFT-based group is an effective and acceptable therapeutic intervention for overweight individuals. Importantly, the results suggest an ongoing improvement after the intervention. CFT-based group intervention requires further investigation with a larger sample size that is more representative of the population. Additionally, delivering 12 intervention sessions in a longer period than 6 weeks, could allow an insight into most optimal frequency for therapy sessions.

Dance Movement Therapy (DMT)

Paper-7 focused on body image disturbance (BID) in overweight women. Three risk factors for BID were noted: high BMI, identifying as a woman and emotional eating. It was argued people with weight management difficulties may be less sensitive to internal satiety clues but more sensitive to emotional states. DMT was chosen for the study because it promotes awareness and reflection on body image and emotions and encourages physical activity.

Twenty percent of participants in the intervention group dropped out. Participants' feedback was not provided and therefore acceptability of the intervention could not be estimated.

Significant improvement following the intervention was found in all measured outcomes: general distress, body image distress, eating behaviour, self-esteem, and BMI. Significant improvements in general distress, body image distress, and self-esteem were not found in the control groups. As all the groups lost weight, but most psychological gains were achieved in the DMT group, the findings contradict the notion that weight loss exclusively leads to psychological well-being.

Paper-7 was evaluated to have "some concerns" over bias. This evaluation was achieved due to concerns over the randomisation process, the effect of assignment to intervention, the effect of adhering to intervention, and the measurement of the outcome. Study limitations also included authors taking simultaneous roles as researchers and group facilitators and a small sample size that did not allow full randomisation. Despite these limitations, the study suggests DMT is an effective treatment for overweight women that warrants more research.

Dialectical Behavioural Therapy (DBT)

The authors of *paper-1*and *paper-2* described affect regulation theory, which suggests that some people who lack stress coping skills use food to reduce negative affect. As this strategy provides the desired outcome, it gets further reinforced. They argued that DBT, originally aimed at people with emotional dysregulation difficulties, could help to improve the lives of people with obesity who engage in emotional eating via this mechanism.

Additionally, the authors of *paper-2* described Linehan's biosocial theory. They suggested that the interplay between individual vulnerabilities and an invalidating environment may result in difficulty managing food intake. They proposed that Linehan's theory is the basis for the DBT model when explaining their choice of the intervention. It is

important to note that the intervention in *paper-2* was described as a DBT skills training group, which may suggest some meaningful differences between interventions in both papers where intervention in *paper-2* was more education than therapy-orientated.

Intervention drop-out rate in *paper-1* was 16.7% and in *paper-2* -44%.

Participants in *paper-1* rated their satisfaction with the group using self-reported measures. The average rating was high (3.71 out 4). The authors of *paper-1* analysed qualitative participants' feedback. Participants expressed appreciation for not feeling alone with their struggles and the information and tools learned. A preference for a longer duration for group or follow-up, less time for homework discussion in favour of more time for psychoeducation and a desire for firmed boundaries around attendance was expressed. Based on this data the intervention could be considered acceptable as it met TFA criteria of affective attitude,, ethicality, perceived effectiveness and self-efficacy.

Paper-2 included a more modest amount of participants' feedback compared to *paper-1*. Participants in *paper-2* reported appreciation for mindfulness skills. However, they also commented that mindfulness skills were very difficult to practice and implement in daily eating routines. This suggests mixed findings in relation to the acceptability of the intervention.

Participants in *paper-1* improved significantly from the baseline to post-treatment and between baseline to the 3-month follow-up in emotional overeating, emotion regulation, and mindfulness. Additionally, large effect sizes in all three measures suggest practical as well as statistical significance. Statistical analysis found no levelling up over time, which suggests that improvements across these domains would continue as time goes on. Although changes in general distress were not statistically significant, improvements were clinically meaningful.

Paper-1 was assessed to have "low risk" of bias. The limitations of the *paper-1*study include low statistical power, a short-term follow-up and absence of control group.

Participants in *paper-2* intervention group decreased in binge eating severity from moderate to mild/no binge after the intervention. This trend was signified by large effect size. Problematic eating behaviours decreased with large effect size. A medium effect size was found in improvement in emotional eating after the intervention and a large effect size was found in improvement in intuitive eating after the intervention. Participants also improved in depressive symptoms and general distress, as demonstrated by large effect sizes, and in anxiety symptoms, as demonstrated by medium effect sizes. Mindful eating decreased after the intervention, with a medium effect size. None of the findings demonstrated statistical significance.

Non-statistically significant findings in *paper-2* may be explained by small sample size. The high dropout rate in the research, considered through the lens of socioeconomic and cultural factors observed in the sample's demographics, is concerning and puts into question the feasibility of this intervention. Economic factors like occupational status and financial means may play a significant role in engaging in group-based therapy physically and mentally. Educational stance adopted in the intervention is also worth to be considered as it may be less appealing to participants. The quality assessment of the study was concluded as "low risk" of bias.

Based on findings in *paper-1* and *paper-2*, group-based psychological DBT intervention that incorporates psychoeducation and skills building to address emotional dysregulation may be an effective intervention for weight management. However, based on the large effect sizes in the findings in *paper-2*, but the lack of statistical significance, a strong conclusion cannot be made. There was promising evidence in support of the

acceptability of the intervention, but a strong conclusion cannot be made due to conflicting data regarding acceptability in *paper-2*.

Integrated therapy

Paper-8 investigated an integrated therapeutic approach combining third-wave therapies: Mindfulness, ACT, and CFT. The authors state these therapies have been found to be helpful in treating people with chronic conditions, and being overweight could be considered one of them. According to the authors, this intervention could improve distress tolerance, present moment awareness, and a caring approach to self: qualities that people with increased weight might find challenging.

Similarly to *paper-8*, *paper-12* also focused on the non-dieting approach. The intervention integrated elements of cognitive, feminist, systemic, dynamic and behavioural therapies, and aimed to foster insight into maladaptive behaviours, enhance emotional well-being, and promote regular physical exercise and non-disordered eating. It was not designed with an emphasis on weight loss and was not promoted as one of the intervention aims. In *paper-12* the authors did not describe a theory of why their specific intervention was expected to be helpful. Instead, they presented empirical evidence highlighting the unhelpfulness of dieting approaches.

Participant's feedback on the interventions in the papers was not provided and therefore acceptability of the intervention could not have been estimated. Drop-out rates were 11.7% and 9.5% in *paper-8* and in *paper-12* respectively.

There were significant improvements across all measured outcomes in *paper-8*. At post-treatment, participants were found to have significantly increased quality of life,

mindfulness , and self-compassion and significantly decreased BMI, weight self-stigma, emotional eating, weight-related experiential avoidance, shame , and self-judgment. The effect sizes were large for all the measures except for self-compassion, which was medium. Results indicated that changes from baseline to post-treatment were maintained at the follow-up. The authors in *paper-8* also found that the increased quality of life and reductions in weight self-stigma at post-treatment were mediated by decreased levels of weight-related experiential avoidance, shame and self-judgment patterns and increased mindfulness skills. Self-compassion was not found to mediate changes in participants' quality of life. It is important to note that self-compassion was focused on interventions last session, and the findings may reflect a need for a more extended period of time to develop self-compassion skills.

Paper-8's findings were limited by a small sample size and absence of control group. Additionally, they only had female participants, which made the results difficult to generalise. However, overall, the results were statistically significant and further supported by large and medium effect sizes. Importantly, *paper-8* was evaluated as "low risk" of bias suggesting a reliable methodology of the study.

The findings in *paper-12* were significant across all measures. At the end of the intervention, participants improved significantly in depression, anxiety, and self-esteem. Participants improved significantly in eating disorders symptoms across all but one (perfectionism) subscales after the intervention. Participants also demonstrated significant improvements in physical exercises and BMI after the intervention ended. The improvements were maintained at the follow-up. A significant negative correlation between weight loss and depression post-treatment was found, but not between weight loss and change in depression. These findings suggest that there is a nonlinear relationship between weight loss and change in depression. It is important to note that gains in the intervention group were

compared to the gains in non-active control and in the behavioural intervention group delivered in psychoeducation format, in favour of the experimental condition.

Similar to *paper-8*, *paper-12* was limited by exclusively female participants and a small sample. However, the study was assessed to have a "low risk" of bias. Moreover, by including not one but two control groups, *paper-12* demonstrated that treatment tailored to the psychological needs of overweight women provides of enhances emotional well-being.

Based on *paper-8*, the importance of promoting acceptance, mindfulness, and self-compassion abilities in order to decrease shame, self-criticism, and internalized stigma and promote the quality of life of overweight individuals can be concluded. Another conclusion that can be drawn from *paper-8* findings is that targeting weight-related experiential avoidance and developing mindfulness and self-compassion abilities is essential to reducing emotional eating and weight.

Overall, although the two papers that investigated integrated psychological group therapies used different therapy frameworks, both offered strong findings in support of the effectiveness for psychological and physical gains for overweight women. The acceptability of the intervention is unclear.

Mindfulness

Paper-4 discussed the dysregulation model of obesity, which is one of the elements forming the mindful eating approach to obesity. The model proposes that overweight individuals lose the ability to recognize or respond to internal hunger, taste, satiety, and fullness. In addition to that, some individuals, according to authors, when exposed to negative emotions, use avoidant coping styles and consume excessive amounts of food in dissociative manner. The authors of *paper-4* suggested that mindfulness meditation increases awareness

and the ability to respond to stressful situations in more helpful ways. The group intervention in *paper-4* was designed to develop skills linked to increased awareness of eating, emotions, and negative self-judgment.

The authors of *paper-5* reasoned that mindfulness would help reduce emotional distress, increase awareness of internal physiological states, and increase the ability to differentiate hunger from emotional arousal.

No participants dropped out of the intervention in *paper-4*, and 16.7 % of participants dropped out of the intervention in *paper-5*. Participants' feedback was not provided in either of the papers and therefore, acceptability of the interventions could not be assessed.

There were numerous gains in participants in *paper-4*. All participants experienced significant weight loss and reduction in C-reactive protein, which, in higher concentration, was found in obese individuals. There were no significant changes in markers associated with cardiovascular risk. The additional gains included moderate to large increases in cognitive restraint and sub-scales related to mindfulness, large decreases in disinhibition or loss of control over eating and binge eating, moderate to large decreases in depression, physical symptoms, and negative effects at the end of the intervention, and the follow-up. A large decrease in hunger was found at the end of the intervention but only became significant at the follow-up. Moderate gains in perceived stress were found at the follow-up. The opposite trend was found in anxiety, where a significant decrease at the end of the intervention was no longer found at the follow-up.

Although the study had some limitations, including a small sample size, limited demographics, and absence of a control group, it demonstrated that mindfulness-based intervention could promote emotional and physical awareness and, in this way, improve

the ability to recognize and respond to satiety clues. The study was evaluated to have a "low risk" of bias. However, the findings were not statistically significant and strong conclusions about effectiveness could not be drawn.

The outcome effects were promising in *paper-5*. The treatment group reported significantly greater increases in the majority of mindfulness subscales and in the body responsiveness with medium to large effect sizes, a significant decrease in anxiety with moderate effect size, and a decrease in external eating with a large effect size

Marginal significance was found in emotional eating with a moderate effect size, and nonsignificant reduction was found in cortisol awakening response with a moderate effect size.

It is important to note that no significant changes occurred in stress; there was a slight increase in restrained eating in the control group, albeit effect sizes were small, and there were no changes in weight.

Just as *paper-4*, *paper-5* had its limitations. These included small sample size, female-only participants, which did not allow for the generalization of results, and participants being aware of research hypotheses. Additionally, quality evaluation of the study suggested "some concerns". However effect sizes suggest that changes in the intervention group were meaningful. Additionally, *paper-5* findings support the theory that improvements in mindfulness, responsiveness to bodily sensations, and chronic stress targeted by the intervention may lead to changes in abdominal adiposity.

Overall, mindfulness-based interventions appear to be effective in improving psychological outcomes in overweight people. Effectiveness on physiological outcomes and overall acceptability of mindfulness interventions is unclear.

Discussion

The present review aimed to evaluate the effectiveness and acceptability of longer-term group psychological interventions for overweight people. Given the range of therapies found across the included papers this review also compared different therapeutic approaches delivered in the group format over longer-term.

Results suggest that longer-term group interventions are effective in supporting overweight people, pointing to psychological gains. Physiological gains such as weight loss were limited. The data to estimate the acceptability of longer-term group interventions were insufficient across studies, so results tentatively point to its acceptability. Overall, longer-term therapy groups seem to be promising interventions for overweight individuals that warrant more research.

A closer look at different therapeutic approaches delivered in a longer-term group format reveals that CBT, in its standard and modified formats, had the most solid support with regard to the quality of the papers and evidence for both acceptability and effectiveness on psychological and physical gains. As CBT was explored in the most, studies included in the review, this may have given an advantage regarding evidence base in comparison to other reviewed therapeutic approaches.

The effectiveness of integrative therapeutic approaches and DMT for psychological and physical gains for overweight people was supported, but acceptability was unclear.

Mindfulness-based interventions appear to be effective in improving psychological outcomes in overweight people. However the effectiveness on physiological outcomes and overall acceptability of interventions was unclear. The same conclusion was reached for DBT approach.

CFT appears to be promising intervention for psychological gains that seem to increase over time. However, further research into CFT based longer term group intervention on overweight individuals is necessary to assert the findings due to small sample size.

The ACT approach is the most unclear in terms of both, effectiveness and acceptability.

It is useful to conceptualise group therapy within broader literature on individual therapy when examining the review findings. There are only a handful of studies that compared individual and group therapy for overweight people, and the results are conflicting. Renjilian et al.'s (2001) study compared 26 weekly sessions of individual and group cognitive behavioural therapy for weight loss. The study found that group therapy produced greater weight loss than individual therapy, even when participants had an initial preference for individual intervention. On the other hand, psychological improvements were not different when compared across the groups. Similarly, Kingsley and Wilson (1977) found compelling evidence favouring group modality. The authors compared 8 weekly sessions of behavioural group and individual therapy for women with long-standing obesity. Findings suggest that women who received individual therapy showed significantly higher weight loss than women who received group therapy post-intervention; however, individually treated women regained weight at 12 months follow-up, while group-treated women continued to lose weight at follow-up. These findings suggest that there may be different mechanisms involved in weight loss success post-group and longer term, however as the focus of the study was weight loss and no psychological outcomes were monitored, it is difficult to conclude the findings holistically

Pezzot-Pearce (1982) did not find a significant difference in weight loss between the behavioural group and individual interventions, both consisting of 10 weekly

sessions. Similar to Kingsley and Wilson‘s study, the adult participants were monitored on weight loss only, and so the impact on psychological variables in the study is unknown.

A systematic review by Paul-Ebhohimhen and Avenell (2009) compared individual and group interventions for overweight adults and also found evidence in support of group therapy. They found significantly greater weight loss at 12 months post-treatment among adults who received group-based over individually-based interventions.

One study was found that strongly suggested individual modality being straightforwardly more effective than group therapy for overweight individuals. Hakala et al. (1993) compared group and individual counselling for overweight adults that both lasted for two years. The five-year follow-up findings suggested that individual counselling, especially in men, achieved a more sustained effect in weight loss. However, the study did not assess psychological gains.

Overall, the empirical evidence suggests that group therapy may be more effective for weight loss than the individual approach. However, there is a significant lack of data on psychological outcomes when assessing the effectiveness of these modalities. This gap in knowledge may be linked to the traditional view of overweight and obesity as primarily body issues, rather than the complex interplay between physiological and psychological elements, which the current review advocates.

It is important to note that our interrogation of which therapies were most effective and acceptable should be considered critically. One of the reasons for the critical stance is that decisions about what therapy should be used for individuals should be informed by psychological assessment and formulation of individuals, and a "one size fits all" approach may not be helpful to employ. The recommendation for therapy is also influenced by

therapies' theoretical integrity and empirical evidence of effectiveness; however, it may also be dictated by practicalities such as resources, training, accreditation, and others.

Another reason for a critical stance is well illustrated by Hayes (2008). He suggested that a comparison of therapeutic approaches should be made carefully, not to view them dichotomously: "strength of one method is not increased one iota by the weakness of another" (as cited in Swart, Bass & Apsche, 2015, p.93). Moreover, there has been criticism of how NICE decides what therapies should be delivered and for what type of difficulties (Mollon, 2009). Mollon suggests a large amount of psychotherapy research is ignored by the authorities and differences between the effectiveness of therapies are minimal and lie within the skills of the therapist rather than the type of therapy.

Interrogation of the papers included in the review demonstrated various therapies and different reasons for choosing them. The papers showed that obesity may be conceptualised and approached from multiple psychological perspectives, and each of them is supported by empirical evidence, psychological theories or a combination of the two. This raises the question of whether differences between different types of therapies are sufficient to warrant the use of different therapies rather than an integrated approach which based on the current review is an effective approach.

All reviewed papers had compelling ideas about larger weight that offer considerations for developing interventions for overweight people. It seems that psychological flexibility promotes weight loss and eating in response to physiological rather than emotional hunger. Weight loss can also be promoted via improvements in depression and restrained eating. Psychological flexibility, restrained eating and depression symptoms could be targeted in overweight people to support them with weight loss. On the other hand, some findings suggest that physiological and weight loss gains may be independent of

psychological gains, specifically improved body image and psychological well-being. This suggests that psychological gains can help with weight loss, but weight loss is less likely to help psychological gains. This suggests that psychological support for overweight people may be not only aid for weight loss but a necessary component of care.

Importantly, based on the findings, overweight individuals value and prefer aspects of intervention promoting healthy lifestyle as compared to promoting weight loss only. Moreover, healthy lifestyle promotion has the power to improve not only group attendees' health but their family's health also, which suggests an impact on wider systems. Furthermore, if wider systems are positively affected, individuals who access support may likely benefit in the long term as the influenced systems continue promoting a healthy lifestyle.

The review has several limitations. Firstly, it is unclear how long people in the studies have been struggling to manage weight. It has been suggested that therapy outcomes and mechanisms may be different in people struggling to manage weight for many years compared to people who have not experienced these difficulties for as long (Leach, 2006). The optimal duration and type of intervention might be dependent on these factors. Additionally, the participants' ages across the studies varied between 18-67. wide range of ages covered in the review may mean that some differences between age groups were missed. It is recognised that developmental stages are relevant to adults (Smith & DeFrates-Densch, 2009). Motivational goals in old age vary from the goals of younger people, as management of losses becomes a bigger focus than growth. Differences in age may be relevant in considering types of interventions for overweight individuals.

Secondly, while the papers covered a wide age range of participants, the demographics were limited in other ways. Most participants were women, meaning that

women's' experience was more understood in the studies. Additionally, the significant majority of the participants in the studies were white, which means that the experiences of people from minoritized ethnic groups were not represented.

Thirdly, the current review's definition of longer-term therapy- a minimum of six sessions may be a limitation, particularly considering the findings presented in the introduction that the average therapy length in IAPT services is 7.5 sessions. Considering the arguments that were made in favour of longer-term approaches and a critical stance for brief intervention, the choice of definition may lack sufficient rationale and be inconsistent with the findings presented in the introduction.

Another factor worth considering critically is the effectiveness assessment in the review. The wide variety of outcome measures across the reviewed studies makes comparing the effectiveness of different therapeutic approaches difficult. Choosing specific outcomes in future research may allow more rigorous assessment.

One of the exclusion criteria in the current review was participants receiving combined psychological intervention and treatment as usual. In papers 1, 6, and 7, participants were recruited through organisations that were supporting them with weight management. Because this support was not a part of the psychological intervention in focus, it was decided to include the papers. However, this might be considered a violation of exclusion criteria and, therefore, a limitation.

The findings of the review are in line with the previously reviewed studies suggesting that weight management is complex and involves psychological as well as behavioural strategies. The findings affirm that effective weight management support should not be focused on calory restriction alone, but on healthy lifestyles and psychological support designed to shift unhelpful coping strategies and narratives about weight.

Longer-term psychological group therapy is an effective intervention to deliver for overweight individuals that seems to promote longer-term effects. However, to fully establish the effectiveness and acceptability of longer-term psychological group interventions for overweight people, further larger-scale research is needed. Employing mixed methods could provide evidence for effectiveness and allow insight into participants' experiences of the intervention and assessment of the acceptability of interventions. A larger sample size representative of a wider population could help achieve more generalizable results, especially given that men and people from minoritized ethnic groups were underrepresented in the review. Additionally, dropout rates may be linked to socioeconomic factors- further inquiry into this could be helpful. Additionally, a longer-term follow-up data collection could add significant value to the findings' conclusiveness. Finally, considering the longevity of weight management difficulties, an inquiry into its impact on intervention effects could inform more tailored interventions for overweight individuals.

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Section B

Series of single cases looking at body image, psychological distress, shame and disordered eating in patients in a Tier-3 weight management service receiving online delivered, Compassion Focused Therapy (CFT) based group intervention

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This study will be submitted for publication to the journal, 'Health Psychology Review'.

Abstract

Background: Research looking into CFT for overweight people has started to emerge, but little research has focused on people in weight management services.

Aims: This study investigated a 12-week CFT-based group intervention, which tested the hypotheses that the intervention would reduce distress, shame, and disordered eating and improve body image in patients in a Tier-3 weight management service.

Method: The study used a mixed-methods multiple-single case design with 4-week follow-up (n=8). The time series were analysed using simulation modelling analysis. The standardised measures were assessed for reliable change. Thematic analysis was used for post-intervention interviews.

Results: Characterological shame and body image improved as predicted in one and two participants respectively. The themes that emerged from the interviews were: Challenges, Connections, Mental health and weight, Ongoing need and Positive changes.

Conclusion: The findings supported the intervention's acceptability but not effectiveness. Theoretical, clinical, and research implications were considered.

Keywords: Obesity, Tier-3, weight management, Compassion focused therapy (CFT), Group therapy

Introduction

Evolutionary psychology theories in social context highlight that emotions and motives evolve because they help us to problem-solve challenges linked to survival or, as Paul Gilbert puts it,- it helps us to understand that "we are all a part of the flow of life" (2019). People do not choose what social graces they possess or how their brain adapts to circumstances and adversities they encounter (Atzil et al., 2018; Cowan et al., 2016). Social mentality theory (Gilbert 1989, 2005) suggests that to achieve biosocial goals, people switch between different types of mentalisation. The theory suggests that specific motivations direct changes in attention, cognitive processing, emotions and behaviour (Liotti & Gilbert, 2011). Two primary motivations that constitute competitive and caring mentalities, respectively, are competition and compassion (Gilbert, 2019). Competitive motivation predisposes sensitivity to rank and vulnerability to shame, whereas compassionate motivation makes one sensitive to the suffering of self and others and promotes commitment to alleviate it. (Gilbert, 2014).

Based on the social mentality theory, for an overweight person, a competitive motivation may lead to social comparison, shame, and self-criticism, making one vulnerable to depression and anxiety (Carter et al., 2023). In addition, the experience of "being shamed" often experienced by overweight people may also lead to far-reaching negative consequences for their physical and mental health (Gilbert, 2007; Westerman et al., 2015). The social rank theory, which has constituted the formation of the social mentality theory, offers more insight into how competition may impact overweight individuals (Gilbert, 2016; Price et. al, 1994; Sloman, Gilbert & Hasey, 2003). According to the theory, social comparison typically means that a person's attention is focused on ranking, that is, who is superior or inferior. The social rank theory suggests that in the case of overweight people, the competition is not about

achieving superiority over others, but about avoiding being seen as inferior and the consequences associated with it (McEwan, Gilbert & Duarte, 2012).

Compassion-focused therapy (CFT) helps people enhance their capacity to notice, access, and tolerate different motivations in themselves and others and cultivate compassionate motivation in helpful ways (Gilbert, 2014). A review on CFT use in clinical populations revealed that this approach is promising across many clinical presentations, especially when delivered in a group format for at least 12 hours (Craig, Hiskey & Spector, 2020). CFT has been found to improve shame, psychological distress, disordered eating, and body image, the traits that have been linked to increased body weight (Carter, Gilbert & Kirby, 2020; Gale, et al., 2012; Leavis & Uttley, 2014; Matos & Steindl, 2020; Noroozi, Ghorban Shiroodi & Khalaj, 2021; Steindl et al., 2016).

To date, a handful of studies have investigated CFT in populations with larger body weights. The first was a large-scale (n=974) non-randomised parallel-group study that looked into a commercial weight management program (CWMP) with an added virtual CFT module (Duarte et al., 2019). Both, the control and the intervention group, received multicomponent CWMP (Slimming World UK group support). However, the intervention group had access to CFT-related videos for three months and was led by facilitators who received two-day CFT training from Paul Gilbert. The study found better outcomes on binge eating behaviour, psychological adjustment, self-evaluation, and reduced dropout in the group that received CFT elements in addition to the usual CWMP intervention. The study findings suggest that online delivery is a suitable modality for CFT. Interestingly, although CFT elements had a positive impact on psychological outcomes and were associated with lower dropout rates, they had no impact on body weight. The study had good statistical power, but due to the nature of CFT delivery, there are strong biases of selective participation, which could account for low drop-out rates. The second study was a non-controlled pilot (n=15) investigating an

intensive 2-day CFT-based program for women (Forbes et al., 2020). The results showed significant improvement in psychological distress, life satisfaction, loneliness, eating self-efficacy, body satisfaction, self-compassion and internalised weight stigma, and non-significant weight loss, which was of secondary interest to the authors. Although the study offered significant findings, they were preliminary and based on a small sample of self-selected white females, which limits the generalisability of the results. The third study was a mixed method, small-scale pilot (n=5) that examined 12-session CFT group therapy (Carter et al., 2020). The quantitative findings suggested that CFT helped reduce body weight shame and health-engaging behaviours. No significant changes were found in quantitative self-reported measures of compassion at the group level. Still, significant reliable changes in self-compassion and compassion from others were found at individual level. Qualitative feedback pointed to the importance of group dynamics in de-shaming body appearance. Qualitative analysis found that the intervention assisted participants in the experience of compassion. It is interesting that the authors did not monitor changes in participants' weight and looked into physical activity instead. The range of investigation in the study constitutes its strength, even in light of the small sample size and difficulty in generalizing demographic characteristics (participants were undergraduate students). The authors looked at significance at the group and individual level and interrogated both qualitative and quantitative data, offering a rich exploration.

The most recent study (n=55) examined the impact of a 12 sessions CFT group intervention (Carter et al., 2023). The study advanced the existing evidence base by using a randomised control trial design (albeit the control group was a wait list) and integrating measures linked to social mentality theory constructs. The findings suggested a significant positive CFT impact on body weight shame, self-compassion, fears of compassion, self-criticism, and external shame. The authors did not monitor changes in participants' weight

but assessed heart rate variability, which is associated with cardiovascular health and overall well-being. The latter outcome did not show significant trends in the study.

Although the studies that investigated CFT group interventions with overweight people have all had valuable contributions in building the empirical evidence base, there is a need to expand on it. One of the gaps in the evidence base is an exploration of CFT-based intervention in clinical settings. One of the important functions of empirical evidence is to inform clinical guidelines and help shape high-quality care in the National Health Service (NHS). Yet, to date, there is no evidence of the impact of an online CFT-based group intervention with patients in weight management services in the NHS. The current study aims to address this gap.

Present study

The aim of the present study was to conduct an initial, single-case investigation of changes in feelings of shame, psychological distress, body image and disordered eating in adult patients in a naturalistic setting, a Tier-3 weight management service, following CFT-based, online group intervention.

The hypotheses in the study were:

1) As the intervention starts and progresses, there will be improvements in single-item measures of shame, the impact food-related thoughts have on self-esteem, and love for one's body.

2) Improvement in single-item measures will be maintained at the verification phase.

3) Psychological distress will decrease following the intervention and will be maintained at the follow-up.

4) There will be a reduction in disordered eating following the intervention and this change will be maintained at the follow-up.

5) Shame will decrease in participants following the intervention and will be maintained at the follow-up.

6) There will be an improvement in body image during the intervention and it will be maintained at the follow-up.

In addition, this study sought to explore the following questions:

1. What experiences from CFT-based online group intervention are perceived as the most impactful to patients in a Tier-3 weight management service?

2. What changes do participants in a Tier-3 weight management service notice in their relationship with food and their bodies that they link to CFT-based online group intervention?

The study is in line with NHS values, in particular, *commitment to quality of care*, *compassion* and *improving lives*.

Methods

Participants

Participants were recruited from a Tier-3 weight management service, where they received multidisciplinary team (MDT) support. All participants were referred for psychological therapy in the service. Participants were offered to participate in the research by a clinical psychologist who was also the group's facilitator at their initial psychology appointments if they met the inclusion criteria (Table 1). Some participants were recruited several months before the group intervention started, while a few were recruited closer to the

starting date, with one participant being recruited a week before the intervention. Participants were allowed to change their minds about participation in the intervention and/or research at any point.

Table 1

Study's inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
• Group intervention considered clinically appropriate, following specialist assessment of needs	• Current alcohol or drug abuse
• Being able to commit to 12-week intervention	• Interpersonal difficulties, self-reported or observed by clinicians, that could be disruptive in the group (for example, anger management difficulties)
• Having access to internet connection and a device to join online delivered intervention	• Moderate or severe learning disabilities

Participants answered questions about demographic details in open-text format so they could use the language they felt comfortable with (Table 2). Two men and six women participants took part in the study. Their age ranged from 31 to 66 (Mean=51, SD=11). All participants were from white ethnic backgrounds. The number of sessions attended ranged from 9 to 12 (Mean=11, SD=1).

Table 2

Study sample's demographic characteristics (n=8)

	Number of participants
Relationship status	
Single	3
Living with a partner	1
In a relationship	1
Married	2
Widowed	1
Employment status	
Full time employed	3
Unemployed	3
Retired	1
Part time student	1
Ethnicity	
White European	3
White British	4
White Irish	1
Religion	
No religious beliefs	2
Atheist	1
Jewish	1
Christian	4
Sexual orientation	
Preferred not to say	1
Bisexual	2
In a relationship with a person of the same gender	1
Homosexual	1
Heterosexual	3

Design

Mixed methods multiple single case ABA design was used. The mixed methods approach allows greater validity by corroborating qualitative and quantitative methods, provides a more comprehensive picture of the investigated phenomena and provides a greater repertoire of tools to answer research questions (Doyle, Brady & Byrne, 2009). ABA design,

in contrast to an uncontrolled pre-post design, allows each participant to act as their own control (Kazdin, 2011; Yin, 2009). It also allows the exploration of change in symptoms over time and enables the detection of change that might be lost through averaging in a group design (Barlow, Nock & Hersen,2008).

The baseline and verification phases lasted for four weeks. The length of these phases was motivated by the need to have enough data for analysis and the wish to avoid impacting the participants negatively by having phases that were too long. The experimental phase included 12 weekly group sessions, which due to the facilitator's availability resulted in three one-week breaks at weeks 2, 7 and 10. The experimental phase, therefore lasted for 15 weeks. Each session lasted 1h 15min, meaning participants were exposed to 15 hours of CFT, excluding any CFT practices they may have done at home.

Baseline and verification phases included time series administered twice a week. This frequency was reduced to weekly in the experimental phase so as not to overburden participants (Table 3).

Standardised measures were administered at the start and end of each phase and midpoint in the experimental phase.

Table 3

Frequency of questionnaires administration

Week (from the start of the research)	Research phases	Data collection methods
1	Start of the baseline phase	Standardised measures
1-4	Baseline (4 weeks)	Time series twice a week
4	End of the baseline phase/ start of the experimental phase	Standardised measures
4-10	The experimental phase (15 weeks), the 1st half	Time series once a week
11	Mid of the experimental phase (week 8)	Standardised measures
12-18	The experimental phase (15 weeks), the 2nd half	Time series once a week
18	End of the experimental/start of the verification phase	Standardised measures
18-22	Verification phase (4 weeks)	Time series twice a week
22	End of the verification phase	Standardised measures

A mixed methods strategy used in the study most resembled a sequential explanatory strategy (Creswell, 2003). The difference was that quantitative data analysis did not inform semi-structured telephone interviews with participants after the end of the intervention. This was because the objective of this element of the study was to explore different aspects of the group experience.

Measures (Appendixes D-J)

Body Appreciation Scale-2 (BAS-2)

BAS-2 is a 10-item scale designed to assess appreciation and respect to one's body (Tylka & Wood-Barcalow, 2015). Items are rated on a 5-point Likert-type scale ranging from "Never" to "Always". The scale was updated from the original BAS instrument that had 13 items. BAS-2 was achieved by eliminating sex-specific versions, body dissatisfaction-based language and developing additional items based on positive body image research. BAS-2 was found to demonstrate good internal consistency, test–retest reliability, construct (convergent, incremental, and discriminant) validity and provide good cultural

adaptations (Argyrides, 2019; Tylka & Wood-Barcalow, 2015). Test-retest reliability has been found to be r=0.77 (Tylka & Wood-Barcalow, 2015).

Clinical Outcomes in Routine Evaluation 10 (CORE-10)

CORE-10 is a 10-item self-reported measure of common presentation of psychological distress (Barkham et al., 2013). The answers vary from "not at all" to "most or all of the time" and are scored from zero to four, with higher scores indicating greater levels of distress. Scores of the CORE-10 can be divided into categories of distress: healthy (0–5), low (6–10), mild (11–14), moderate (15–19), moderate-to-severe (20–24), and severe (25 and above).

Barkham et al. (2013) validated the CORE-10 in primary care patients as well as the general population, finding it had high internal reliability of 0.9. To our knowledge, test-retest reliability has not been established for CORE-10. However, test-retest reliability has been established for Clinical Outcomes in Routine Evaluation – Outcome Measure(CORE-OM), from which it has been developed, and for YP-CORE, the CORE-10 version for young people. The r values were found to be 0.61-0.94 and 0.69, respectively (Gergov et al., 2016; Viliūnienė et al., 2012). The CORE-10 was found to correlate with the CORE-OM at .94 in a clinical sample and .92 in a non-clinical sample (Barkham et al., 2013).

Disordered Eating Questionnaire (DEQ) (modified)

This 24-item self-reported measure evaluates the frequency and intensity of disordered eating attitudes and behaviours (Lombardo et al, 2011).

The measure has three sections. Section-A consists of 18 items that evaluate the frequency with which the person adopts a series of disordered eating behaviours. The answers vary from “never” to “several times per day” on a 6-point frequency scale.

Section-B has six items dealing with worries and intrusive thoughts regarding weight, food, calories, and physical fitness. The answers require choosing from an answer on a seven points Likert scale ranging from 0 to 6, where “0” indicates “not at all” and “6” “totally”.

The modification of this questionnaire was made by excluding part C which contains questions about age, weight, height, menstrual cycle and use of oral contraceptives because it was considered to be irrelevant in the present research.

The measure was found to have high validity, reliability, construct validity and sensitivity (Lombardo et al, 2011, Lombardo et al, 2004). The test-retest reliability of DEQ is not known. However, test-retest reliability was established for the Eating Disorder Examination (EDE), the gold standard recommended by most researchers (Lombardo et al., 2011). Test-retest reliability for EDE scales was found to range between r=0.335 and r=0.97 (Rizvi et al., 2000). DEQ and EDE scores were found to correlate between r= 0.63 and r=0.87 for people with anorexia, bulimia, eating disorders not otherwise specified (EDNOS) and controls (Lombardo et al., 2011).

Experiential Shame Scale (ESS)

The 25-item questionnaire assesses eight areas of shame: (1) shame of personal habits, (2)manner with others, (3)sort of person (you are), (4)personal ability, (5)shame about doing something wrong, (6)saying something stupid, and (7)failure in competitive situations and (8)bodily shame (Turner, 2014). For each of the eight shame areas

covered, there are three related items addressing the experiential component, a cognitive component, and a behavioural component. For bodily shame, there is an extra item concerning avoidance of mirrors (in addition to concealing body parts from others).

The answers vary from “not at all” to “very much” and are scored from one to four. The ESS scale has a high internal consistency (Andrews, Qian & Valentine, 2002). The measure has good test-retest reliability, r=0.83 (Vizin, Urban & Unoka, 2016).

Three-Factor Eating Questionnaire-Revised (TFEQ-R18)

The 18-item self-reported instrument measures three areas: cognitive restraint of eating, disinhibition and hunger. The answers varied across 17 questions from: "never" to "at least once a week", "unlikely" to "very likely", "almost never" to "almost always", "definitely true" to "definitely false" and "only at mealtimes" to "almost always". The questions are scored from one to four. The last item in the questionnaire asks the respondent to evaluate their restraint in eating on a scale from 1 to 8.

The TFEQ-R18 was found to detect different eating patterns in the general and clinical populations (Fleurbaix Laventie Ville Sante (FLVS) Study Group, 2004). The measure has good test-retest reliability, r=0.72 (Jáuregui-Lobera et al., 2014).

Single-item questions

To enable weekly measures on the sense of shame, love of one's body and impact food had on people's self-esteem, three relevant questions were extracted from ESS, BAS-2 and DEQ. This allowed reduction in burdening participants because on the weeks the standardised measures were administered, that also accounted for single-item questions.

Interview questions

Five questions aimed to prompt participants to reflect on the effect the intervention may had on them (Appendix J). In addition, question-4 was included as a control question to help understand quantitative trends in data.

Procedure

Ethical approval was received from an NHS Research Ethics Committee (Appendix K) and the Research and Development Department of the host trust (Appendix L).

Participants were given an information sheet (Appendix M). People who agreed to participate completed consent forms (Appendix N).

The full battery of measures were administered via Online Surveys and the three weekly questions were sent to the participants via the OVIVA app that all participants were using in the service already.

After the final group session, participants were invited to participate in a telephone interview via email.

Intervention

The intervention protocol was developed with the supervisor (Appendix O; Table 4). The protocol was based on the CFT framework, but elements of mindfulness and transactional analysis were incorporated in it. The protocol was developed as a guide, and it was agreed that session material would be flexible and adapted if significant events occurred in the group that needed to be worked through by its members.

The supervisor had to take leave and the covering clinical psychologist facilitated the group. The facilitator had their usual monthly supervision and contacted the supervisor for additional support.

The intervention was delivered online. Each sessions lasted 1h15min. The facilitator made clinical judgement to stay online for 15min after each session if group members needed support. The space was used a few times when patients found a session challenging.

Table 4

Summary of the group protocol

Session number	Aim/focus of the sessions
1	Welcoming participants to the group and introducing the format of the group Collaboratively establishing group rules to facilitate safety in the group Facilitating discussion about what has worked and what has not worked for participants so far in managing weight and how it left them feeling Introducing CFT framework
2	Generating a soothing image that participants could access if needed Introducing three emotional regulation systems Defining compassion Discussing experience of compassion to self and others
3	Understanding what, who, and how affected participants in their lives Discussing what it was like completing exercises about influences on them
4	Considering compassion in relation to the personal story Discussing why we need (as opposed to deserving) compassion and which compassion (to self, to others, or from others) is the most difficult
5	Expanding on self-compassion Discussing how we relate to ourselves when things don't go our way Considering the emotional tone we speak to ourselves, and how our behaviour shows compassion to ourselves or lack of it
6	Understanding the role of attention in compassion Understanding how threat impacts compassion Considering self-criticism and internal critic

7	Understanding personal values and how they link to self-compassion
8	Applying CFT concepts to behaviour Considering what participants feel when they try new things Considering what participants avoid and how it links to emotional regulation systems
9	Applying CFT concepts to behaviour Reflecting on the compassionate behaviour experiment last week Discussing coping with setbacks
10	Considering how we relate to self and others Discussing drama triangle and roles, we adopt
11	Self-compassion in the future- generating the plan Discussing hopes and goals for the future
12	Ending the group Discussing experience of endings Reflecting on the work that participants did in the group

Analysis

Quantitative analysis

Simulation modelling analysis (SMA) (Borckardt et al., 2008) was used to analyse the time-series data to test Hypothesis-1 and Hypothesis-2. SMA enables case design and time-series studies with multiple observations to assess individual change (Borckardt & Nash, 2014). It is based on bootstrapping methods and is designed for analysing short ($N<30$), autocorrelated data streams typically found in clinical practice. It has good reliability and statistical power (Borckardt et al.,2008). SMA has been used in multiple single-case design peer-reviewed studies previously (Berman, Boutelle & Crow, 2009; Walker et al., 2022). In the present study, non-parametric tests (Spearman's rho) were administered due to the small sample size. Bonferroni corrections were used to control for type-1 error that might occur due to multiple comparisons by dividing the significance of 0.05 by the number of tests administered and the planned number of administrations ($3x\ 28=84$; $0.05/84\approx0.001$).

Reliable change calculations were used to test Hypothesis-3, Hypothesis-4, Hypothesis-5 and Hypothesis-6. Where suitable population norms were available, a reliable change index (RCI) was calculated using the Leeds reliable change indicator (Morley & Dowzer, 2014).

The properties of quantitative measures that were used to calculate reliable changes are provided in Table 5. Means and SDs for the ESS subscales were averaged for each item in the reference paper. To make Means and SDs appropriate for the present study, they were scaled up by multiplying by the number of items on each subscale.

Mean and SD for the BAS-2 was available for men and women in the literature and therefore used in the present study.

Bonferroni corrections were applied to RCI to control for type 1 error by multiplying the number of tests administered and the planned number of administrations and looking up this value in tables for Z scores (5 x5= 25; the new RCI value=+-3.09).

Clinically significant improvements were noted for the CORE-10 with clinical cut-offs. A change was considered clinically significant if it was large enough to be reliable for the given measure and if the score crossed the clinical cut-off.

Table 5

Properties of quantitative measures that were used to calculate reliable change

Measure	Min score	Max score	Cronbach's alpha	Mean (SD) for clinical populations	Clinical gain	Clinical cut offs
BAS-2	10	50	0.97 (Tylka & Wood-Barcalow, 2015)	22 (5.87)- women 16 (16.49)-men (Behrend & Warschburger, 2022)	Increase	No
DEQ	18	144	0.90 (Lombardo et al., 2004)	31.17 (18.72) (Lombardo et al., 2011)	Decrease	No
CORE-10	0	40	0.90 (Barkham et al., 2013)	19.6 (6.6) (O'Reilly et al., 2016)	Decrease	Yes
ESS: Characterological shame	12	48	0.92 (Vizin, Urban & Unoka, 2016)	25.92 (8.52) (Vizin, Urban & Unoka, 2016)	Decrease	No
ESS: Behavioural shame	9	36	0.92 (Vizin, Urban & Unoka, 2016)	22.32 (7.92) (Vizin, Urban & Unoka, 2016)		
ESS: Bodily shame	4	16	0.85 (Vizin, Urban & Unoka, 2016)	9.32 (3.68) (Vizin, Urban & Unoka, 2016)		
TFEQ-R18: Uncontrolled eating	9	36	0.85 (Angle et al., 2009)	35.4 (15.8) (Angle et al., 2009)	Decrease	No
TFEQ-R18: Cognitive restraint	6	13	0.75 (Angle et al., 2009)	42.6 (15.2) (Angle et al., 2009)		
TFEQ-R18: Emotional eating	3	12	0.87 (Angle et al., 2009)	46.6 (28.7) (Angle et al., 2009)		

Qualitative analysis

Qualitative analysis was used to answer the two additional research questions.

Post group telephone interviews were audio-taped and transcribed. Thematic analysis (TA) was used to analyse interview data employing the six phase framework (Table 6) (Braun and Clarke, 2017). It has been suggested that TA is a method rather than a methodology and therefore, it is remarkable in flexibility by not being tied to any particular epistemological or theoretical perspective (Braun & Clarke 2006; Clarke & Braun, 2013).

The internal research supervisor evaluated coding reliability by reading through the coding transcript (Appendix P). Disagreements were revisited and discussed until consensus was achieved.

Table 6

Six-phase Thematic Analysis framework

Phase 1	Familiarising with data
Phase 2	Generating initial codes
Phase 3	Search for themes
Phase 4	Reviewing themes
Phase 5	Defining themes
Phase 6	Writing up

Results

Quantitative findings are presented in the first part of the results section. The second part of the section covers qualitative findings.

Quantitative results

Participant-8 did not provide quantitative data. Some participants did not provide quantitative data at various stages, either due to joining the study later or due to other circumstances.

Participant-1

There was fluctuation in the ratings of shame and the impact food-related thoughts on their self-esteem (Figure 1-2). Participant-1 explained that they experienced carer-related

stress that had a negative effect on their self-esteem, exercise and eating habits. Participant's-1 love for their body was consistently low (Figure 3). All ratings no significant change between phases (Table 7). Hypothesis-1 and Hypothesis-2 were not supported.

Figure 1

Participant's-1 ratings on the impact the thoughts about food intake had on their self-esteem

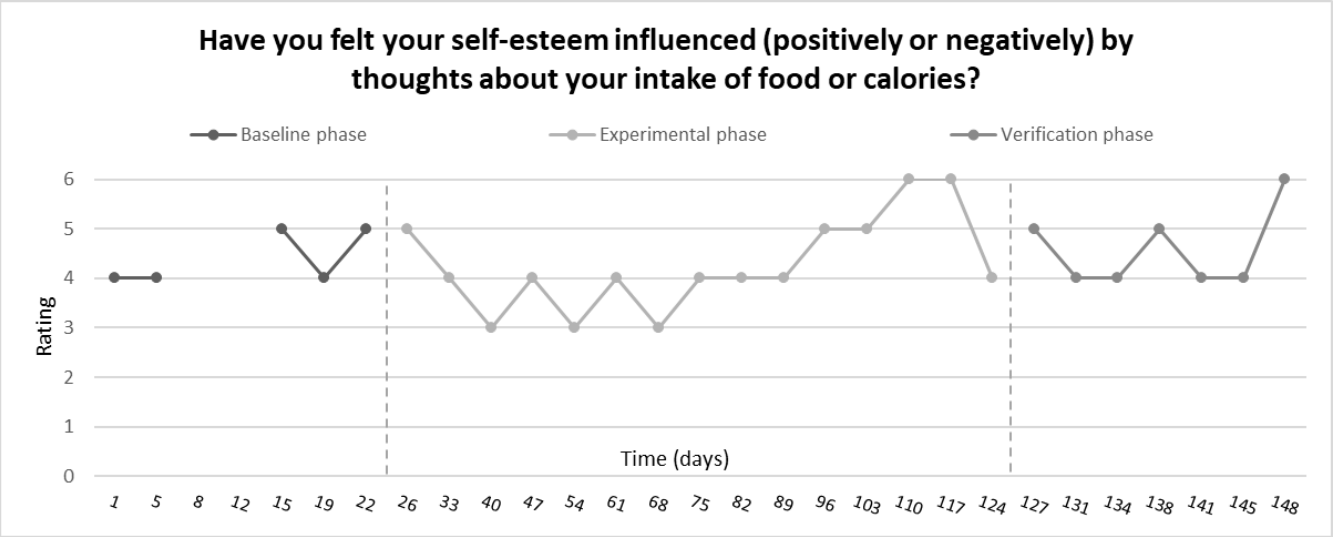

Figure 2

Participant's-1 ratings on their feelings of shame

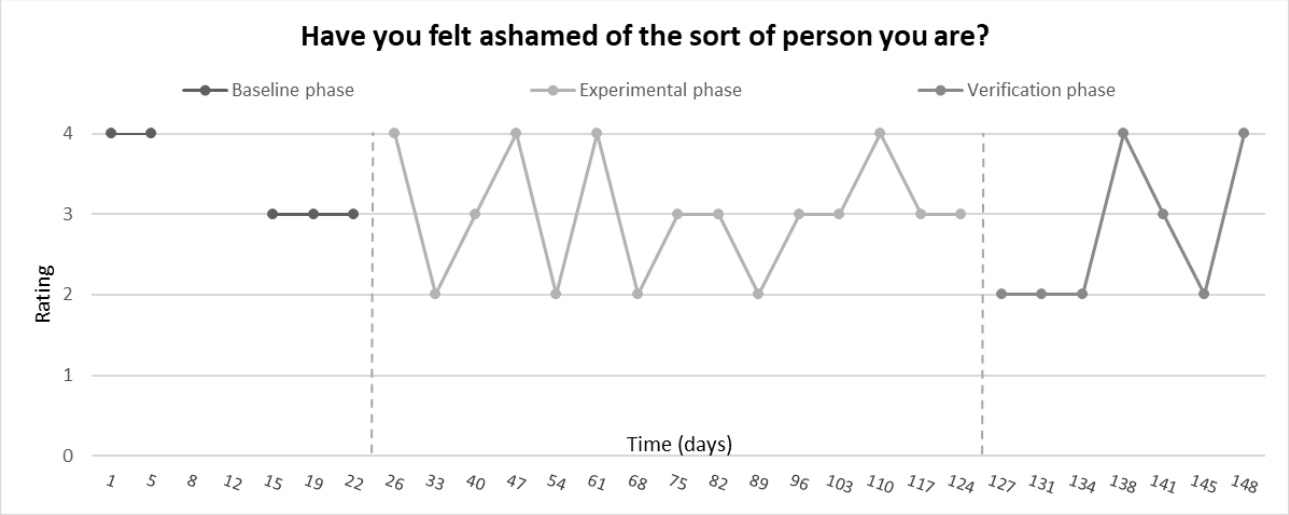

Figure 3

Participant's-1 ratings on their love for their body

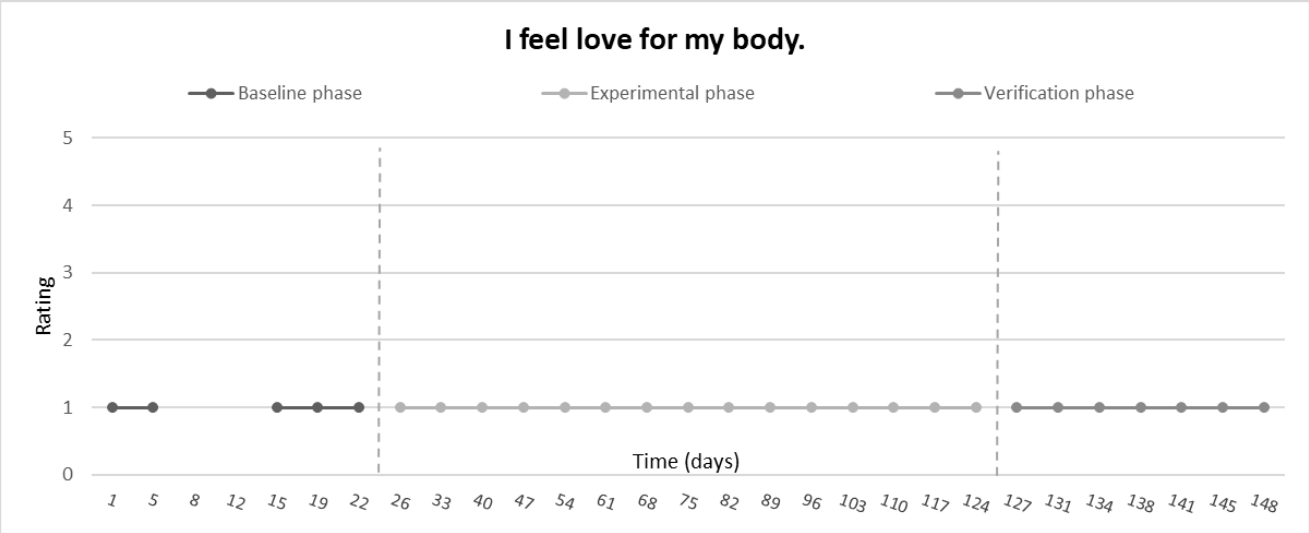

Table 7

Phase level changes in Participant's-1 measures

	Baseline to experimental phase		Experimental to verification phase		Baseline to verification phase	
Measure	Rho	*P*	Rho	*p*	Rho	*p*
The impact the thoughts about food intake have on their self-esteem	-0.11	0.31	0.09	0.33	-0.06	0.45
Feelings of shame	-0.24	0.16	-0.18	0.2	-0.41	0.09
Love for their body	-nan	-nan	-nan	-nan	-nan	-nan

*Significant at p≤0.001, -nan- insufficient variation in scores for valid analysis

Participant's-1 scores of general distress were in the moderately severe range throughout the phases (Table 8). A reliable worsening occurred at the follow-up in DEQ

scores, but this was not significant after applying the Bonferroni correction. These trends did not support Hypothesis-3 and Hypothesis-4. Shame scores did not support Hypothesis-5. Participant's-1 body appreciation scores did not show reliable change and did not support Hypothesis-6.

Table 8

Participant's-1 scores on the standardised measures

Measure	Start of baseline	Start of the intervention	Mid intervention (week 6)	End of the intervention	4 weeks follow-up
CORE-10	24	22	23	20	25
TFEQ-R18 total	44	47	41	42	41
Uncontrolled eating	21	22	17	19	20
Cognitive restraint	14	15	16	15	13
Emotional eating	9	10	8	8	8
DEQ	65	68	65	55	72
ESS total	96	91	86	86	86
Characterological shame	48	42	41	42	42
Behavioural shame	36	36	34	33	32
Bodily shame	12	13	11	11	12
BAS-2	21	22	22	22	20

RI Reliable improvement from previous time-point, RW Reliable worsening from previous time-point

RCI Reliable and clinically significant improvement from previous time-point

Participant-2

There were fluctuations in food-related thoughts on Participant's-2 self-esteem (Figure 4). Their sense of shame and love for their body were consistently low (Figure 5-6). There were no significant changes in the three measures (Table 9). Hypothesis-1 and Hypothesis-2 were not supported. Participant-2 reported that their difficulties with food were long-standing, and they have not found "a way around it yet". Additionally, during the research, they experienced family emergencies that impacted how they adhered to healthy lifestyles.

Figure 4

Participant's-2 ratings on the impact the thoughts about food intake had on their self-esteem

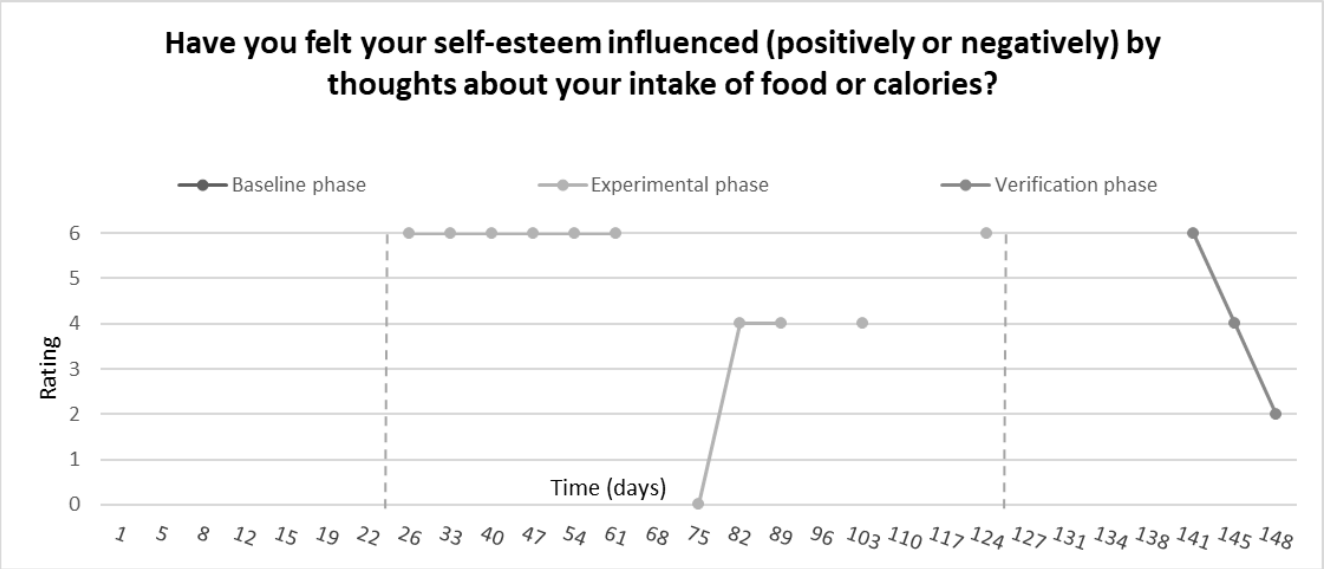

Figure 5

Participant's-2 ratings on their feelings of shame

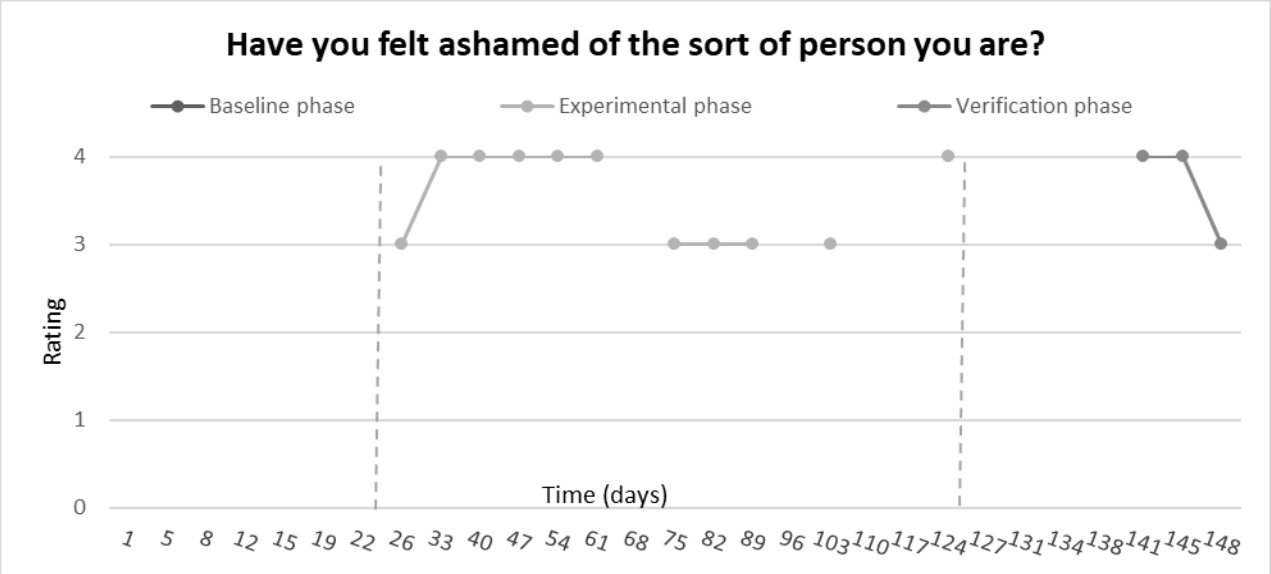

Figure 6

Participant's-2 ratings on their love for their body

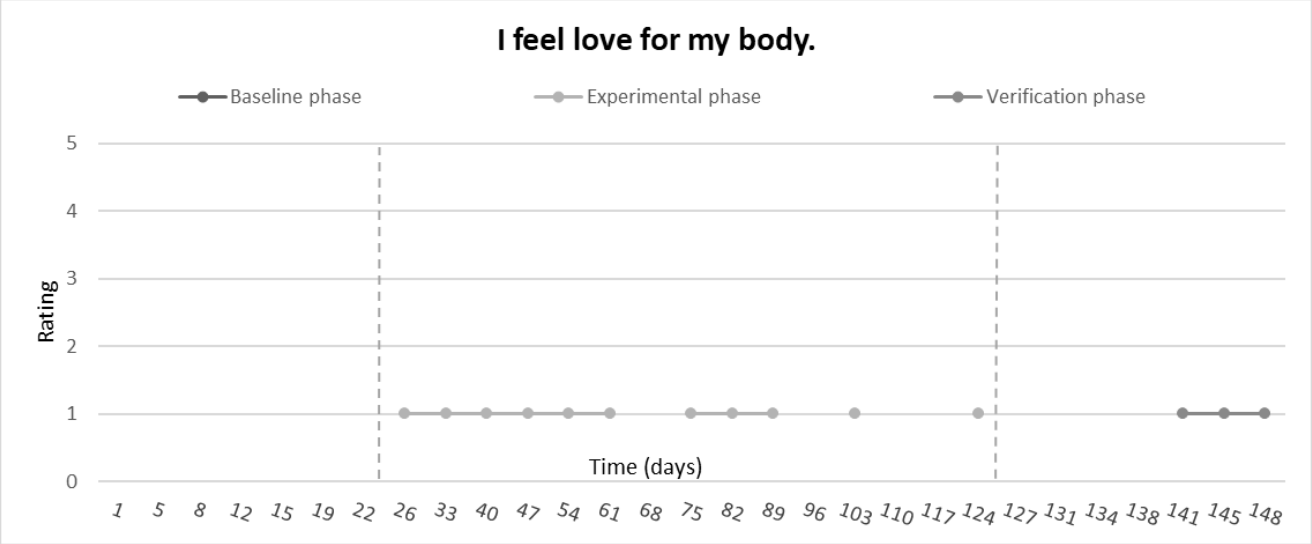

Table 9

Phase level changes in Participant's-2 measures

	Baseline to experimental phase		Experimental to verification phase		Baseline to verification phase	
Measure	Rho	*P*	Rho	*p*	Rho	*p*
The impact the thoughts about food intake have on their self-esteem	-	-	-0.27	0.18	-	-
Feelings of shame	-	-	0.1	0.4	-	-
Love for their body	-	-	-nan	-nan		

*Significant at p≤0.001, -nan- insufficient variation in scores for valid analysis

Participant's-2 distress scores started as moderately severe, but there was a reliable worsening at the end of the intervention when they entered the severe distress category (Table 10). This change was no longer reliable after applying the Bonferroni correction. At the follow-up, their distress scores returned to the moderately severe category, suggesting

reliable and clinical improvement but not supporting Hypothesis-3. Disordered eating measured by DEQ reliably improved at mid-intervention and reliably worsened at the end of it. These trends were not significant after applying the Bonferroni correction and not in line with Hypothesis-4. Characterological shame reliably improved at the follow up compared to the beginning of the intervention and remained significant after applying the Bonferroni correction. No significant trends were found in other two ESS subscales after applying the Bonferroni correction. Hypothesis-5 was not supported. Participant's-2 body appreciation scores did not support Hypothesis-6.

Table 10

Participant's-2 scores on the standardised measures

Measure	Start of baseline	Start of the intervention	Mid intervention (week 6)	End of the intervention	4 weeks follow-up
CORE-10	No data	24	21	33	23
TFEQ-R18 total	No data	49	52	49	54
Uncontrolled eating	No data	24	25	25	30
Cognitive restraint	No data	13	15	12	12
Emotional eating	No data	12	12	12	12
DEQ	No data	76	53	71	55
ESS total	No data	78	86	87	61
Characterological shame	No data	36	41	44	25^{RI}
Behavioural shame	No data	26	34	27	20
Bodily shame	No data	16	11	16	16
BAS-2	No data	10	11	10	10

RI Reliable improvement from previous time-point, RW Reliable worsening from previous time-point

RCI Reliable and clinically significant improvement from previous time-point

Participant-3

Participant-3 experienced fluctuation in how food-related thoughts impacted their self-esteem (Figure 7). They provided steady, low ratings of love for their body and shame (Figure 8-9). SMA found significant improvement in their love for their body between the baseline and experimental phases (Table 11). However, while multiple comparisons were controlled for using the Bonferroni correction, there was no longer significance supporting Hypothesis-1. Hypothesis-2 was not supported either. Participant-3 reported recent improvements in their family life and no adverse events during the research period.

Figure 7

Participant's-3 ratings on the impact the thoughts about food intake had on their self-esteem

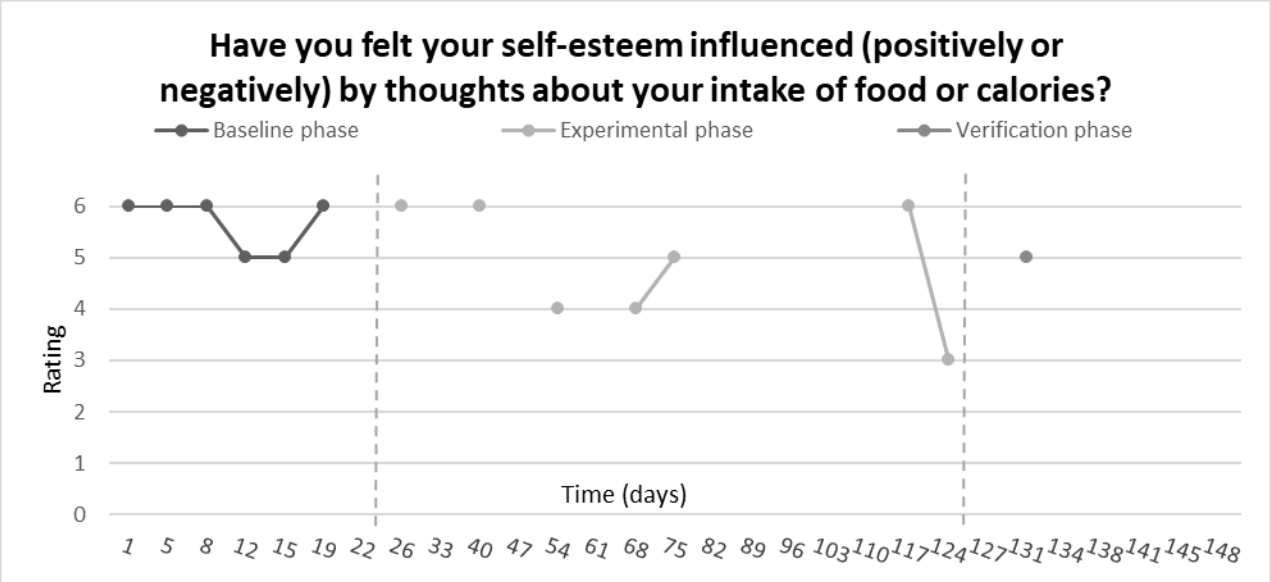

Figure 8

Participant's-3 ratings on their feelings of shame

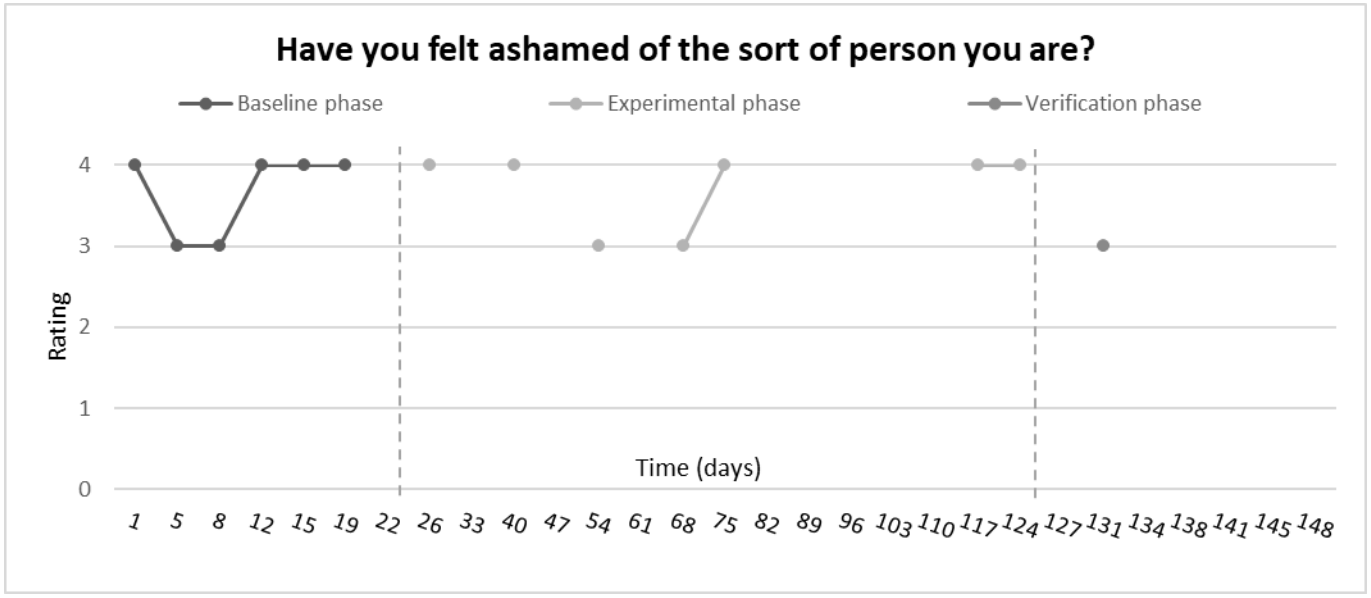

Figure 9

Participant's-3 ratings on their love for their body

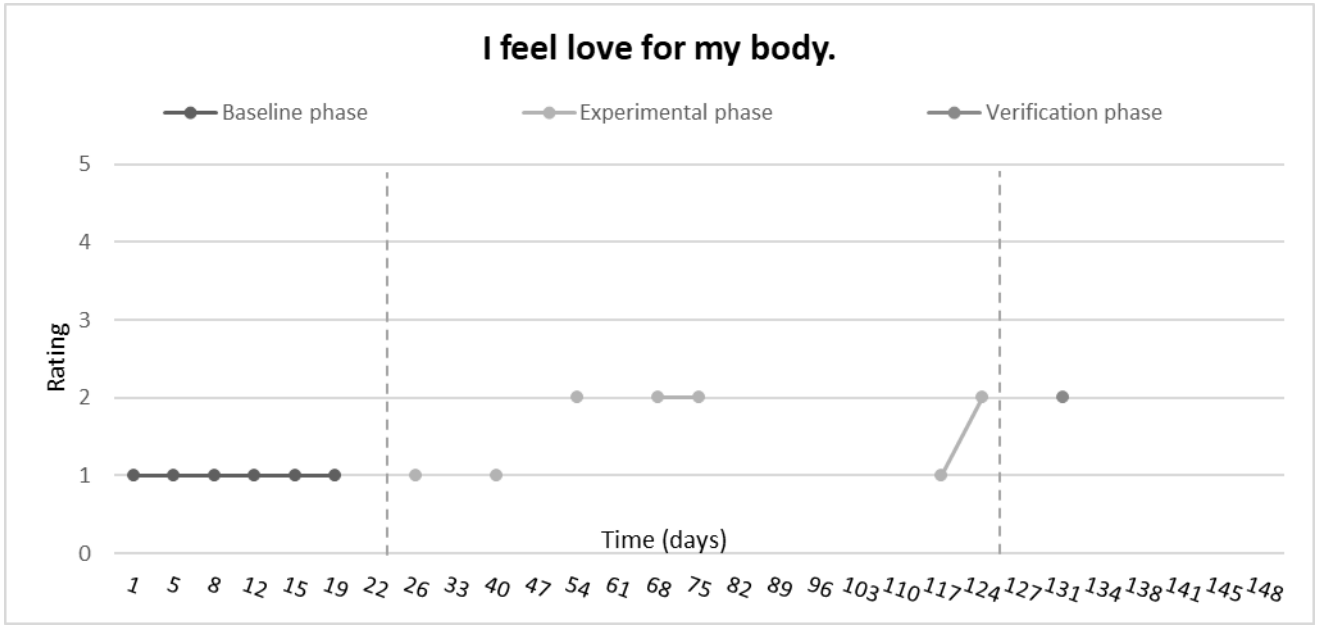

Table 11

Phase level changes in Participant's-3 measures

	Baseline to experimental phase		Experimental to verification phase		Baseline to verification phase	
Measure	Rho	*P*	Rho	*p*	Rho	*p*
The impact the thoughts about food intake have on their self-esteem	-0.26	0.18	0	0.5	-0.35	0.3
Feelings of shame	0.05	0.46	-0.49	0.18	-0.47	0.21
Love for their body	0.62	0.02	0.29	0.33	1	0.06

*Significant at p≤0.001, -nan- insufficient variation in scores for valid analysis

Participant's-3 scores of severe distress before the intervention changed to the moderately severe by mid-intervention (Table 12). By the end of the intervention, however, the scores worsened reliably, reaching the severe distress category, rejecting Hypothesis-3. DEQ scores suggested reliable worsening at the start of the intervention and reliable improvement mid-intervention, which was maintained at the end of the intervention. The trends in DEQ scores were no longer significant after applying Bonferroni correction. Hypothesis-4 was not supported. There was a noticeable difference in shame scores during the intervention compared to four weeks before it started. However Hypothesis-5 was not supported. Participant-3 experienced a reliable improvement in body appreciation at the end of the intervention, which was in line with the predicted direction of change. Additionally this improvement remained significant after applying Bonferroni correction. The follow-up scores were not available and therefore, Hypothesis-6 was supported partially.

Table 12

Participant's-3 scores on the standardised measures

Measure	Start of baseline	Start of the intervention	Mid intervention (week 6)	End of the intervention	4 weeks follow-up
CORE-10	26	28	24	31[RW]	No data
TFEQ-R18 total	46	46	48	51	No data
Uncontrolled eating	28	27	28	32	No data
Cognitive restraint	7	7	8	7	No data
Emotional eating	11	12	12	12	No data
DEQ	74	92	75	72	No data
ESS total	88	82	81	79	No data
Characterological shame	41	41	38	38	No data
Behavioural shame	32	27	27	26	No data
Bodily shame	15	14	16	15	No data
BAS-2	15	15	17	20[RI]	No data

RI Reliable improvement from previous time-point, RW Reliable worsening from previous time-point

RCI Reliable and clinically significant improvement from previous time-point

Participant-4

Participant's-4 scores fluctuated(Figure 10-13). The impact of food-related thoughts on self-esteem was less before the intervention and at the start, with it increasing after these time points. Their sense of shame appeared to decrease during the intervention, returning to the previous levels at the end of it. After the intervention, there were some high ratings of love for their body. These trends were reflected in the significance found by SMA (Table 13). After applying the Bonferroni correction, significance was no longer found in any of the measures. Participant-4 reflected that their ratings of shame were affected by stressful work-related circumstances. Hypothesis-1 and Hypothesis-2 were not supported.

Figure 10

Participant's-4 ratings on the impact the thoughts about food intake had on their self-esteem

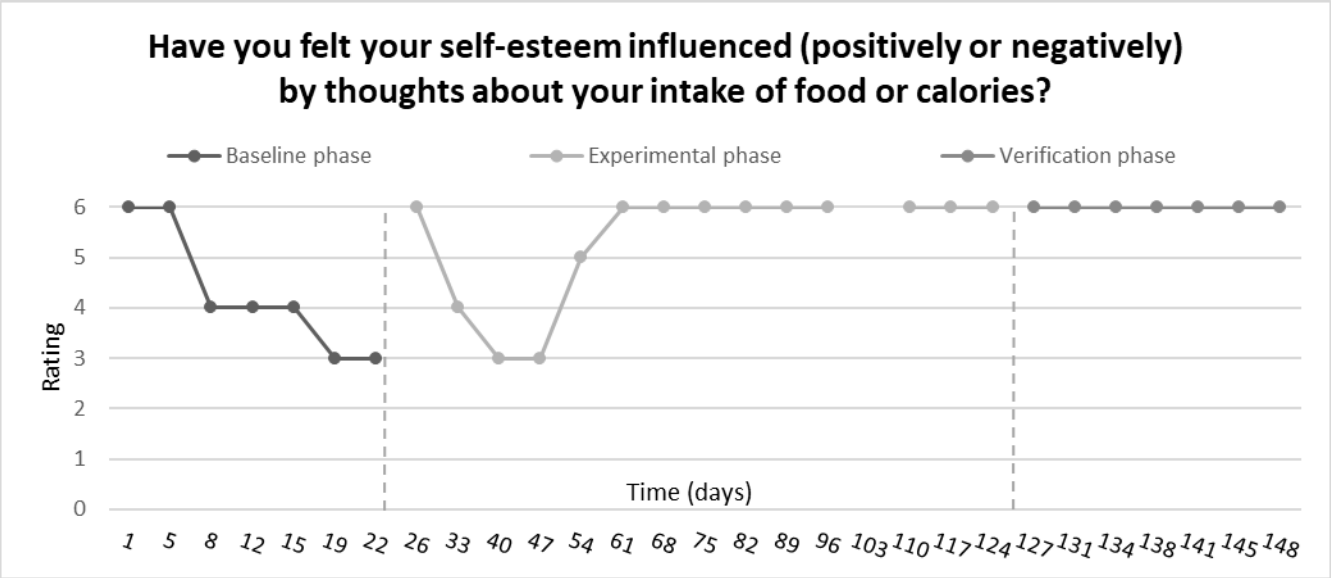

Figure 11

Participant's-4 ratings on their feelings of shame

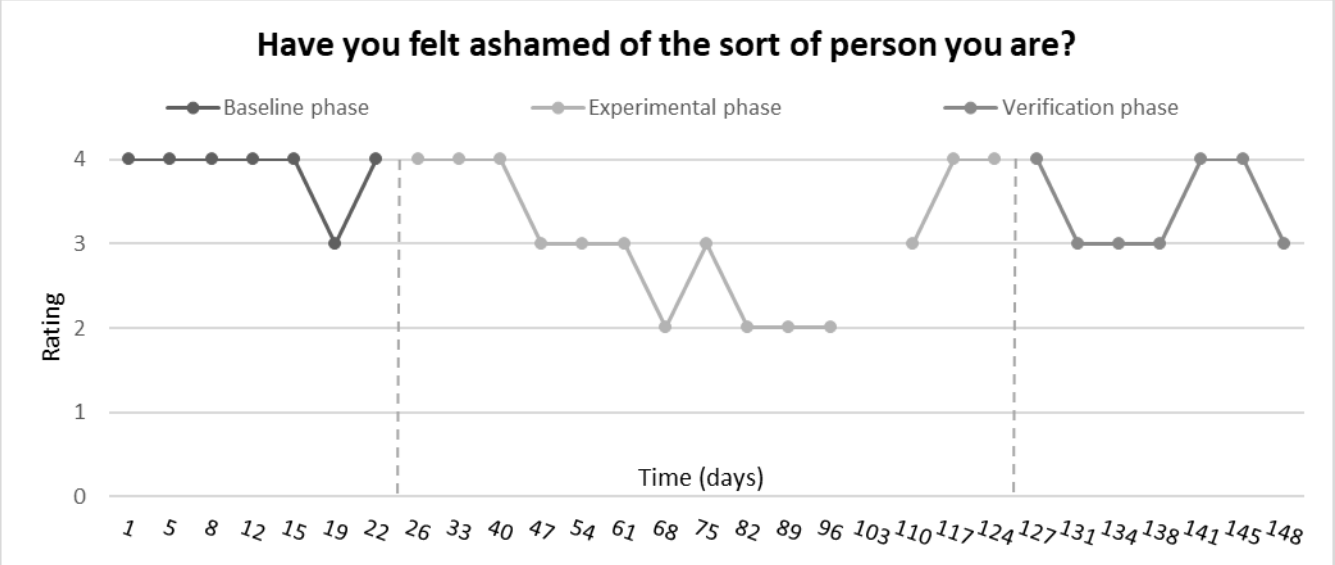

Figure 12

Participant's-4 ratings on their love for their body

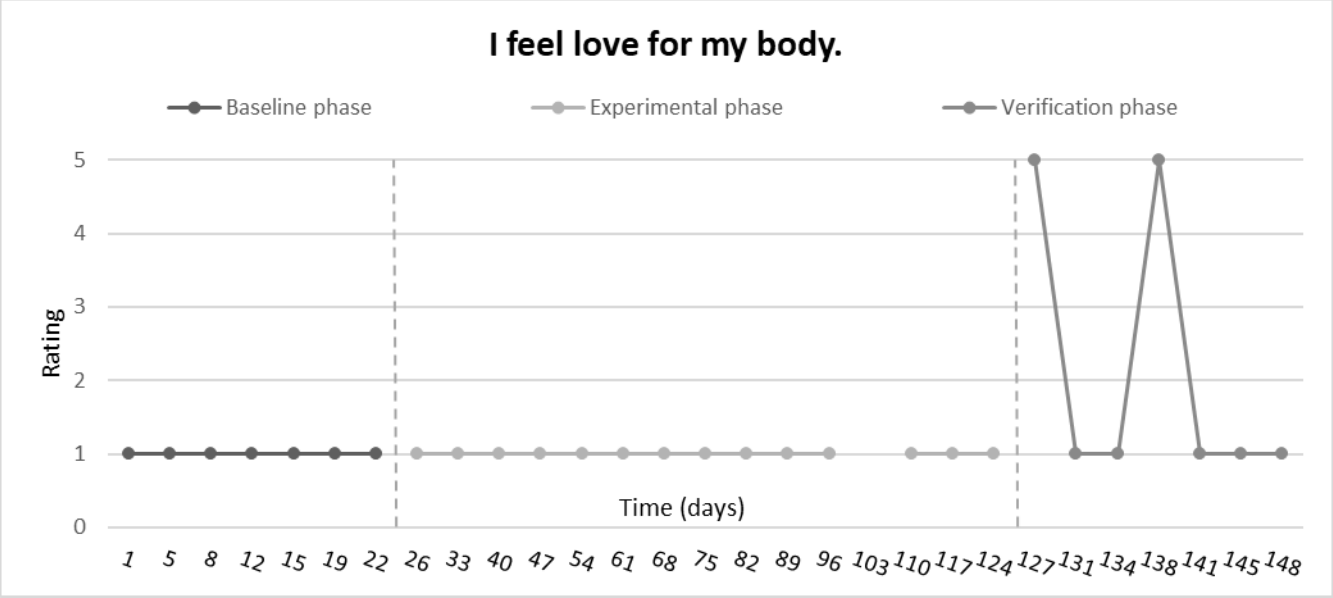

Table 13

Phase level changes in Participant's-4 measures

	Baseline to experimental phase		Experimental to verification phase		Baseline to verification phase	
Measure	Rho	*P*	Rho	*p*	Rho	*p*
The impact the thoughts about food intake have on their self-esteem	0.4	0.04	0.34	0.06	0.36	0.07
Feelings of shame	-0.49	0.02	0.21	0.18	-0.45	0.07
Love for their body	-nan	-nan	0.46	0.03	0.41	0.09

*Significant at p≤0.001, -nan- insufficient variation in scores for valid analysis

Participant's-4 distress scores changed from moderately severe to moderate at the start of the intervention and low levels of distress at mid-intervention (Table 14). These changes demonstrated clinically reliable improvement at both of those points, but only the change that occurred at mid intervention remained significant after applying the Bonferroni

correction. This trend reversed at the end of the intervention and at the follow-up demonstrating reliable worsening. The change that occurred at the follow-up remained statistically significant after applying the Bonferroni correction. Hypothesis-3 was not supported. The trend in distress scores was mirrored, albeit with no reliable change, in disordered eating measured by DEQ. Hypothesis-4 was not supported. There was fluctuation in Participant's-4 scores of shame and their body appreciation remained stable. None of these measures exhibited trends predicted by Hypothesis-5 and Hypothesis-6.

Table 14

Participant's-4 scores on the standardised measures

Measure	Start of baseline	Start of the intervention	Mid intervention (week 6)	End of the intervention	4 weeks follow-up
CORE-10	24	17	7^{RIC}	14	25^{RW}
TFEQ-R18 total	47	54	38	38	44
Uncontrolled eating	28	29	18	17	22
Cognitive restraint	7	13	13	12	11
Emotional eating	12	12	7	9	11
DEQ	87	79	68	80	84
ESS total	84	77	80	87	80
Characterological shame	35	32	36	38	33
Behavioural shame	33	29	28	33	31
Bodily shame	16	16	16	16	16
BAS-2	10	10	12	11	10

RI Reliable improvement from previous time-point, RW Reliable worsening from previous time-point

RCI Reliable and clinically significant improvement from previous time-point

Participant-5

Participant-5 ratings suggest that food-related thoughts had a considerable impact on their self-esteem and that their sense of shame and love for their body was mid-range (Figure 13-15). No significant trends in the measures were found and Hypothesis-1 and Hypothesis-2 were not supported (Table 15).

Figure 13

Participant's-5 ratings on the impact the thoughts about food intake had on their self-esteem

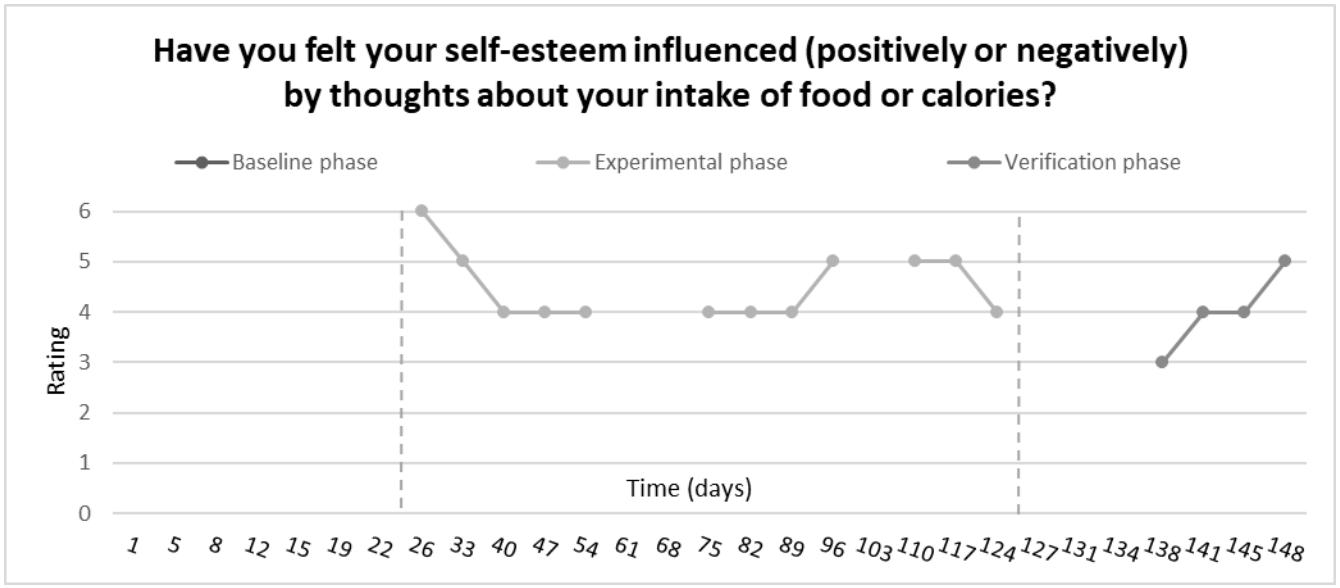

Figure 14

Participant's-5 ratings on their feelings of shame

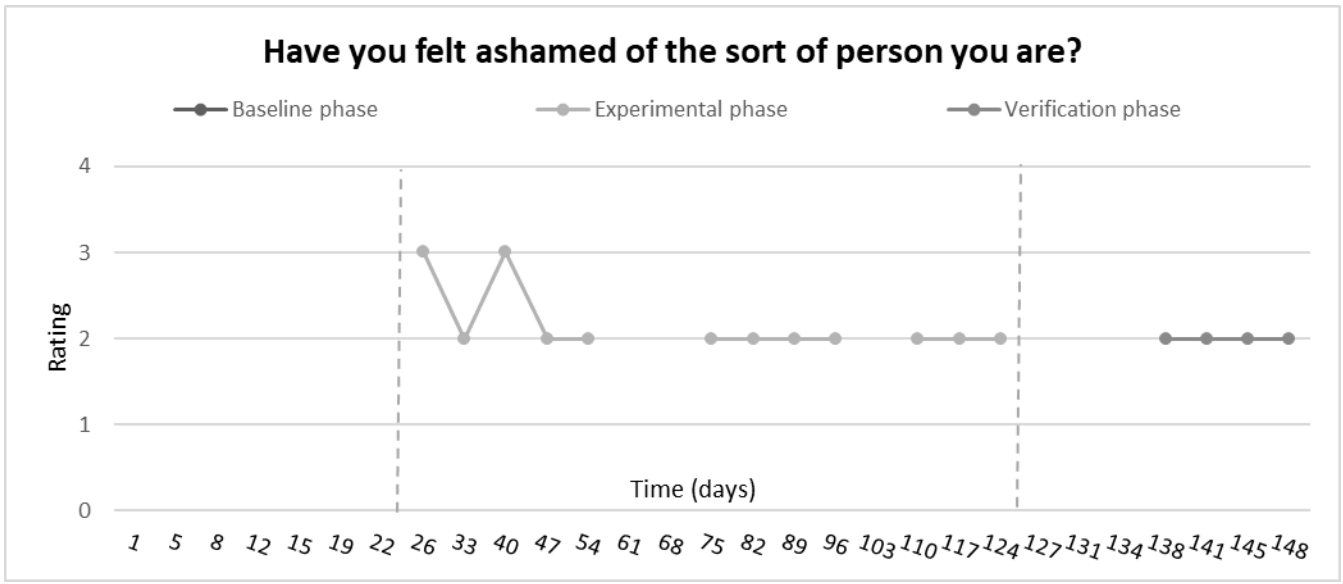

Figure 15

Participant's-5 ratings on their love for their body

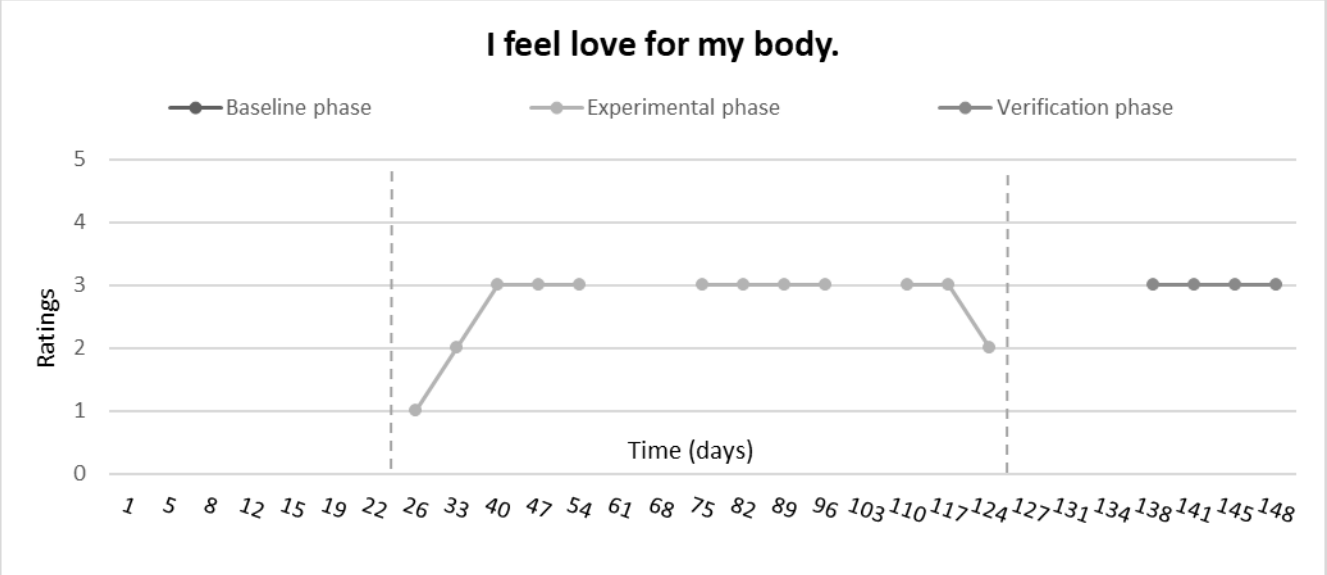

Table 15

Phase level changes in Participant's-5 measures

	Baseline to experimental phase		Experimental to verification phase		Baseline to verification phase	
Measure	Rho	*P*	Rho	*p*	Rho	*p*
The impact the thoughts about food intake have on their self-esteem	-	-	-0.28	0.15	-	-
Feelings of shame	-	-	-0.22	0.27	-	-
Love for their body	-	-	0.28	0.18	-	-

*Significant at p≤0.05, -nan- insufficient variation in scores for valid analysis

Participant-5 started the intervention with mild psychological distress (Table 16). The scores increased into the moderate distress category at mid-intervention but returned to the starting position, which did not support Hypothesis-3. Disordered eating scores did not support Hypothesis-4. Characterological shame experienced reliable improvement at the end of the intervention compared to the start, which was maintained at the follow-up and

remained statistically significant after applying the Bonferroni correction. Although bodily shame improved reliably as the intervention went on, this was no longer significant after applying the Bonferroni correction. Hypothesis-5 was supported partially. Participant-5 body appreciation reached reliable improvement at mid-intervention and remained high at the follow-up, supporting Hypothesis-6. This finding remained significant after applying the Bonferroni correction.

Table 16

Participant's-5 scores on the standardised measures

Measure	Start of baseline	Start of the intervention	Mid intervention (week 6)	End of the intervention	4 weeks follow-up
CORE-10	No data	14	17	15	13
TFEQ-R18 total	No data	60	58	53	52
Uncontrolled eating	No data	29	25	27	25
Cognitive restraint	No data	19	21	16	17
Emotional eating	No data	12	12	10	10
DEQ	No data	62	61	59	60
ESS total	No data	70	52	48	49
Characterological shame	No data	37	27[RI]	24	22
Behavioural shame	No data	20	16	16	19
Bodily shame	No data	13	9	8	8
BAS-2	No data	20	31[RI]	28[RW]	30

RI Reliable improvement from previous time-point, RW Reliable worsening from previous time-point

RCI Reliable and clinically significant improvement from previous time-point

Participant-6

Food-related thoughts had a high impact consistently on Participant's-6 self-esteem (Figure 16). Their feelings of shame and love for their body improved after the group, which was reflected in statistically significant SMA findings (Figure 17-18; Table 17). However, only the improvement in their feeling of shame remained significant after applying the Bonferroni correction. Hypothesis-2 was not supported. Participant-6 reflected that the weight loss that they experienced during the group and changes in their skin caused them body image difficulties and emotional stress.

Figure 16

Participant's-6 ratings on the impact the thoughts about food intake had on their self-esteem

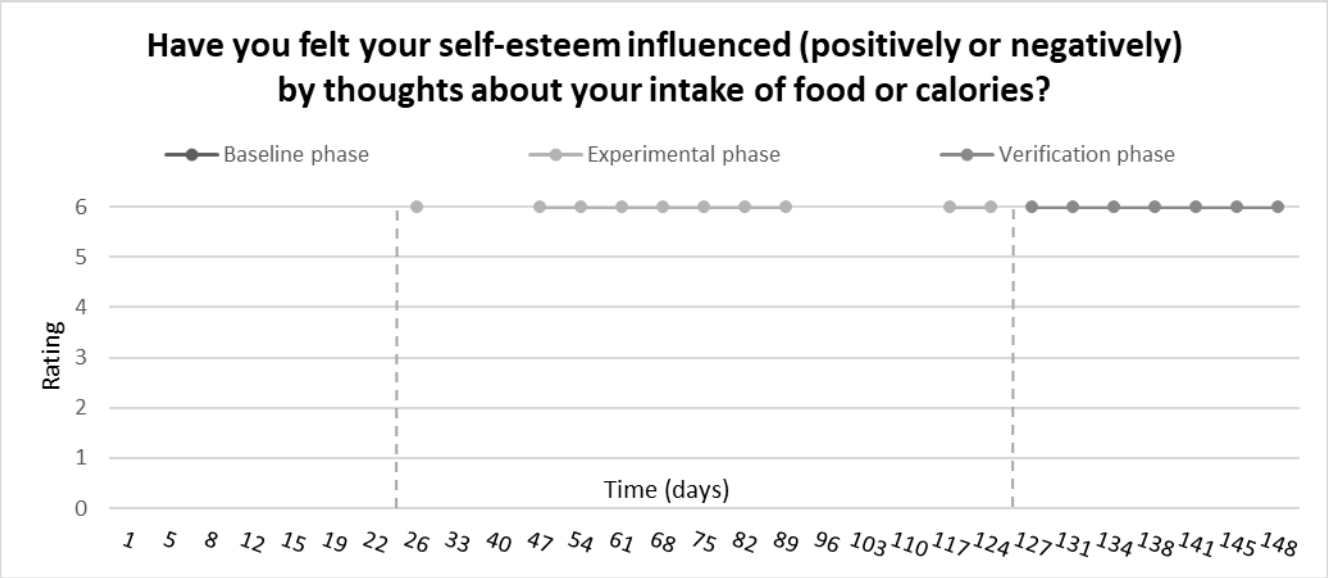

Figure 17

Participant's-6 ratings on their feelings of shame

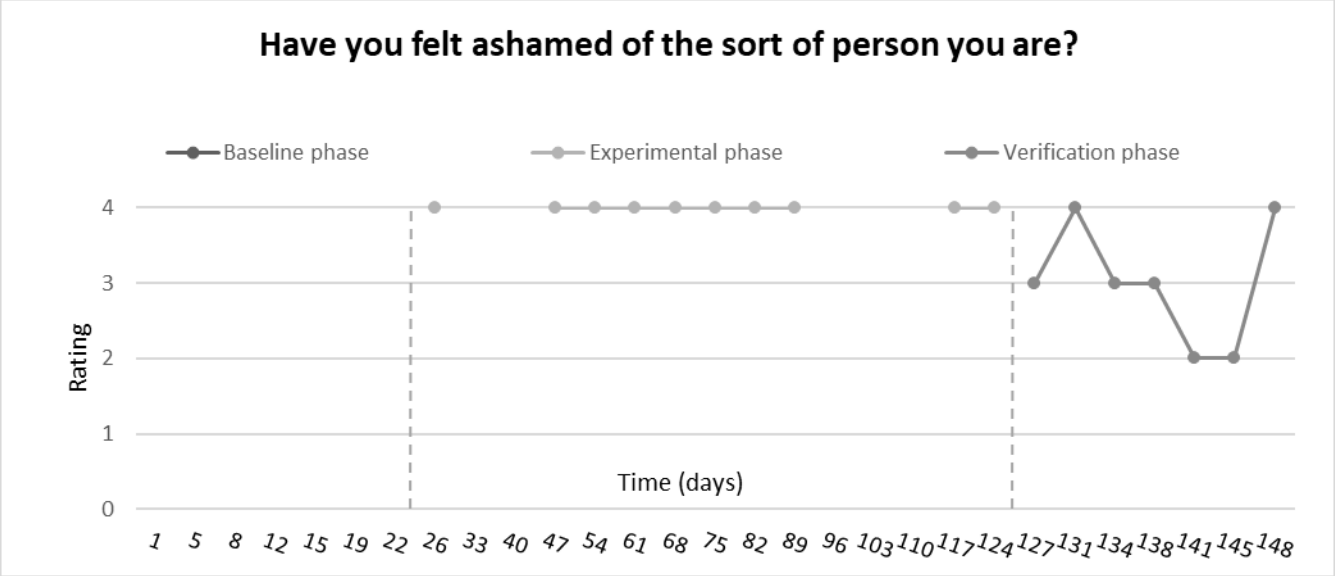

Figure 18

Participant's-6 ratings on their love for their body

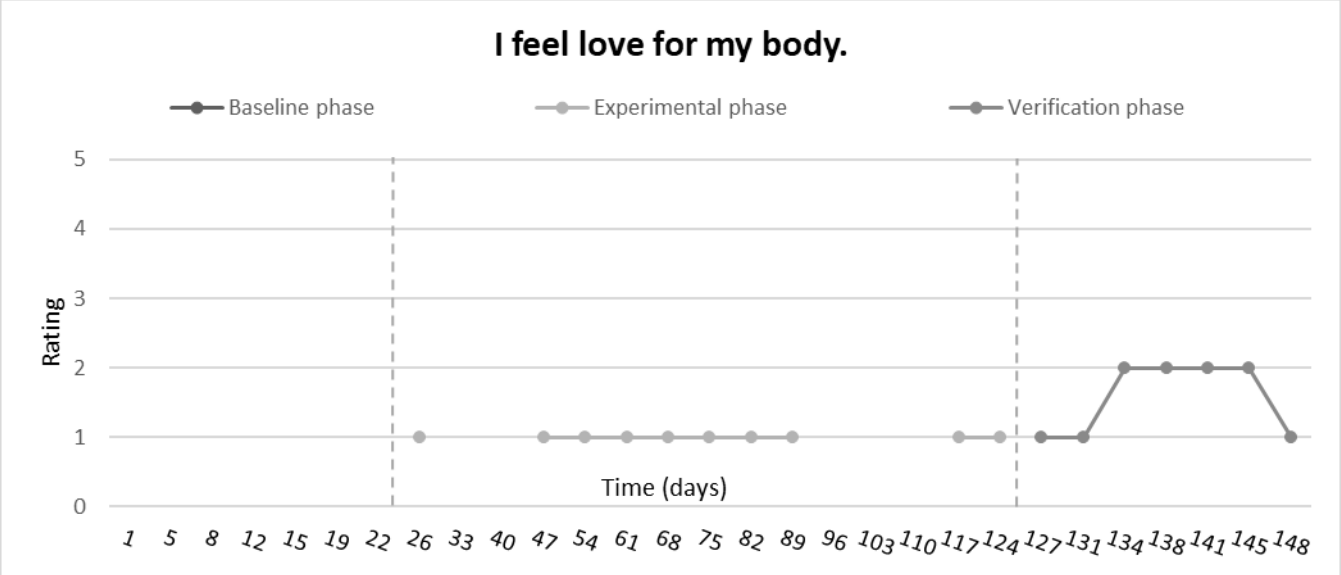

Table 17

Phase level changes in Participant's-6 measures

	Baseline to experimental phase		Experimental to verification phase		Baseline to verification phase	
Measure	Rho	*P*	Rho	*p*	Rho	*p*
The impact the thoughts about food intake have on their self-esteem	-	-	-nan	0.00	-	-
Feelings of shame	-	-	-0.76	0.00*	-	-
Love for their body	-	-	0.66	0.01	-	-

*Significant at p≤0.001, -nan- insufficient variation in scores for valid analysis

Participant's-6 general distress remained in severe range throughout the study (Table 18). Hypothesis-3 was not supported. Participant's-6 disordered eating measured by TFEQ-R18 and DEQ did not support Hypothesis-4. Participant's-6 scores of shame reached

maximum from mid-intervention onwards, rejecting Hypothesis-5. Their body appreciation was consistently low and did not support Hypothesis-6.

Table 18

Participant's-6 scores on the standardised measures

Measure	Start of baseline	Start of the intervention	Mid intervention (week 6)	End of the intervention	4 weeks follow-up
CORE-10	No data	28	30	30	30
TFEQ-R18 total	No data	57	55	56	52
Uncontrolled eating	No data	30	30	28	25
Cognitive restraint	No data	15	13	16	15
Emotional eating	No data	12	12	12	12
DEQ	No data	102	116	116	111
ESS total	No data	95	100	100	100
Characterological shame	No data	46	48	48	48
Behavioural shame	No data	33	36	36	36
Bodily shame	No data	16	16	16	16
BAS-2	No data	12	10	10	10

RI Reliable improvement from previous time-point, RW Reliable worsening from previous time-point

RCI Reliable and clinically significant improvement from previous time-point

Participant-7

The impact food-related thoughts had on Participant's-7 self-esteem was significantly lower in the experimental phase compared to the verification phase, which did not support Hypothesis-2 (Figure 19-21;Table 19). Additionally, the significance was not found after applying the Bonferroni correction. Hypothesis-1 was not supported. Participant-7 explained that they experienced significant stress linked to their health while participating in the research, which had an impact on their emotional well-being.

Figure 19

Participant's-7 ratings on the impact the thoughts about food intake had on their self-esteem

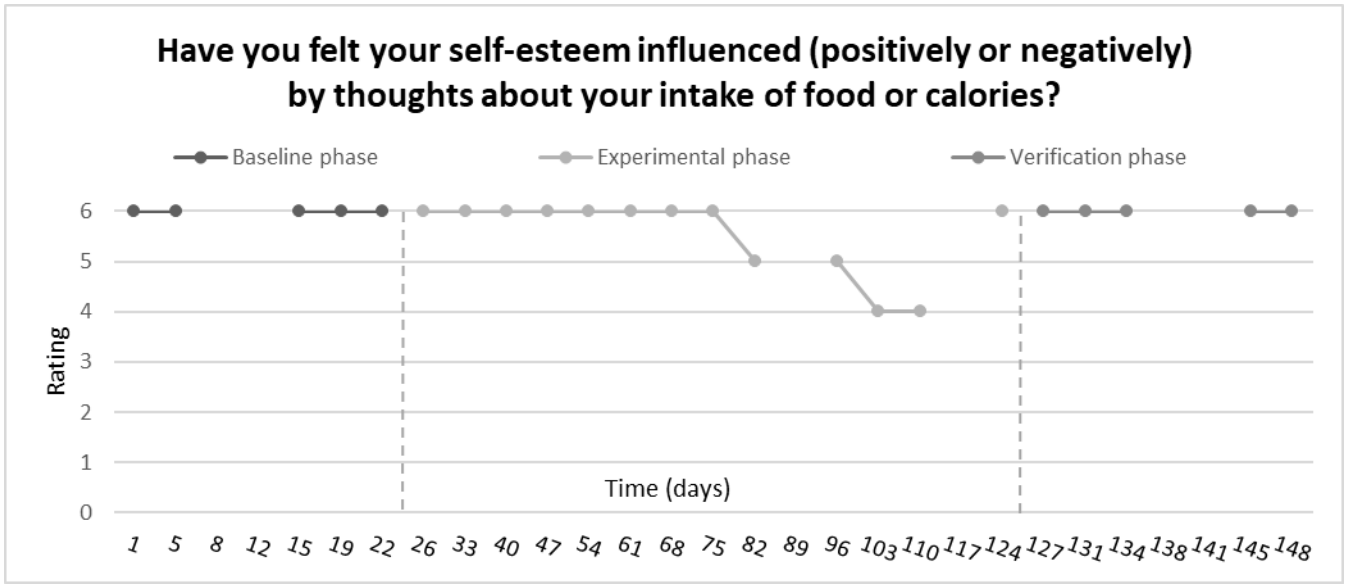

Figure 20

Participant's-7 ratings on their feelings of shame

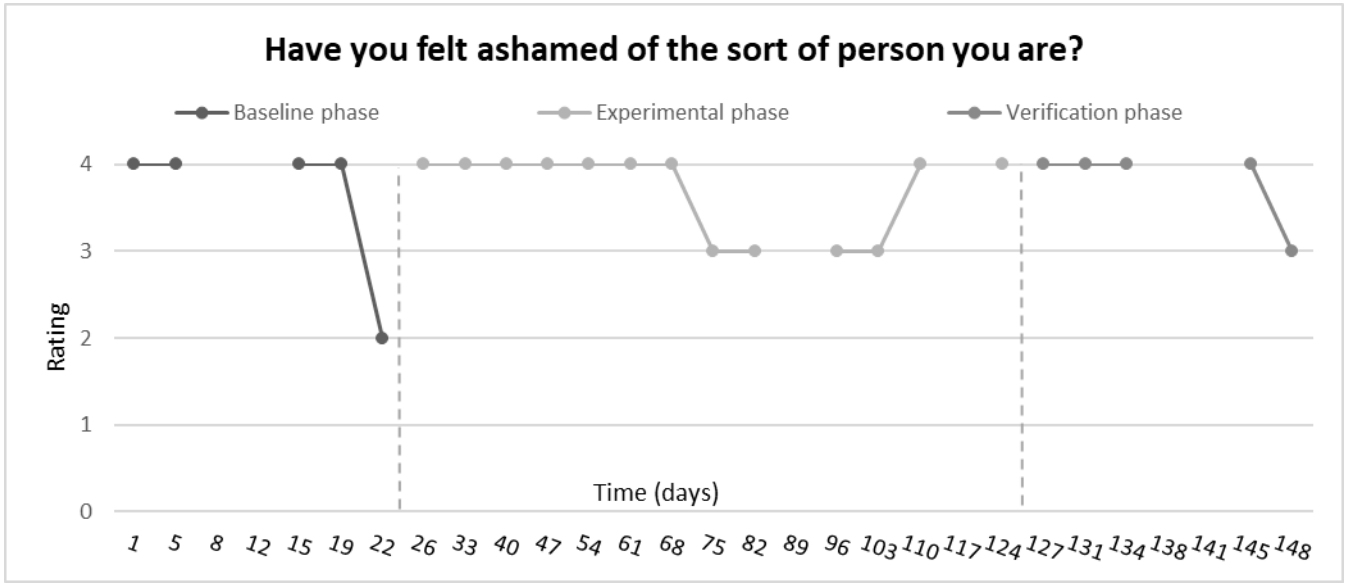

Figure 21

Participant's-7 ratings on their love for their body

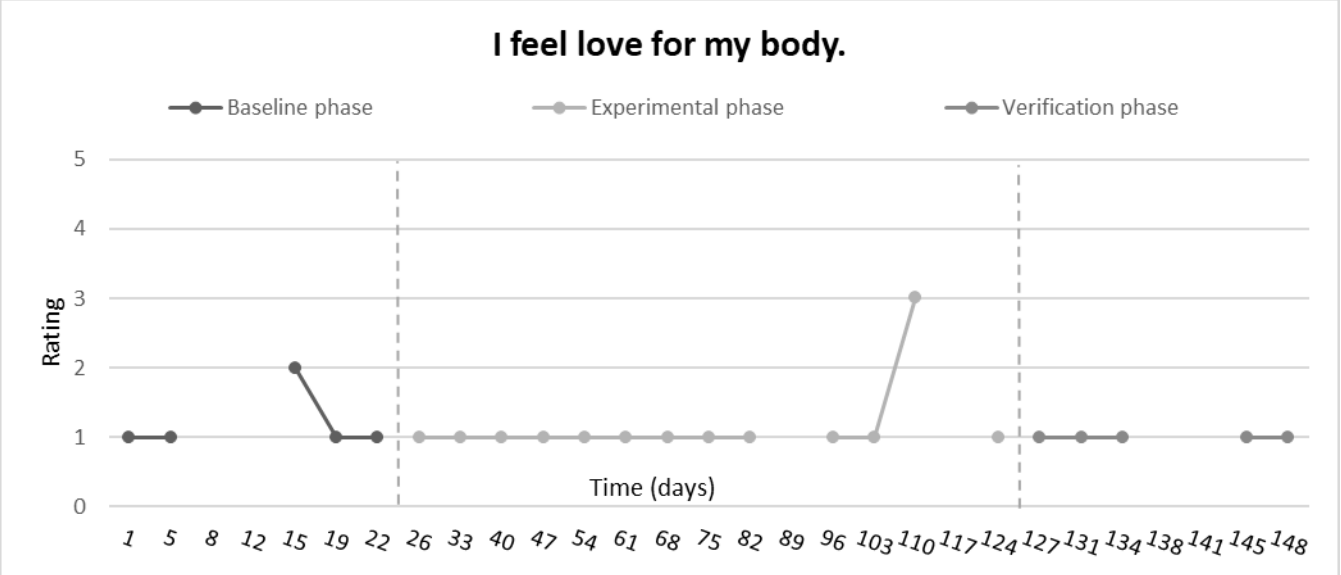

Table 19

Phase level changes in Participant's-7 measures

	Baseline to experimental phase		Experimental to verification phase		Baseline to verification phase	
Measure	Rho	*P*	Rho	*p*	Rho	*p*
The impact the thoughts about food intake have on their self-esteem	-0.33	0.09	-0.53	0.04	-nan	-nan
Feelings of shame	-0.05	0.43	0.11	0.38	0.05	0.4
Love for their body	-0.14	0.31	-0.16	0.37	-0.33	0.25

*Significant at p≤0.001, -nan- insufficient variation in scores for valid analysis

Participant-7 showed steady but not statistically significant improvement in general distress across time points (Table 20). Their scores shifted from severe psychological distress to moderate. Hypothesis-3 was not supported. DEQ scores at the end of the intervention demonstrated reliable improvement compared to the start, but this was not maintained at the

follow-up and did not remain significant after applying Bonferroni correction. No TFEQ-R18 subscales showed reliable change. Hypothesis-4 was rejected. There was reliable improvement in characterological shame at mid-intervention and the follow-up, albeit there was reliable worsening at the end of the intervention. These trends in characterological shame remained statistically significant after applying the Bonferroni correction. Hypothesis-5 was partially supported. There was a reliable worsening in body appreciation at the end of the intervention, which remained stable at the follow-up and rejected Hypothesis-6.

Table 20

Participant's-7 scores on the standardised measures

Measure	Start of baseline	Start of the intervention	Mid intervention (week 6)	End of the intervention	4 weeks follow-up
CORE-10	25	23	22	21	19
TFEQ-R18 total	62	54	61	53	58
Uncontrolled eating	34	30	30	27	32
Cognitive restraint	16	12	19	17	14
Emotional eating	12	12	12	9	12
DEQ	110	108	110	91	102
ESS total	97	99	88	96	80
Characterological shame	46	47	36^{RI}	46^{RW}	33^{RI}
Behavioural shame	35	36	36	34	31
Bodily shame	16	16	16	16	16
BAS-2	17	16	16	13^{RW}	12

RI Reliable improvement from previous time-point, RW Reliable worsening from previous time-point

RCI Reliable and clinically significant improvement from previous time-point

The quantitative findings are summarised in Table 21.

Table 21

Summary of quantitative findings (n=7)

		Was hypothesis supported?/ Relevant notes						
No	Hypothesis	P1	P2	P3	P4	P5	P6	P7
1	As the intervention starts and progresses, there will be improvements in single-item measures of shame, the impact food-related thoughts have on self-esteem and love for one's body.	NO	NO	NO, significant improvement in love for their body between experimental and baseline phases	NO, Sense of shame decreased significantly at the experimental phase compared to baseline.	NO	NO	NO
2	Improvement in single-item measures will be maintained at the verification phase	NO	NO	NO	NO, significant improvement at verification phase for love for their body compared to experimental phase	NO	NO, improvement occurred at verification phase in feelings of shame* and love for their body	NO
3	Psychological distress will decrease following the intervention and will be maintained at the follow-up.	NO	NO	NO	NO, but scores improved significantly at mid intervention*	NO	NO	NO
4	There will be a reduction in disordered eating following the intervention and this change will be maintained at the follow-up.	NO	NO	NO, reliable improvement in DEQ scores from the start to the end of the intervention	NO	NO	NO	NO, DEQ reliably improved at the end but was not maintained at the follow up
5	Shame will decrease in participants following the	NO	NO, characterological shame improved	NO	NO	PARTIALLY, reliable improvement in	NO	NO, characterological shame improved

	intervention and will be maintained at the follow-up.		reliably at the follow up compared to the start of the intervention *			characterological shame which was maintained * Reliable change in bodily shame, which was maintained at the follow up.		reliably at the follow up compared to the start of the intervention*.
6	There will be an improvement in body image during the intervention and it will be maintained at the follow-up.	NO	NO	PARTIALLY, significant improvement at the end of the intervention *, but no follow up data available.	NO	YES*	NO	NO

*- statistical significance after applying the Bonferroni correction

Qualitative results

Participant-5 declined the interview. Five themes were identified: “Challenges”, “Connections”, “Mental health and weight”, “Ongoing need”, “Positive changes” (Table 22; Appendix Q).

Table 22

Themes, subthemes and frequencies (n=7)

Themes	Subthemes	Frequencies of the subthemes
Challenges	Dynamics and ruptures	5
	Group format	4
	Physical health	3
	Time and endings	9
Connections	Containing therapist	9
	Empathy and ongoing bonds	11
Mental health and weight	Emotions fuel larger weight	5
	External factors	5
	Weight impacts one’s emotional wellbeing	6
Ongoing need	Professional support	3
	Weight management	4
Positive changes	Healthier eating	3
	Increased self-compassion	5
	Information and skills	5
	Kinder thoughts about one’s body	3
	New perspectives	6

Theme 1: Challenges

The theme reflects challenges linked to the practical aspects of the intervention and relational dynamics in the group. The latter was captured by subtheme of *Dynamics and ruptures*. In groups, participants impact each other, and relationship ruptures that occur between a few people have a ripple effect on the rest of the group. As Participant-7 noted, "I found that some of the people in the group didn't get on. Quite early on. […] I know people that kinda supported the /person/ and when there were others who kinda felt more sympathy for the /person/, really."

The challenges linked to practical aspects of the group were reflected in subthemes: *Group format*, *Physical health*, and *Time and endings*. Participants spoke about the intervention not being long enough and how it took time for them to open up. Participant's-1 lived experience speaks to the challenge of offering short-term psychological interventions for long-term conditions: "…something that has been going on, quite possibly, for decades, it will not get sorted out in a few weeks or even in few months. It is an ongoing process." Participant-1 offered an interesting observation about the end of the intervention: "I think when this comes to an end, it needs to be a bit like you take a drug or something and you try to cut down, you don't suddenly stop taking it, you reduce it gradually." This suggests that time is needed not only to benefit from groups but to stop them effectively.

Challenges over group format may be linked to relational threats that may be more activated in groups. It may have also been due to emotional content in the group;- it was "heavy" as Participant-4 put it. The challenges with physical health were directly linked to specific health conditions such as asthma, and chronic pain, which made it difficult to engage in exercises requiring focus on breathing and the body. The provisional diagnosis of cancer that one participant received halfway through the group has also impacted the engagement

with the intervention. This, perhaps, speaks to how, for overweight individuals, physical health hardships are common experiences that demand their attention over other matters.

Theme 2: Connections

The theme captured the significance of relationships in the group. The subthemes included: *Containing therapist* and *Empathy and ongoing bond*. Participants expressed appreciation for the group facilitating therapist and them providing an opportunity to be contacted outside the group if they felt distressed.

Some participants reflected on importance of the therapist aiding repairs of ruptures in the group: "I think in a way, once we had a meeting with /*facilitator's name*/ and cleared the air a bit, it felt quite cathartic." (Participant-1).

Empathy and ongoing bond was a strong subtheme: "…within the group were quite empathetic and, you know, made me feel heard and understood." (Participant-3). There seemed to be a wish to maintain the established connections as some participants continued their relationships outside the group. Honesty in the group was highlighted, which may also have been a factor in bonding: "You don't meet people like that on a day-to-day basis; you talk to people this and that, but it's nothing to like it was in the class." (Participant-8).

Theme 3: Mental health and weight

The theme captured reflections on the struggle of larger weight. The subthemes included: *Emotions fuel larger weight*, *External factors* and *Weight impacts one's emotional*

wellbeing. Participants spoke about the emotional toll that eating difficulties can take. Participant-4 shared poignant reflections on how systems influence the experience of overweight individuals: "…obviously there's a constant message from society that being that much weight is really bad for you. And from medical professions as well obviously ...so...obviously that is not acceptable […]. Which impacts my body image."

The interviews gave a valuable insight that achieving weight loss can cause psychological distress: "I've been going quite heavy with exercising, my body shape changed. Skin is a lot more loose and saggy and that is really dysphoric to see. That really messes my head up." (Participant-6)

Theme 4: Ongoing need

The theme reflected how the group intervention was not the end of the journey in for some participants. The theme had two subthemes: *Weight management* and *Professional suppor*t. Participants suggested that the relationship with food is still difficult: "I really don't have a good relationship with food and sadly, I haven't found a way around that yet."(Participant-2). The intervention seemed to had an impact on some psychological gains, but it was not the case in participants' relationship with their bodies: "I don't think that changed. Not the relationship with my body. I think probably more the state of mind."(Participant-8).

Some participants suggested that more psychological support would be helpful; they shared the psychological work they plan to engage in soon and disclosed that participating in the group gave them confidence to access further support.

Theme 5: Positive changes

The subthemes included: *Healthier eating, Increased self-compassion, Information and skills, Kinder thoughts about one's body* and *New perspective*. Participants spoke about what they learned in the group, like recognising one's triggers for eating, better understanding of body and weight, which reflects the educational aspect of the intervention. Some gains were linked to food and one's body, like improvement in disordered eating patterns and increased respect for one's body. Many subthemes pointed to relational gains, particularly how one related to self, like self-compassion and acceptance. Participant's-2 quote illustrates this: "You could show compassion to yourself, which I think was what the group was all about."

Discussion

Quantitative findings

Hypothesis-1: *As the intervention starts and progresses, there will be improvements in single-item measures of shame, the impact food-related thoughts have on self-esteem and love for one's body* and Hypothesis-2: *Improvement in single-item measures will be maintained at the verification phase* were not supported. In the single item weekly measures, only the improvement in the sense of shame at the verification phase in Participant-6 remained statistically significant while controlling for type-1 errors.

Visual analysis of weekly participants' data suggested some moderate patterns. Improvements in the weekly shame ratings were found in four participants at weeks nine and ten of the intervention. In week nine, participants had the 7th session, which was focused on compassion in relation to personal values. This may suggest reflecting on personal values

resonated with participants. However, it is important to consider that therapy effects are not immediate, that at that point, participants completed more than half of the intervention, and the pattern that emerged may have been influenced by multiple factors.

Hypothesis-3: *Psychological distress will decrease following the intervention and will be maintained at the follow-up*, was not supported. by Particiant's-4 distress levels improved significantly at mid intervention while controlling for type-1 error, but this was not maintained at the following time points.

The general distress data suggest that all participants, except for Participant-5, whose distress ranged from mild to moderate, experienced distress that ranged from moderately severe to severe. Several things could explain the high distress and low gains in this domain. Firstly, many participants in their interviews shared that events in their personal and professional lives impacted their psychological well-being. Secondly, it has been documented that overweight is associated with adverse and traumatic life experiences and psychological complexities (Leach, 2006). This rejects the idea that psychological intervention in of its own is enough to improve psychological well-being if a person's adverse or difficult socio-economic environment does not change.

Hypothesis-4: *There will be a reduction in disordered eating following the intervention and this change will be maintained at the follow-up*, was not supported.

While some statistically non-significant fluctuation was observed in DEQ scores, this was not observed in TFEQ-R18 scores. Complicated trends in disordered eating in the study are in line with documented presentations in people with obesity. It has been found that individuals with obesity have highly disordered eating psychopathology that impacts their psychological well-being (Darby et al., 2007; Nightingale & Cassin, 2019). Self-compassion has been found to have a beneficial impact on eating behaviours and to be an "adaptive

emotion regulation strategy" in difficulties with disordered eating (Braun, Park & Gorin, 2016; Turk & Waller, 2020). Limited improvements in disordered eating in the present study may suggest that self-compassion was not cultivated enough in the intervention. Little change in disordered eating may have occurred because the intervention did not target it specifically. Perhaps if the primary goal was to reduce disordered eating, CFT may not be the first choice of therapy, or the protocol would need to be adapted with this goal in mind.

Hypothesis-5: *Shame will decrease in participants following the intervention and will be maintained at the follow-up*, was partially supported by Participant's-5 data. Participant-5 demonstrated reliable improvement in characterological shame at the end of the intervention, which was maintained at the follow-up and which remained significant after adjusting for type-1 error. There were other trends in the results that although did not support the hypothesis are worth to note. A significant trend after controlling for type-1 error occurred at the follow up in characterological shame in Participant-2 and Participant-7.

Slow and uneven gains in shame were also found in a study about group therapy for people with body dysmorphic disorders (Linde et al., 2023). Similarly, Luoma and colleagues (2012) found that slower decreases in shame occurred during the intervention phase, and gains in this domain mainly occurred at the follow-up. Participants' data suggest that bodily shame was difficult to shift. There could be several reasons for this. Social messaging in Western society commonly states that weight loss is easy to achieve, which may put pressure on overweight people (Conradt et al., 2007). This message decontextualises people's experiences and does not consider life events, complex relational interactions, and the impact of the systems around them. Additionally, it has been found that overweight people often respond to negative feedback by attributing it to their bodies rather than the prejudices of others (Crocker, Cornwell, & Major, 1993). Similarly, they tend to attribute internally unsuccessful weight loss attempts (Goodrick, Raynaud, Pace, & Foreyt,1992).

Hypothesis-6: *There will be an improvement in body image during the intervention and it will be maintained at the follow-up,* was supported by Participant-5. Participant-3 has also demonstrated significant improvement after adjusting for type-1 error at the end of the intervention, however, they did not provide a follow-up data and therefore it supported Hypothesis-6 partially.

Many of the participants' scores of body appreciation have been steady, with minimal change throughout the study. Another aspect that stands out is that all participants' ratings of this measure were considerably low, with Participant-2, Participant-4 and Participant-6 frequently scoring the minimum possible score. The tendency to have poor body image was consistent with previous research suggesting that overweight people have high body dissatisfaction, especially if they are females or males from the LGBTQ+ community (Schwartz & Brownell, 2004). Research that looked into body image before, during, and after weight loss treatment has found that changes in body image in overweight people are not associated with changes in body weight (Foster, Waden & Vogt, 1997). Another study concluded that poor body image following weight loss persists in some individuals due to early onset of weight management difficulties, possibly because of perpetual negative self-image from adolescence (Sorbara & Geliebter, 2002).

Qualitative findings

The qualitative data were analysed to answer two additional research questions:

What experiences from CFT-based online group intervention are perceived as the most impactful to patients in a Tier-3 weight management service?

What changes do participants in a Tier-3 weight management service notice in their relationship with food and their bodies that they link to CFT-based online group intervention?

The emerging themes were *Challenges*, *Connections*, *Mental health and weight*, *Ongoing needs*, and *Positive changes*. That all participants spoke about relational aspects of the group as captured in themes of *Challenges* and *Connections* and just as much as about group content is in line with previous research suggesting that therapeutic alliance in therapy groups, as well as the climate of the group experienced by participants, is a significant aspect of group intervention that even impacts individual outcomes of the intervention (Alldredge et al., 2021; Ogrodniczuk & Piper, 2003). Many participants referenced the ruptures in the group: “I think it was just a fundamental of other person’s personality. There was nothing that could be done to change moving forward. Because of that, as I said in the past life, I was a group facilitator and I don’t know what I would have done in such a position. It’s a clash of personalities.” (P4); “I think in a way, once we had a meeting with /facilitator’s name/ and cleared the air a bit, it felt quite cathartic.” (P1)

The different ways of referencing these events suggest that some participants were involved in the ruptures directly, and others indirectly. This highlights the relational nature of group interventions where an individual also becomes a collective. Ruptures in group therapy can be very complex because all the group members have to process the rupture, even if not directly involved.

The emotional "heaviness" of the group, as referenced by participants, may be linked to group dynamics, an invitation to reflect on oneself and find compassion, or it could mirror participants' experiences of their bodies; it is heavy and emotionally challenging. Based on participants’ feedback, the impact of being overweight extends far beyond physicality,

affecting many areas of one's life. Based on the interviews, stress in life and emotional difficulties are inextricably linked and often lead to unhealthy eating habits. These episodes of unhealthy eating, in turn, trigger a cascade of negative emotions and poor self-esteem, further exacerbating the emotional burden.

Participants named multiple positive changes associated with the intervention. Some gains came up more frequently and included increased self-compassion and nformation and skills. Some participants spoke about improved eating habits and kinder thoughts about one's body. It has been shared by one of the participants how weight loss although desired can influence other changes in body like lose skin and cause considerable distress. Experiences shared by participants were in line with literature suggesting that weight loss is a complex process that is not only physical but psychological.

Findings

Social mentality theory may suggest that limited improvements demonstrated by quantitative findings in the study may have occurred due to difficulty shifting social mentalities. Previous research found that a barrier that may account for difficulty in mentality shifting is a fear of self-compassion (Kelly et al., 2012). Based on social mentality theory, this suggests that not only competitive motivation could be a barrier to self-compassion, but also motivation of fear. Interestingly, some participants spoke about increased self-compassion, suggesting that the intervention helped activate self-compassion motivation. Considering the limited improvement demonstrated by quantitative data, it is essential to consider that there may have been things in participants' experience of the intervention that quantitative measures could not have fully captured or were not able to capture due to methodological limitations.

In the interviews, participants spoke positively about many aspects of the intervention and suggested various positive gains. Therapy induces psychological changes that continue progressing after therapy has ended. Participants spoke about how intervention was not long enough and that it took time for them to start opening up, which might explain the limited findings. This highlights the importance of allowing sufficient time for participants to fully engage and benefit from the intervention. Another crucial factor to consider is the safety in group therapy. It took time for the safety to be established and there was a rupture referenced by participants that may have threatened this sense of safety. More time in the group may have allowed more complete repair, re-established safety and more positive outcomes for individuals. This seems to be plausible considering the theme of *Connections* that emerged.

It is important to consider that positive qualitative feedback from participants about the intervention may have occurred in response to peer support, being part of a therapeutic group and related processes rather than in response to the CFT model specifically. This point is supported by most of the themes speaking about relational aspects linked to group processes rather than specific aspects of CFT. If this was the case, what remains unclear, yet worthy to reflect on, is how the CFT model related to group processes, whether it was detached from them, enhanced them or perhaps hindered them.

The quantitative findings in the present study did not suggest that CFT-based group intervention is an effective approach for overweight individuals. The findings varied markedly from the conclusions of Carter, Gilbert & Kirby's (2020) study, which also used mixed methodology to assess the effectiveness of 12 sessions (albeit delivered in six weeks) of CFT group intervention on overweight individuals. The frequency of sessions in Carter and colleagues' study may have resulted in higher intensity intervention. Additionally, the authors specifically targeted body weight shame, which improved significantly, whereas the present study targeted shame in a broader sense and included behavioural shame, bodily

shame, and characterological shame. Only the latter was found to improve in the present study. Interesting to note that neither Carter and colleagues nor the present study found a significant effect on the relationship with food when using quantitative assessment methods, but in the interviews, some participants in the present study discussed improved eating habits. This may suggest that the relationship with food in overweight people is strongly impaired and difficult to shift.

Although the present study did not strengthen the position that CFT is an effective intervention for overweight people, it addressed the gap in evidence base by assessing individuals in Tier-3 weight management services. Perhaps the difference in the recruited participants in the two studies may shed light on differences in findings and highlight the needs of people in weight management services. Carter and colleagues' participants were undergraduate students with a mean age of 30.6, whereas the participants in the present study varied in their occupational status, and the mean age was 51. This may suggest that patients in weight management services do not have access to certain social connections like students do and have longer-term weight management struggles, which may have had a bigger impact on them overall. This may mean that the population in weight management services needs to be considered as having greater needs, and psychological group interventions need to be adapted accordingly.

The present study focused on assessing the effectiveness of the intervention and not acceptability. Although there was not sufficient evidence found to support the effectiveness of the intervention, an argument can be made in support of its acceptability based on the Theoretical Framework of Acceptability (TFA) (Sekhon, Cartwright & Francis, 2017). Based on participants' feedback, the intervention met seven criteria of TFA, affective attitude, burden, ethicality, intervention coherence, opportunity costs, perceived effectiveness, and self-efficacy, and therefore can be considered acceptable.

Strengths and Limitations

One of the limitations of the study is missing data. Due to external circumstances, it was not possible to recruit all the participants at the same time which is one of the challenges of ABA study design (Zhan & Ottenbacher, 2001). Four participants had baseline data and three of them provided more than one data point during the verification phase, which resulted in three participants with a complete data set. Kazdin (2011) suggests that baseline data have the critical functions of describing and predicting. Half of participants without baseline data do not have control data which compromises the validity of single-case experimentation.

Another limitation is the relatively short time series data. Borckardt and colleagues (2008) recommend at least 10 points per pair of phases in SMA analysis, which has not been met in the present study. Additionally, although specific guidelines are not available for frequencies in obtaining data at different phases to our knowledge, inconsistent frequencies in the present study might be considered a flaw. Data were obtained at baseline and verification phases more frequently- twice a week, compared to the experimental phase- once a week. Although this design for data collection was put in place for clinical and ethical reasons, namely, to ensure the shortest waiting time possible for the group to start and avoid overburdening participants with questionnaires, one could argue this threatened the research legitimacy.

Another possible limitation was the decision to use questions from questionnaires to obtain time series data. This was decided for the benefit of participants, so they would be required to answer these questions less frequently. However, as Participant-2 noted in their interview:" Regarding the questions that you did every week, you may want to vary them, cause they were very specific. I think if you asked more general questions, you would have

got more varied answers." Having more open questions or more answer options like rating subjective units of distress on a large scale may have helped to reveal changes in participants' well-being that may have been missed.

Another aspect that requires consideration is measurement effects. Regular self-monitoring may have impacted participants' vigilance to distress, caused documentation fatigue, and participation in research may have affected the therapeutic experience of the intervention.

The study lacked the power to detect change within the group-level statistical analysis. However, the study's strength is the participants, who were representative of a Tier-3 weight management service population. Moreover, mixed-methodology allowed the quantitative findings to be placed within a meaningful context.

Theoretical Implications

Social mentality and social rank theories were considered in the present study. In the light of the modest findings the present study does not qualify to support them. The intervention that was focused on compassion helped to partially improve the sense of shame for one participant only. Social mentality and social rank theories are systemic in nature because they offer an understanding of individuals in relation to others. Based on the theories, support for overweight people should acknowledge wider context and relational aspects of these difficulties. This is supported by some participants' feedback pointing to their awareness of social messaging about being overweight and its impact on their view of self.

Group format is a powerful therapeutic space that has the potential improving well-being. The power of this format is twofold. As the social rank and social mentality theories suggest, people's motivations and subsequent behaviours, thoughts and feelings occur in

relation to others, and therefore approaching them in the group may provide experiential learning about self in relation to others. Also, based on findings on social mentality theory, fostering self-compassion may be achieved through care-seeking and caregiving to others (Hermanto & Zuroff, 2015). However, it may be that in this format, some unhelpful ways of relating to others may be triggered through an activated threat system, and it can be challenging for people to reorientate from feeling unsafe to a compassionate system and motivation to connect.

Clinical Implications

Participants' feedback about their experience of the group suggests that connectedness and empathy shared in the group may have triggered compassionate motivation that had a positive impact on individuals. Additionally, feedback about challenges in managing ruptures in the group shared by some may suggest that a threat system may have been activated in the group, also. Based on this, it is essential for clinicians implementing similar interventions in the future to plan and prepare not only for the controlled aspects of the group, like psychoeducation but also for unplanned aspects like dynamics in the group. We propose that because of the relational potential that CFT holds, CFT-based interventions should have a considerable experiential "here and now" component where clinicians guide and contain participants in addressing potential ruptures in relationships safely and in a meaningful way.

Participants' feedback suggests that longer-term support is in demand and that careful planning of endings is important. It is difficult to work on one’s feelings in a group, when there is not enough time to create safe and trusting relationships. Having longer-term group therapy may help to build trust and safety. The suggestion to have a gradual ending to the group suggests the importance of containment.

Finally, study shows that mindfulness may not be suited for everyone. We suggest offering alternatives to mindfulness exercises if some individuals find them difficult to do due to their physical health conditions.

Future Research

Further research is needed to build on the findings of this study, for example, addressing the current study's limitations and replicating it. It may be beneficial for future research using single case designs to use subjective units of distress encompassing a considerable range (for example, 1-100) instead of using questions with fewer answer options (like here) to capture more nuance in participants' changes. Longer-term follow-up may also provide more insight into the mechanisms of the intervention. Given qualitative findings, which had prominent relational subthemes, it may be beneficial to assess relational aspects of the intervention as mediating factors. Due to the limited significant findings of the current research, an RCT is not indicated.

Conclusions

To our knowledge, this is the first mixed-methods multiple single-case design study on CFT based group intervention conducted in a naturalistic Tier-3 weight management setting.

Findings of the study did not support the effectiveness of the intervention. However the intervention can be considered acceptable. The intervention helped to partially improve the sense of shame for one participant only. Modest, inconsistent, partial gains were found in general distress, characterological shame and body image. No gains across participants were found in disordered eating and weekly measures of shame, love for their body, and impact

food related had on their self-esteem. Interviews suggested that participants valued the intervention positively, and the relational aspect of the intervention had a big impact on them.

Given the initial findings, subsequent steps include implementing participants' feedback by tailoring mindfulness exercises to suit people with breathing or pain conditions, offering longer interventions and a gradual ending of the intervention. Additionally, the intervention may benefit from an increased relational, experiential approach in the sessions..

Further intervention development and more rigorous study designs are needed. For single case design, introducing subjective units of distress instead of our used questions with limited answer options may allow more insight into subtle changes in how participants feel.

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Section C

Appendixes and supporting material

Appendix A: Detailed summaries of the included papers

1) Beaulac, Sandre & Mercer (2019) Impact on mindfulness, emotion regulation, and emotional overeating

This study investigated the impact of modified DBT skills training group. 18 participants who were patients at the hospital outpatient weight management clinic were recruited. The intervention lasted for 12 weeks. The group was semi-closed, and new participants were able to join every 4 weeks- at the beginning of a new module. Three consecutive groups were run. The self-reported data were collected at the start and the end of the group and 3 months after the group ended.

Table 1A

Group characteristics in Beaulac, Sandre & Mercer (2019) study

Referrals	• Self-referrals • Health care providers from surgical, medical or behavioural stream
Inclusion criteria	Patients with emotion regulation, interpersonal difficulties, emotional eating, who had current or historical diagnoses of BPD
Exclusion criteria	Patients with unstable medical conditions, with acute psychosis, mania or substance use.
Facilitators	A doctor (3rd author of the paper) who completed DBT training and has been practising for 11 years (1st group) A psychologist and a social worker who observed the doctor above running the 1st group co facilitated 2nd and 3rd groups
Structure of intervention	• 3 modules each lasting for 4 weeks: ○ Emotion regulation, ○ Interpersonal effectiveness ○ Distress tolerance • Each module started with one mindfulness session

Features of individual sessions	• The group room was open 10 min prior start for "settling in" • 10-15 min Mindfulness exercise • 40-45 min homework review • 45 min introduction for new material • 15 min grace period after the end for crisis intervention
|In between session work	• Homework • Optional diary cards

Table 1B

Summary of findings in Beaulac, Sandre & Mercer (2019) study

Item measured	Instrument measured by	Findings
Psychological distress	OQ-45	No significant improvement
Emotional overeating	EOQ	Significant improvement between baseline and post treatment and between baseline and follow up; no levelling off effect over time
Emotion regulation	DERS	Significant improvement between baseline and post treatment and between baseline and follow up; levelling off or maintenance over time.
Mindfulness	FFMQ	Significant improvement baseline and follow up, no significance between baseline and post treatment; continued increase over time

2) Cancian, Souza, Liboni, Machado & Oliveira (2019) Effects of a dialectical behavior therapy-based skills group intervention for obese individuals: a Brazilian pilot study

The RCT study with a waitlist serving as a control group that investigated the impact of adapted DBT skills training group. 79 participants who identified as obese and responded to the group's add on social media were selected to participate in the study. The intervention lasted for 5 weeks. Two groups were run. The self-reported data was collected at the start of the group and after the group had ended.

Table 2A

Group characteristics in Cancian et al. (2019) study

Referrals	Self-referrals
Inclusion criteria	Adults between ages 18-59 with BMI greater than 30 and with formal education of at least 8 years.
Exclusion criteria	People with psychotic symptoms, suicidal ideation or suicide attempt in the last year, substance use or previous treatment with DBT components
Facilitators	2 psychologists. One attended 10 day DBT intensive workshop and one took 200 hours DBT training

Structure of intervention	• standardised audio-visual resources used across the groups
	• 3 modules :
	  ○ Mindfulness
	  ○ Emotion regulation
	  ○ Distress tolerance

Features of individual sessions	• Mindfulness practise at the start • 40 min homework review • 1h15 min introduction for new material • Homework given at the end of the session • Summary of all 10 sessions is provided in the paper
In between session work	• Homework

Table 2B

Summary of findings in Cancian, et al. (2019) study

Item measured	Instrument measured by	Findings
Emotion regulation	DERS	Non-significant increase, medium effect size
Symptoms of anxiety and depression	DASS-21	Non-significant decrease, but medium and large effect sizes respectively
Problematic eating behaviours	EES	Non-significant decrease, but large effect size
Adaptive eating behaviours	IES-2	Non-significant increase, but large effect size
Mindful eating	MEQ	Mindful eating reduced (non-significantly) after the intervention with a medium effect size
Binge eating	BES	Non-significant decrease, but large effect size

3) Carter, Gilbert & Kirby (2020) Compassion-focused therapy for body weight shame: A mixed methods pilot trial

The study investigated the impact of the CFT group. Six undergraduate students were recruited from the general population via convenience sampling and snowballing techniques. Flyers were displayed on public notice boards, on university campuses and on social media sites. The intervention lasted for 6 weeks. The self-

reported data was collected before the intervention, the end of it and 3 months after the group ended. After the follow-up measures were completed participants were invited to attend a focus group discussion.

Table 3A

Group characteristics in Carter, Gilbert & Kirby (2020) study

Referrals	Self-referrals
Inclusion criteria	Adults with BMI of 30 or more who were willing and able to commit to the 12 session group intervention and who expressed body weight shame (BISS)
Exclusion criteria	People who were receiving psychological intervention already or unable to read English
Facilitators	A clinical psychologist trained in CFT and a provisionally registered psychologists (authors 1st and 3rd authors)
Structure of intervention	Followed the protocol by Gilbert, Kirby & Petrocchi (2020)
Features of individual sessions	Description of each session is provided in the study's appendix.
|In between session work	Participants were encouraged to listen audio recordings of compassion imagery practises done in the sessions as a part of in between sessions practice.

Table 3B

Summary of findings in Carter, Gilbert & Kirby (2020) study

Item measured	Instrument measured by	Findings
Body weight shame	BISS	Significant effect across time. 2 participants at the end of the intervention and 3 at the follow up showed significant reliable change.
Compassion engagement and action	CEAS	Non-significant effect on compassionate action and engagement with self-compassion, compassion to others and from others. At the end of the intervention 4 participants had significant reliable change scores for self-compassion engagement and 2 for compassionate engagement from others. This was maintained at the follow up with 1 participant reporting significant reliable change for compassionate engagement from others.

External shame	OAS	Significant effect across time. 2 participants reported significant reliable change at the end of the intervention, and it was maintained at the follow up.
Social comparison	SCS	No significant effect. 2 participants reported significant reliable change at the end of the intervention, and all of them did at the follow up.
Eating attitudes	EAT-26	Non-significant effect. Significant reliable change in 3 participants at the end of intervention in 4 the follow up.
Physical activity	IPAQ	Non-significant effect. 2 participants reported significant reliable change at the end of the intervention .

4) Dalen, Smith, Shelley, Sloan, Leahigh & Begay (2010) Pilot study: Mindful Eating and Living (MEAL): Weight, eating behavior, and psychological outcomes associated with a mindfulness-based intervention for people with obesity

The study investigated the effect of group-based mindfulness training. 10 participants were recruited through Young Men's Christian Association. The intervention lasted for 6 weeks. All participants completed the same group. The self-reported measures were administered before the group, after the group ended and at the 3 month follow-up.

Table 4A

Group characteristics in Dalen et al. (2010) study

Referrals	No details provided
Inclusion criteria	People with BMI of 30 or more who are willing to commit to the group and research.
Exclusion criteria	People with acute mood disorders, psychosis and current substance use.
Facilitators	No details provided
Structure of intervention	No details provided
Features of individual sessions	• Mindfulness meditation • Group eating exercises

	• Group discussions • Education on diet, exercises, calories and nutrition
In between session work	• Written materials and compact discs used at home • 10 min mindfulness meditation daily • Mindful eating

Table 4B

Summary of findings in Dalen et al. (2010) study

Item measured	Instrument measured by	Findings
Eating behaviour	TFEQ & BES	Significant increases in cognitive restraint was found at the end of the group and at the follow up; Significant decrease in disinhibition and loss of control over eating were found at the end of the group and at the follow up; significant decrease in hunger was found at the end of the group.
Depression and anxiety symptoms	BDI & BAI	Moderate to large decrease in depression symptoms at the end of the group and at the follow up; significant decrease in anxiety was found at the end of the group.
Perceived stress	PSS	Moderate decrease was found at the follow up
Affect	PANAS	Moderate to large decrease in negative affect at the end of the group and at the follow up; no differences in positive effect.
Physical symptoms	No standardised measure	Moderate to large decrease at the end of the group and at the follow up
Mindfulness	KIMS	Moderate to large increases at the end of the group and at the follow up
Weight and inflammation markers	NA	Significant weight loss in all participants; reduction in C reactive protein; no significant changes in markers associated with cardiovascular risk.

5) Daubenmier, Kristeller, Hecht, Maninger, Kuwata, Jhaveri, Lustig, Kemeny, Karan & Epel (2011). Mindfulness Intervention for Stress Eating to Reduce Cortisol and Abdominal Fat among Overweight and Obese Women: An Exploratory Randomized Controlled Study

The RTC, with a waitlist serving as a control group, that investigated effects of a mindfulness intervention. 53 women were recruited from the general public using social media and flyers. The intervention lasted for 10 weeks. All participants completed the same group. The data was collected before and after the intervention.

Table 5A

Group characteristics in Daubenmier et al. (2011) study

Referrals	• Self-referrals
Inclusion criteria	English literate women with BMI 25-40, weighting less than 300lb, with no history of bilateral oophorectomy, hysterectomy or polycystic ovary syndrome, had no active endocrinologic disorder, not currently on a diet, with no self-reported eating disorders or substance or alcohol addiction, ha negative test for Diabetes or opiate use, not taking steroids or antipsychotics, had no prior experience of Mindfulness Based Stress Reduction (MBSR
Exclusion criteria	Women who were pregnant, less than one year postpartum, breastfeeding, have been through Menopause, had Diabetes or used medication like hormonal supplements that could affect weight and insulin levels, who were practising yoga or meditation.
Facilitators	No details provided

Structure of intervention	• Components were drawn from:
	  ○ Mindfulness Based Stress Reduction (MBSR)
	  ○ Mindfulness Based Cognitive Therapy (MBCT)
	  ○ Mindfulness Based Eating Awareness Training (MB-EAT)

Features of individual sessions	• Session opens with mindfulness practice • Followed by discussion about practice • Review of progress and challenged since the last session • Guided meditations • Discussion to introduce new practices On the retreat day participants did meditations and mindful eating practices in silence.
|In between session work	• Daily homework

Table 5B

Summary of findings in Daubenmier et al. (2011) study

Item measured	Instrument measured by	Findings
Mindfulness	KIMS	Significant improvement in intervention group in awareness, observation and acceptance subscales
Body responsiveness	The Body Responsiveness Scale	Significant increase
Chronic stress	The Wheaton Chronic Stress Inventory	Treatment group significantly decreased in trait anxiety
Eating behaviours	DEBQ	Treatment group demonstrated significant decrease in external eating
Salivary cortisol	Saliva samples	No statistical significance
Serum cortisol	Fasting blood samples	No statistical significance
Anthropometric variables	Stadiometer, digital scale and tape measure	No statistical significance
Body fat	DEXA scans	No significant change

6) Genis, Kayalar, Donmez & Cosar (2022). Effect of structured cognitive-behavioral group therapy on body weight, mental status and the quality of life in obese and overweight individuals: A 16-week follow up study

The study aimed to explore the effectiveness of Cognitive Behavioural Therapy (CBT) based group. 40 people consulting the psychiatry and endocrinology outpatient clinics for weight loss took part in the study. Multiple groups were run simultaneously, so one group would be made up of 8-10 people. The intervention lasted for 16 weeks. The self-reported data was collected at the start of the intervention, at the 8th, 12th and 16th weeks.

Table 6A

Group characteristics in Genis, Kayalar, Donmez & Cosar (2022) study

Referrals	• Unclear
Inclusion criteria	People with BMI >=25
Exclusion criteria	having severe mental disorders, unstable hormonal disorders, pregnancy and lactation; use of or inability to discontinue agents for weight loss or which may affect weight change.
Facilitators	A team of therapists, trained and experienced in the subject, including a professor of psychiatry, a psychiatrist and a psychiatry nurse
Structure of intervention	• Getting the group members acquaintanted with each other, explaining the group therapy rules and the CBT program to be delivered and establishing the basis of collaboration between the participants and with the therapy team. (session 1) • Explanation of the rationale for behavioral change, determination of the diet list and planned meals (session 2) • Organising the environment, awareness during eating, appointing a diet coach (session 3) • Continuation of behavioral therapy, exercise planning, discussing different types of hunger (session 4) • Discussing emotional eating (session 5) • Description of automated thinking, discussing cognitive distortions (session 6) • Continuation of cognitive intervention, formation of alternative thoughts (session 7) • General assessment, discussion of the methods to prevent recurrence (session 8) • General assessment, determining and discussing the problem areas (session 12 and 16)
Features of individual sessions	The first 15 minutes were allocated to mood control, follow up on homework and conversations on the session agenda, and the planned therapeutic programs were undertaken during the following 30 to 40 minutes. The sessions were closed by 5-10 minutes of going over the session content and planning the new homework
|In between session work	Homework assignments

Table 6B

Summary of findings in Genis, Kayalar, Donmez & Cosar (2022) study

Item measured	Instrument measured by	Findings
Depressive symptoms	BDI	Significant improvement at week 8, 12 and 16 compared to baseline
Anxiety symptoms	BAI	Significant improvement at week 8, 12 and 16 compared to baseline
Quality of life	OQOLS	Significant improvement at week 8, 12 and 16 compared to baseline
Eating behaviours	DEBQ	Emotional eating: Significant improvement at week 8, 12 and 16 compared to baseline. Significant improvement at week 16 compared to week 12. Restrained eating: Significant improvement at week 8, 12 and 16 compared to baseline. External eating: Significant improvement at week 8, 12 and 16 compared to baseline. Significant improvement at week 12 compared to 8 and week 16 compared to 12.
Dysfunctional attitudes about diet	DRDAS	Significant improvement at week 8, 12 and 16 compared to baseline
Self esteem	RSES	Significant improvement at week 8, 12 and 16 compared to baseline
Physical activity	IPAQ	Significant improvement at week 8, 12 and 16 compared to baseline
BMI	Weighted by clinicians	Significant improvement at week 8, 12 and 16 compared to baseline. Significant improvement at week 12 and 16 compared to week 8. Significant improvement at week 16 compared to week 12.
Weight	Weighted by clinicians	Significant improvement at week 8, 12 and 16 compared to baseline. Significant improvement at week 12 and 16 compared to week 8. Significant improvement at week 16 compared to week 12.

7) Meekums, Vaverniece, Majore-Dusele & Rasnacs (2012) Dance movement therapy for obese women with emotional eating: A controlled pilot study

The study explored the effectiveness of Dance Movement Therapy (DMT). 92 women from a commercial weight loss programme who met criteria for emotional eating participated. The study had three groups: the exercise control group, the non-exercise control group and DMT. The intervention lasted for 5 weeks. Two groups were run. The self-reported data was collected before and after the intervention.

Table 7A

Group characteristics in Meekums et al. (2012) study

Referrals	• Self-referrals
Inclusion criteria	Women who were emotional eaters (based on DEBQ outcome)with BMI of 28 or above, who engaged in weight loss programme either face to face or online
Exclusion criteria	No details
Facilitators	2 study authors who were doing MSc in art therapies
Structure of intervention	• Formative, warm up stage (sessions 1-2) • Differentiation and intimacy stages (session 3-8) • Separation and closure stage (session 9-10) • More details of the programme available in the paper
Features of individual sessions	No details
|In between session work	No details

Table 7B

Summary of findings in Meekums et al (2012) study

Item measured	Instrument measured by	Findings
General distress	CORE-OM	Significant improvement in the intervention group
Body image distress	SIBID	Significant improvement in the intervention group
Self esteem	RSES	Significant improvement in the intervention group
Eating behaviours	DEBQ	Significant improvement in the intervention group
BMI	NA	Significant improvement

8) Palmeira, Cunha & Pinto-Gouveia (2019) Processes of change in quality of life, weight self-stigma, body mass index and emotional eating after an acceptance-, mindfulness- and compassion-based group intervention (Kg-Free) for women with overweight and obesity

The study investigated the efficacy of acceptance and commitment therapy (ACT), mindfulness and compassion-based groups. 60 women who participated in a weight loss programme in primary care or hospital were invited to take part in the group on the day of their medical appointment. The intervention lasted for 14 weeks. It is unclear if all participants attended the same group. The data was collected at the start, the end of the group and 3 months after the group had ended.

Table 8A

Group characteristics in Palmeira, Cunha & Pinto-Gouveia (2019) study

Referrals	• Self-referrals
Inclusion criteria	Women age 18-55 with BMI of 25 or greater, enrolled in nutritional treatments for weight loss in primary care units and hospitals in Coimbra district
Exclusion criteria	Binge eating disorder, severe psychiatric problems, medical conditions that affect weight, medication that affect appetite or weight use
Facilitators	No details
Structure of intervention	Psychoeducation (sessions 2 & 3) Values and committed action (session 4) Acceptance and diffusion skills (sessions 5-7) Self-compassion (session 8) Experiential exercises (sessions 9-10)
Features of individual sessions	• 30 min of shared experience at the start • 5 min mindfulness practice • Session content • Eating mindfulness practice • Establishing practices for the week
|In between session work	• Homework practices of mindfulness or self-compassion exercises

Table 8B

Summary of findings in Palmeira, Cunha & Pinto-Gouveia (2019) study

Item measured	Instrument measured by	Findings
BMI	Composition Analyser (Tanita TBF-300)	Significant improvement at the end of the group and at the follow up compared to baseline. No significant difference between after the group and follow up
Internalised weight stigma	WSSQ	Significant improvement at the end of the group and at the follow up compared to baseline. No significant difference between after the group and follow up
Obesity related quality of life	ORWELL-97	Significant improvement at the end of the group and at the follow up compared to baseline. No significant difference between after the group and follow up

Eating behaviours	TFEQ-R21	Significant improvement at the end of the group and at the follow up compared to baseline. Significant improvement at the follow up compared to after the group.
Weight related experiential avoidance	AAQW-R	Significant improvement at the end of the group and at the follow up compared to baseline. No significant difference between after the group and follow up
External shame	OAS	Significant improvement at the end of the group and at the follow up compared to baseline. No significant difference between after the group and follow up
Self-compassion	SCS	Significant improvement at the end of the group and at the follow up compared to baseline. No significant difference between after the group and follow up
Self-judgement	SCS	Significant improvement at the end of the group and at the follow up compared to baseline. No significant difference between after the group and follow up
Mindfulness	FFMQ-15	Significant improvement at the end of the group and at the follow up compared to baseline. No significant difference between after the group and follow up

9) Rapoport, Clark & Wardle (2000) Evaluation of a modified cognitive behavioural programme for weight management

This study investigated modified CBT's efficacy compared to standard CBT. 84 women were invited to take part in the group via letters to GPs, posters in health centres and advertising in local media. The intervention lasted for 10 weeks. Three groups were run. The data was collected at the start, the end of the group, 6 and 12 months after the group had ended.

Table 9A

Group characteristics in Rapoport, Clark & Wardle (2000) study

Referrals	• Self-referrals
Inclusion criteria	Women aged 18-65 with BMI of 28 or greater, being identified by their GP as suitable for group intervention for obesity and not being involved in other weight management method.
Exclusion criteria	Serious psychiatric or medical conditions, insulin dependent diabetes, pregnancy or lactation.
Facilitators	Dietitian and health psychologist who received training and supervision in CBT methodology
Structure of intervention	Topics: ○ A healthy lifestyle approach to weight management ○ Regularizing eating ○ Healthy eating-the essentials ○ Becoming more active ○ Healthy eating-applying the essentials ○ Developing self-control ○ Stress management ○ Social support and assertion ○ Improving body image ○ Preparing for the future ○ Detailed break down of intervention is available in the paper
Features of individual sessions	• Detailed description is not available
|In between session work	• Daily self-monitoring of patterns of eating, food intake, activity levels, and slips from healthy eating plan • Participants were encouraged to start walking programme and increase it weekly

Table 9B

Summary of findings in Rapoport, Clark & Wardle (2000) study

Item measured	Instrument measured by	Findings
Weight and body fat distribution	Soehnle electronic weighting scale; 2m adult mini meter;	No significant weight loss in experimental group at the end of the intervention, but significant weight loss in control group. By 12 months follow up weight loss was significant in both groups. Significant changes in both groups in waist and hip circumference
Fasting lipids and glucose	Blood test	Significant changes in both groups in cholesterol after the intervention and at the 12 months follow up.

Blood pressure	A&D UA-751 semiautomated sphygmomanometer	Significant changes in both groups in systolic and diastolic blood pressure as the time went on.
General wellbeing	GHQ	Significant improvement over time in both groups
Depression	BDI	Significant improvement over time in both groups
Self esteem	RSE	Significant improvement over time in both groups
Stress	PSS	Significant improvement over time in both groups
Binge eating	BES	Significant improvement over time in both groups
Eating style	TFEQ	Significant improvement over time in both groups
Body satisfaction	BSS	Significant improvement over time in both groups
Body image avoidance	BIAQ	Significant improvement over time in both groups
Nutrient intake	EPIC food frequency questionnaire	Significant improvement over time in both groups
Fitness	Techumseh step test	Improvement over time in both groups, but statistical significance is not clear
Physical activity	Physical activity questionnaire	Significant improvement over time in both groups

10) Rosen, Orosan & Reiter (1995) Cognitive Behavior Therapy for Negative Body Image in Obese Women

The study compared CBT to no treatment control group on people who looked to improve their body image. 77 participants were recruited by responding to a newspaper announcement or by being referred by a healthcare professional. Six treatment groups were run. The intervention was supposed to last for 8 weeks, but if one member was unavailable to join the session, it was rescheduled, resulting in the groups lasting between 8-12 weeks. The data was collected before the treatment, 2 weeks after the treatment, and 4.5 months after the treatment had ended.

Table 10A

Group characteristics in Rosen, Orosan & Reiter (1995) study

Referrals	• Self referrals • Referrals from mental health therapist or physicians
Inclusion criteria	People with BMI equal or greater to 27.3
Exclusion criteria	Severe eating disorder, psychotic disorders
Facilitators	The authors of the study: a clinical psychologist and two post masters clinical psychology students
Structure of intervention	• Intervention was modelled after cognitive behavioral body image therapy of Rosen et al. 1989 & 1990 • Aims: ○ Overview of body image and social aspects of being overweight (session 1) ○ Individual factors in negative body image (session 2) ○ Distress tolerance of physical appearance (session 3) ○ Maladaptive assumptions about appearance and cognitive restructuring (session 4) ○ Strengthening cognitive restructuring skills (session5) ○ Planning exposure assignments (session 6) ○ Planning of exposure assignments with increased difficulty (session 7) ○ Planning exposure and response prevention assignments (session 8)
Features of individual sessions	• Detailed description of each session is available in the paper
|In between session work	• Homework via audiotapes and workbook

Table 10B

Summary of findings in Rosen, Orosan & Reiter (1995) study

Item measured	Instrument measured by	Findings
Body dysmorphic disorder	BDDE	Significant improvement at the end of the treatment and at 4.5 months follow up
Body image	BSQ	Significant improvement at the end of the treatment and at 4.5 months follow up
Perception of body size	Size estimation procedure	Significant improvement at the end of the treatment and at 4.5 months follow up

Psychological distress	BSI	Significant improvement at the end of the treatment and at 4.5 months follow up
Self esteem	RSE	Significant improvement at the end of the treatment and at 4.5 months follow up
Eating disorder symptoms	EDE	Significant improvement at the end of the treatment and at 4.5 months follow up in eating concern and significant improvement at the end of the intervention in restraint
Weight	NA	No significant change

11) Sairanen, Tolvanen, Karhunen, Kolehmainen, Järvelä-Reijonen, Lindroos, Peuhkuri, Korpela, Ermes, Mattila & Lappalainen (2017) Psychological flexibility mediates change in intuitive eating regulation in acceptance and commitment therapy interventions

This study explored mechanisms of change in intuitive eating and weight ACT intervention for overweight people. 219 participants were recruited through advertisements in local newspapers. Participants were divided into three groups: ACT face-to-face group, ACT mobile intervention group, and no treatment control group. The face to face group lasted for 6 sessions over 8 weeks. It is unclear how many face-to-face ACT groups were run in the study. The data was collected before the treatment, after the treatment and at 6 months follow-up.

Table 11A

Group characteristics in Sairanen et al. (2017) study

Referrals	• Self-referrals
Inclusion criteria	People aged 25-60, with BMI 27-34.9 (based on self-reported weight and height) reporting symptoms of perceived psychological distress.
Exclusion criteria	No details provided
Facilitators	No details provided
Structure of intervention	Topics: ○ My life here and now (session 1) ○ Values and mindful living (session 2) ○ Value based actions and barriers (session 3) ○ The observing self and acceptance (session 4) ○ Mindful eating (session 5) ○ Summary and reflections (session 6)

Features of individual sessions	• A reference for detailed description of each session is provided in the paper
	• Each session included
	  ○ experiential exercise based on ACT model
	  ○ pair and group discussions

In between session work	• Homework related to the topic of the session

Table 11B

Summary of findings in Sairanen et al. (2017) study

Item measured	Instrument	Findings
Intuitive eating	IES	Subscale *Eating for Physical rather than Emotional Reasons*, increased significantly in the face-to-face and mobile groups compared with the control group. This significant improvement was found at the end of the intervention compared to baseline, but not at the follow up compared to the end of the intervention. No significant changes found in other two subscales, *Unconditional Permission to Eat* and *Reliance on Internal Hunger and Satiety Cues,* and in total IES score.
Mindfulness	FFMQ	Subscale *Tendency for Observing* increased significantly in face to face and mobile groups in comparison to the control group from the pre- to the post-intervention. Total score and other two subscales*, Acting with awareness* and *Non-reactivity to inner experiences*, were significant in face-to-face and mobile group, but improved more in mobile intervention. The two scales were non-significant in both groups compared to the control group. In the mobile group, the FFMQ total increased significantly more compared with control from the pre- to the post-intervention measurement
Psychological flexibility	AAQ-II	Psychological flexibility for weight improved significantly in face-to-face and mobile group compared with the control group from pre intervention to the post intervention, but not from the post to the follow up
Sense of coherence	SOC-13	No significant changes
Weight		No significant changes

BMI	No significant changes. Indirectly effected by psychological flexibility, mindfulness and sense of coherence

12) Tanco, Linden & Earle (1998) Well-Being and Morbid Obesity in Women: A Controlled Therapy Evaluation

The study investigated the effectiveness of a cognitive group treatment programme by comparing it to behaviour weight loss program and a waitlist control group. 62 women were recruited via radio announcements, newspaper articles and referrals from the eating disorder resource centre. The intervention lasted for 8 weeks. Two cognitive groups were run. The data was collected before the treatment, at mid-treatment, after the treatment and at 6 months follow-up.

Table 12A

Group characteristics in Tanco, Linden & Earle (1998) study

Referrals	• Self-referrals • Referrals from healthcare workers
Inclusion criteria	Women aged 19 or older, no medical condition affecting exercising , BMI 30 or above, at least 10 years of being obese and at least 3 previous unsuccessful attempts to manage increased weight.
Exclusion criteria	Psychopathology
Facilitators	Clinical psychology graduate students, with relevant work and academic experience

Structure of intervention	• Borrowed from cognitive, feminist, systemic, dynamic and behavioural principles
	• Individualised and client cantered
	• Personal disclosures and discussions were encouraged
	• Topics
	  ○ Introduction, exercise and self-efficacy
	  ○ Non dieting approach and nutrition
	  ○ Non hunger reasons for eating and problem-solving techniques
	  ○ Depression/cognitive distortions
	  ○ Assertiveness and relaxation
	  ○ Healthy relationship with one's body
	  ○ Relapse prevention
	  ○ Review

Features of individual sessions	Details not provided
In between session work	• Readings about non dieting approach and exercise were assigned

Table 12B

Summary of findings in Tanco, Linden & Earle (1998) study

Item measured	Instrument measured by	Findings
Depressive symptoms	BDI	Improved significantly over time in the cognitive intervention group. No significant changes at follow up
Self esteem	SCS	Significantly improved by mid treatment in the cognitive intervention. No significant changes at follow up
Eating disorders symptoms	EDI	Improved significantly in cognitive intervention over time, except subscale of perfectionism which did not change significantly. No significant changes at follow up
Anxiety symptoms	STAI	Improved significantly over time in the cognitive intervention group. No significant changes at follow up
Exercising	Self-reported	Significant improvement in cognitive intervention group. No significant changes at follow up
Weight and BMI	Self-reported	Significant improvements in cognitive and behavioural interventions. No significant changes at follow up

Appendix B: Papers quality assessment using revised Cochrane risk-of-bias tool for randomized trials (RoB 2.)

	Paper-2 - Cancian et al. (2019)	**Paper-5**- Daubenmier et al. (2011)	**Paper-7**- Meekums et al. (2012)	**Paper-9**- Rapoport, Clark & Wardle (2000)	**Paper-10**- Rosen, Orosan & Reiter (1995)	**Paper-11**- Sairanen et al. (2017)	**Paper-12**- Tanco, Linden & Earle (1998)
Domain 1: Risk of bias arising from the randomization process							
1.1 Was the allocation sequence random?	Y	Y	N	Y	PY	PY	PY
1.2 Was the allocation sequence concealed until participants were enrolled and assigned to interventions?	NI	N	PN	Y	PY	NI	NI
1.3 Did baseline differences between intervention groups suggest a problem with the randomization process?	N	N	PN	PY	N	NI	N
Risk-of-bias judgement	Low risk of bias	Low risk of bias	Some concerns	Low risk of bias	Low risk of bias	Some concerns	Some concerns
Domain 2: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)							
2.1. Were participants aware of their assigned intervention during the trial?	Y	Y	Y	Y	PY	PY	PY

2.2. Were carers and people delivering the interventions aware of participants' assigned intervention during the trial?	Y	Y	Y	Y	Y	Y	Y
2.3. If Y/PY/NI to 2.1 or 2.2: Were there deviations from the intended intervention that arose because of the trial context?	Y	NI	NI	NI	NI	NI	Y
2.4 If Y/PY to 2.3: Were these deviations likely to have affected the outcome?	N	NA	NA	NA	NA	NA	PY
2.5. If Y/PY/NI to 2.4: Were these deviations from intended intervention balanced between groups?	NI	NA	NA	NA	NA	NA	Y
2.6 Was an appropriate analysis used to estimate the effect of assignment to intervention?	Y	Y	Y	Y	Y	PY	Y
2.7 If N/PN/NI to 2.6: Was there potential for a substantial impact (on the result) of the failure	NA	NA	NA	NA	NA	NA	NA

to analyse participants in the group to which they were randomized?							
Risk-of-bias judgement	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns
Domain 2: Risk of bias due to deviations from the intended interventions (effect of adhering to intervention)							
2.1. Were participants aware of their assigned intervention during the trial?	Y	Y	Y	Y	PY	Y	NI
2.2. Were carers and people delivering the interventions aware of participants' assigned intervention during the trial?	Y	NI	Y	Y	Y	Y	Y
2.3. [If applicable:] If Y/PY/NI to 2.1 or 2.2: Were important non-protocol interventions balanced across intervention groups?	NA	NA	NA	NA	NA	NA	NA
2.4. [If applicable:] Were there failures in implementing the intervention that could have affected the outcome?	Y	NA	NA	NA	NI	PN	PN
2.5. [If applicable:] Was there non-adherence to the assigned	N	NI	Y	NI	NI	NI	Y

intervention regimen that could have affected participants' outcomes?							
2.6. If N/PN/NI to 2.3, or Y/PY/NI to 2.4 or 2.5: Was an appropriate analysis used to estimate the effect of adhering to the intervention?	Y	NI	PY	Y	Y	N	Y
Risk-of-bias judgement	Low risk of bias	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Some concerns	Some concerns
Domain 3: Missing outcome data							
3.1 Were data for this outcome available for all, or nearly all, participants randomized?	Y	Y	Y	Y	Y	NI	N
3.2 If N/PN/NI to 3.1: Is there evidence that the result was not biased by missing outcome data?	NA	NA	NA	NA	NA	NI	Y
3.3 If N/PN to 3.2: Could missingness in the outcome depend on its true value?	NA	NA	NA	NA	NA	NI	NA
3.4 If Y/PY/NI to 3.3: Is it likely that missingness in the outcome depended on its true value?	NA	NA	NA	NA	NA	NI	NA

Risk-of-bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Some concerns	Low risk of bias
Domain 4: Risk of bias in measurement of the outcome							
4.1 Was the method of measuring the outcome inappropriate?	N	N	N	N	N	N	N
4.2 Could measurement or ascertainment of the outcome have differed between intervention groups?	N	N	N	N	N	N	N
4.3 If N/PN/NI to 4.1 and 4.2: Were outcome assessors aware of the intervention received by study participants?	NI	NI	Y	NI	Y	NI	PY
4.4 If Y/PY/NI to 4.3: Could assessment of the outcome have been influenced by knowledge of intervention received?	N	N	N	N	N	N	PN
4.5 If Y/PY/NI to 4.4: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?	N	N	NA	NA	NA	NA	NA

Risk-of-bias judgement	Low risk of bias	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Domain 5: Risk of bias in the selection of the reported result							
5.1 Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?	NI	NI	NI	NI	NI	PY	NI
Is the numerical result being assessed likely to have been selected, on the basis of the results, from... 5.2. ... multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?	N	N	N	N	N	N	N
Is the numerical result being assessed likely to have been selected, on the basis of the results, from... 5.3 ... multiple eligible analyses of the data?	N	N	N	N	N	PN	PN
Risk-of-bias judgment	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias

The overall risk of bias							
Risk-of-bias judgment	Low risk of bias	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Some concerns	Low risk of bias

Answer options: Y=Yes; PY=Probably yes; N=No; NI=No information.

Bias judgment options: Low risk of bias; Some concerns; or High risk of bias.

Appendix C: Papers quality assessment using the risk of bias in non-randomized studies of interventions (ROBINS-I) assessment tool

	Paper-1- Beaulac, Sandre & Mercer (2019)	Paper-3- Carter, Gilbert & Kirby (2020)	Paper-4- Dalen et al. (2010)	Paper-6- Genis et al. (2022)	Paper-8- Palmeira, Cunha,& Pinto-Gouveia (2019)
Bias due to confounding					
1.1 Is there potential for confounding of the effect of intervention in this study? If N/PN to 1.1: the study can be considered to be at low risk of bias due to confounding and no further signalling questions need be considered	PY	PN	PY	PY	PY
If Y/PY to 1.1: determine whether there is a need to assess time-varying confounding:					
1.2. Was the analysis based on splitting participants' follow up time according to intervention received? If N/PN, answer questions relating to baseline confounding (1.4 to 1.6)	N	NA	N	N	N

If Y/PY, proceed to question 1.3					
1.3. Were intervention discontinuations or switches likely to be related to factors that are prognostic for the outcome? If N/PN, answer questions relating to baseline confounding (1.4 to 1.6) If Y/PY, answer questions relating to both baseline and time-varying confounding (1.7 and 1.8)	NA	NA	NA	N	N
Questions relating to baseline confounding only					
1.4. Did the authors use an appropriate analysis method that controlled for all the important confounding domains?	PN	PN	PY	PY	PY
1.5. If Y/PY to 1.4: Were confounding domains that were controlled for measured validly and reliably by the variables available in this study?	NI	NI	NI	NI	NI
1.6. Did the authors control for any post-intervention variables that could have been affected by the intervention?	N	N	N	N	N
Questions relating to baseline and time-varying confounding					
1.7. Did the authors use an	PY	PY	PY	PY	PY

appropriate analysis method that adjusted for all the important confounding domains and for time varying confounding?					
1.8. If Y/PY to 1.7: Were confounding domains that were adjusted for measured validly and reliably by the variables available in this study?	NI	NI	NI	NI	NI
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Bias in selection of participants into the study					
2.1. Was selection of participants into the study (or into the analysis) based on participant characteristics observed after the start of intervention? If N/PN to 2.1: go to 2.4	N	N	N	N	N
2.2. If Y/PY to 2.1: Were the post intervention variables that influenced selection likely to be associated with intervention?	NA	NA	NA	NA	NA
2.3 If Y/PY to 2.2: Were the post intervention variables that influenced selection likely to be influenced by the outcome or a cause of the outcome?	NA	NA	NA	NA	NA
2.4. Do start of follow-up and start of intervention	Y	Y	Y	Y	Y

coincide for most participants?					
2.5. If Y/PY to 2.2 and 2.3, or N/PN to 2.4: Were adjustment techniques used that are likely to correct for the presence of selection biases?	NA	NA	NA	NA	NA
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Bias in classification of interventions					
3.1 Were intervention groups clearly defined?	Y	Y	Y	Y	Y
3.2 Was the information used to define intervention groups recorded at the start of the intervention?	PY	PY	PY	PY	PY
3.3 Could classification of intervention status have been affected by knowledge of the outcome or risk of the outcome?	Y	Y	PN	PN	PN
Risk of bias judgement	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias
Bias due to deviations from intended interventions					
If your aim for this study is to assess the effect of assignment to intervention, answer questions 4.1 and 4.2					
4.1. Were there deviations from the intended intervention beyond what would be expected in usual practice?	N	N	N	N	N
4.2. If Y/PY to 4.1: Were these deviations from intended intervention unbalanced	NA	NA	NA	NA	NA

between groups and likely to have affected the outcome?					
If your aim for this study is to assess the effect of starting and adhering to intervention, answer questions 4.3 to 4.6					
4.3. Were important co-interventions balanced across intervention groups?	PY	NA	NA	NA	NA
4.4. Was the intervention implemented successfully for most participants?	Y	Y	Y	PY	Y
4.5. Did study participants adhere to the assigned intervention regimen?	Y	Y	Y	PY	PY
4.6. If N/PN to 4.3, 4.4 or 4.5: Was an appropriate analysis used to estimate the effect of starting and adhering to the intervention?	NA	NA	NA	NA	NA
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Bias due to missing data					
5.1 Were outcome data available for all, or nearly all, participants?	Y	Y	Y	PY	PY
5.2 Were participants excluded due to missing data on intervention status?	N	Y	N	NI	N
5.3 Were participants excluded due to missing data on other variables needed for the analysis?	N	NA	N	NI	N
5.4 If PN/N to 5.1, or Y/PY to 5.2 or 5.3: Are the	NA	NA	NA	NA	NA

proportion of participants and reasons for missing data similar across interventions?					
5.5 If PN/N to 5.1, or Y/PY to 5.2 or 5.3: Is there evidence that results were robust to the presence of missing data?	NA	NI	NI	NA	NA
Risk of bias judgement	Low risk of bias	Low risk of bias	Some concerns	Some concerns	Some concerns
Bias in measurement of outcomes					
6.1 Could the outcome measure have been influenced by knowledge of the intervention received?	N	N	PN	PN	PN
6.2 Were outcome assessors aware of the intervention received by study participants?	Y	Y	PY	PY	N
6.3 Were the methods of outcome assessment comparable across intervention groups?	Y	NA	NA	Y	NI
6.4 Were any systematic errors in measurement of the outcome related to intervention received?	N	N	N	N	N
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Bias in selection of the reported result					
Is the reported effect estimate likely to be selected, on the basis of the results, from...					
7.1. ... multiple outcome measurements within the outcome domain?	N	N	N	N	N

7.2 ... multiple analyses of the intervention outcome relationship?	N	NI	N	N	N
7.3 ... different subgroups?	N	N	N	N	N
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Overall bias					
Risk of bias judgement	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias

Answer options: Y=Yes; PY=Probably yes; N=No; NI=No information.

Bias judgement options: Low risk of bias; Some concerns; or High risk of bias.

Appendix D: Body Appreciation Scale-2 (BAS-2)

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Appendix E: Clinical Outcomes in Routine Evaluation 10 (CORE-10)

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Appendix F: Disordered Eating Questionnaire (DEQ) (modified)

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Appendix G: Experiential Shame Scale (ESS)

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Appendix H: The Three-Factor Eating Questionnaire-Revised (TFEQ-R18)

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Appendix I: Single-item questions

Dear research participant,

3 questions below will help us monitor changes that people may experience due to CFT group intervention. When answering the questions, think about your recent experiences.

1)Have you felt your self-esteem influenced (positively or negatively) by thoughts about your intake of food or calories?
Please answer with a number from 0 to 6, where 0 = not at all and 6= very much.

2) Have you felt ashamed of the sort of person you are?
a)Not at all
b)A little
c)Moderately
d)Very much

3) I feel love for my body.
a)Never
b)Seldom
c)Sometimes
d)Often
e)Always

Thank you
Research team

Appendix J: Interview questions

1)What would you say had the biggest impact on you as the result of the work you did in the group?

2) How did the work during the group affect your relationship with your body ?

3) How did the work during the group affect your relationship with food ?

4) Has anything else happened in your life in the last 12 weeks that had an impact on your psychological wellbeing, sense of shame, relationship with food or your body?

5)Is there anything else about your experience of the work you did in the group that is important and that you would like to mention?

Appendix K: Ethical approval from an NHS Research Ethics Committee

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Appendix L: Ethical approval from the Research and Development Department of the host trust

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Appendix M: Participant information sheet

Canterbury Christ Church University

IRAS ID 310380

PARTICIPANTS' INFORMATION SHEET
Version no. 2 Date: 12/05/2022

Body image, psychological distress, shame and disordered eating in patients in a Tier 3 weight management service receiving an online delivered, group based, Compassion Focused Therapy (CFT) informed psychological intervention.

SUMMARY INFORMATION

Introduction
Hello. My name is Ugne Tartilaite, and I am a trainee clinical psychologist at Canterbury Christ Church University. I would like to invite you to take part in a research study in the Tier 3 weight management service. This study is an educational project undertaken as part of my studies to be a psychology doctor. Before you decide whether to take part, it is important that you understand why the research is being done and what it asks of you.

Talk to others about the study if you wish as this may help you decide what you would like to do.

The research team
The research team for this project consists of:
Professor Margie Callanan (supervisor from the University)
Dr Sonya Tsancheva (supervisor based in the service)
Dr Fergal Jones (sponsor from the University)
Ugne Tartilaite (me, the lead researcher)

"We" in the following text refers to the "research team".

What is the purpose of the project?
We are interested in looking at the outcomes from a group-based therapy, that uses Compassion, particularly for things that relate to feelings, behaviours and distress. Some of these feelings might be around 'shame', and some of the behaviours might relate to how our bodies are seen by us, and the eating patterns we engage in. The study aims to learn more about what a good support therapy would be for people using weight management services.

Brief outline of the study
In this research study we will use participants' self-reported information. We will only use information that we need for the research study. We will let very few people know your name or contact details, and only if they really need it for this study.
Everyone involved in this study will keep your data safe and secure. We will also follow all privacy rules.
At the end of the study, we will save some of the data in case we need to check it later or use it for future research.
We will make sure no-one can work out who you are from the reports we write.
The information pack tells you more about this.

Canterbury Christ Church University

FURTHER INFORMATION FOR PARTICIPANTS

Why have I been invited?
You have been invited to participate in the study because you use a Tier 3 weight management service. The psychologist in the service identified you as someone who may benefit from CFT based online group intervention following your initial consultation with her.

We aim to recruit 10-12 participants in total.

What are inclusion and exclusion criteria to take part in the research?
The CFT based group intervention will be offered when clinically and ethically appropriate (see the exclusion and inclusion criteria below). Taking part in the intervention and signing up for the research will not affect the care you receive from the service.

Inclusion criteria:

- adults with BMI over 30 or BMI over 25 with Diabetes who use a Tier 3 weight management service.

Exclusion criteria:

- group intervention considered clinically inappropriate.
- not being able to commit to a 12-week intervention,
- Sensitivities with regard to others that would be disruptive to taking part,
- moderate to severe learning difficulties,
- current alcohol or drug abuse.

Do I have to take part?
It is up to you to decide whether to join the study. If you agree to participate, you will be asked to sign a consent form.

How will we use information about you?
We will use information about you to help us describe the group of people taking part, for example:

- gender,
- relationship status,
- employment status,
- age,
- ethnicity,
- religion
- sexual orientation

We collect demographic data, that is information about your age, ethnicity and so on, to describe the participants who took part in the study. Describing participants in this way gives important information for the study findings, allows assessment of how relevant the study will be to others similar to you, tells readers about the range of people who were involved. All of this can help show the value of the study in answering the questions it sets out to address, and if the study could inform similar research in the future.

The data, or information, will only be used for research purposes. If I cannot access some of this data, I may send you an email asking to clarify.

I will ask for your telephone number and email address so that I could schedule the end of the group telephone interview.

Please note, I may remind you to complete questionnaires using your email address, because it is important that we have a full set of information. This will help us answer the study questions. I will be try not to be bothering you too much with reminder emails and will not email you more than once a week.

What are your choices about how your information is used?

- You can stop being part of the study at any time, without giving a reason, but we will have combined the information about you with other information from others, and so will need to keep that as pulling it out would not be possible. It will not personally identify you but will be part of group information.
- We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the information that we hold about you.

Where can you find out more about how your information is used?

You can find out more about how we use your information

- at www.hra.nhs.uk/information-about-patients/
- by asking one of the research team
- by sending an email to the lead researcher Ugne Tartilaite

What will happen to me if I take part?

Your participation would start 4 weeks before the start of the group and end 4 weeks after the group has ended.

I will collect and analyse self-reported questionnaires collected at:

- 4 weeks before the start of the group,
- at the start of the group (session1),
- 6th week into the group (session 6),
- 12th week (the end of the group- the final session),
- and 4 weeks after the group has ended.

Additionally, you will be asked to answer 3 questions via OVIVA app:

- Twice a (2x) week (We suggest Monday and Thursday) 4 weeks before the group starts and the 4 weeks after the group ends.
- And once a (1x) week while the group is running (we suggest the day of the session)

After the group is finished, I will contact you to schedule a 15-20 min telephone interview with myself to ask you a few questions about your experience in the group. The conversation will be audio recorded so I can transcribe your answers and analyse them.

In addition to the data above, I will access demographic information about you specified in the previous sections.

About the intervention

The group will run for 12 weeks and will take place online. Each session will last for 1h 15min. The group will be based on Compassion Focused Therapy (CFT), which promotes compassion for self and others, reducing self-criticism and self-directed hostility. You can read more about this approach online, and the following link provides a nice summary- https://www.goodtherapy.org/learn-about-therapy/types/compassion-focused-therapy.

You might be asked to complete some practice/exercises between the sessions to monitor your thoughts or feelings or complete practice/exercises if there was not enough time to do it.

The idea of group therapy may evoke some anxiety in people. The facilitating clinician will encourage discussion at the start of the group about hopes and worries that participants may have. Collaboratively a way of helping everyone feel safe in the group will be generated. This may be something like coming up with some ground rules. It is important to note that you will not have to disclose anything you don't want to or feel comfortable with to the group.

What is a standard care provided in the service and what are additional study procedures?

· Every patient in the service receives 13 structured sessions each lasting for 2 hours every fortnight (total six months), followed by six 2-hour long monthly sessions (total six months). The sessions aim to provide motivation, increase willpower, address body image and self-esteem, and maintain progress.

· Patients also attend seven physical activity sessions (sessions 2-8).

· Patients have access to an app called OVIVA, which offers ongoing peer support and contact with the tier 3 team who help patients changing behaviours that may be unhelpful.

· The tier 3 psychologist provides additional psychological input to patients. Patients get referred to the psychologist by other clinicians in the team or patients self-refer. Additional psychological support is tailored based on individual needs. Patients whose mental health needs are better met by existing specialist services, such as the IAPT service, are referred on, after initial assessment of needs consultation with the tier 3 psychologist.

If you choose to take part in the study, you will be invited to attend a 12-week group-based online therapy where the focus will be on understanding and developing self-compassion. Additionally, as explained in the previous section, you will be asked to complete self-reported questionnaires at different time points and have a brief telephone interview about the intervention after it ends.

What are the benefits of taking part?

There are no direct benefits of taking part in the study. The indirect benefit is that you will help us understand in what ways CFT based group intervention helps people in weight management services and how psychological interventions can be improved for them.

What are the possible risks of taking part

Some of the possible risks:

- You may find it difficult to remember or frustrating, tiring having to answer the 3 questions via app twice or once a week.
- You may feel distressed in the group reflecting on your feelings and thoughts.
- Some of the questions in the interview after the group ends may lead you to remember frustrations if you found intervention difficult or remind you of something challenging in your life.
-

What if I felt upset during the intervention or an interview?

During the first group session, you and other participants will be asked to decide together how best help a group member in case they become upset during a session. For example:

- Do you want to go into a separate room and have a quick check-in with the group facilitating psychologist?
- Do you want the group to help / how?
- Do you want time by yourself and return when ready?

In case you became upset during the interview:

- The researcher will provide information about helplines, including the local NHS crisis line, at the start of the interviews (see the table below).

Organisation	Contacts	What it does
Lambeth Crisis Team (NHS)	0800 731 2864	A mental health crisis might mean you feel unable to cope and like you might harm yourself, or someone else. It could also mean you have unusual and frightening thoughts. Support is available 24 hours a day, everyday.
Samaritans	116 123 (free from any phone), email jo@samaritans.org or visit some branches in person. You can also call the Samaritans Welsh Language Line on 0808 164 0123 (7pm–11pm every day).	To talk about anything that is upsetting you, you can contact Samaritans 24 hours a day, 365 days a year.
Campaign Against Living Miserably (CALM)	0800585858	(5pm–midnight every day) if you are struggling and need to talk.
National Suicide Prevention Helpline UK	0800 689 5652	(open 24/7). Offers a supportive listening service to anyone with thoughts of suicide.

- The researcher will explain that if you share with her that you have thoughts about harming yourself, abuse, or harm another, then they will have to contact the psychologist in Tier 3 weight management service and appropriate services to help you stay safe.
- If you become distressed during the interview stage, the researcher will ask if you would like to stop the interview and will offer you a chance to speak to the psychologist in the tier 3 service.
- The researcher will ask you about your experience of the interview and if you have any questions or concerns.

Will information from or about me from taking part in the study be kept confidential?

Yes. The research team will follow ethical and legal practices, and all information about you will be handled in confidence. Only the research team, the group facilitating clinician and management of the Tier 3 weight management service will know that you are participating in the research.

The research team will keep all information about you safe and secure.

Once we have finished the study, we will keep some of the data (demographic data and your questionnaire answers), so we can check the results. We will write our reports in a way that no one can work out that you took part in the study.

Who has reviewed the research?
This study has been reviewed and approved by an internal supervisor at Salomons Institute for Applied Psychology (Canterbury Christ Church University) Margie Callanan and sponsor Fergal Jones, external supervisor Sonya Tsancheva, Champions service users in the Tier 3 weight management service, Guys' and St Thomas NHS Trust (GSTT) and by the NW-Preston NHS Research Ethics Committee.

What will happen if I do not want to carry on with the study?
You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have.
Stopping your participation in the study would not affect the standard of care you receive

What will happen if the research needs to be suspended?
If any information comes to light during the study that would necessitate changes to the protocol or suspension of the study, this will be relayed to participants by the student researcher- Ugne Tartilaite. This will be done by telephone call and email.

If information comes to light that requires to suspend research but does not affect group protocol or integrity of the group intervention, the group-based intervention will continue.

Where can I find out more about how my information is used?
You can find out more about how the research team use your information

- at www.hra.nhs.uk/information-about-patients/
- by asking one of the research team, for example Sonya Tsancheva, Fergal Jones
- by sending an email to me, Ugne Tartilaite.

Concerns and complaints
If you are concerned about any aspect of this study, you should ask to speak to me, and I will do my best to address your concerns. If you remain dissatisfied and wish to complain formally, you can do this by contacting Dr Fergal Jones, Clinical Psychology Programme Research Director, Salomons Institute for Applied Psychology – fergal.jones@canterbury.ac.uk

Alternatively, you could contact an independent contact point for complaints like Patient Advice and Liaison Service (PALS): https://www.nhs.uk/nhs-services/hospitals/what-is-pals-patient-advice-and-liaison-service/

Insurance arrangements are in place.

Will information from or about me from taking part in the study be kept confidential?

- The data will be stored securely in a password-protected USB stick until transferred to:
    1) an encrypted NHS internal drive; a password-protected folder dedicated to this research and
    2) 1) university's One Drive, a password protected digital folder designated to the research
- Paper documents like consent forms and so on will be shredded after scanning and transferring them to secure drives.

- Your personal data, like your name, email address and phone number, will be kept for 6-12 months after the study ends. This is so I could email or post you, based on your preference, the summary of the results. 6-12 month period will allow enough time to analyse data if some unforeseen circumstances occur that delay this process.
- All information collected from or about you during the research will be kept strictly confidential, to protect your privacy. After 6-12 months, your information will be anonymised (participant 1, participant 2 and so on) so it would not be identifiable, and your contact details will be removed. The research team will keep anonymised data for 10 years after the study ends so it could be checked for errors or used for other research
- Authorised persons such as the research team and, regulatory authorities & R&D audit (for monitoring the quality of the research) will have access to view data.
- Your anonymised data will be retained for 10 years, and it will be disposed of securely after this period as recommended by Medical Research Council.
- The only time I would be obliged to pass on information from you to a third party would be if, as a result of something you told me, I were to become concerned about your safety or someone else's safety.

What will happen to the results of the research study?

- The results of the study may be published in academic journals. You will not be identified in any report/publication. The summary of the study findings will be posted or emailed to you depending on your preference
- Anonymised quotes from your interview/open-ended questions on questionnaires maybe used in published reports.

Who is sponsoring and funding the research?

Canterbury Christ Church University

Contact details

Lead researcher
Ugne Tartilaite (Trainee Clinical Psychologist)

Postal address
Salomon's Institute for Applied Psychology
Canterbury Christ Church University
1 Meadow Road
Tunbridge Wells
TN1 2YG

email address u.tartilaite3@canterbury.ac.uk.

Telephone number
The telephone number for the lead researcher is not available. You can contact her supervisor, Prof. Margie Callanan on 01227 927094.

Appendix N: Participant consent form

Canterbury Christ Church University

IRAS ID 310380

CONSENT FORM

Version no. 2 Date: 12/05/2022

Title of Project: Body image, psychological distress, shame and disordered eating in patients in a Tier 3 weight management service receiving an online delivered, group based Compassion Focused Therapy (CFT) informed psychological intervention.

Name of Researcher: Ugne Tartilaite

A copy of the consent form will be kept by the research team and a copy will be returned to you.

Please tick a box to appropriate statements:

1. I confirm that I have read and understand the information sheet dated 12/05/2022 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered to my satisfaction.

☐

2. I understand that my participation is voluntary and that I am free to withdraw from the study at any time without giving any reason. I understand that should I wish to withdraw from the study my care will not be being affected.

☐

3. I understand that data collected during the study may be looked at by the lead supervisors Sonya Tsancheva and Margie Callanan. I give permission for these individuals to have access to my data.

☐

4. I agree for my telephone interview at the end of the intervention to be audio recorded and transcribed.

☐

5. I agree that anonymous quotes from my interview and other anonymous data may be used in published reports of the study findings.

☐

6. I agree for my anonymous data to be used in further research studies

☐

Canterbury Christ Church University

IRAS ID 310380

7. I agree to take part in the above study. ☐

8. I wish to receive an executive summary of study findings: Yes ☐

No ☐

If you wish to receive an executive summary of study findings, how would you prefer to receive it:

By email ☐

By post ☐

9. I understand that Ugne Tartilaite, primary researcher/ investigator may send an email reminder about completing the questionnaires (up to once a week). ☐

10. I agree to have a 15-20 min telephone interview with, Ugne Tartilaite, primary investigator after the 12 week group has ended. ☐

My telephone number Click or tap here to enter text.

My email (*in clear print letters*) Click or tap here to enter text.

My postal address (in *clear print letters*) Click or tap here to enter text.

(*you only need to provide your postal address if you wish to receive study results via post*)

Name of Participant Click or tap here to enter text.

Date Click or tap to enter a date.

Signature Click or tap here to enter text.

Name of Person taking consent Click or tap here to enter text.

Date Click or tap here to enter text.

Signature Click or tap here to enter text.

Appendix O: Group protocol

CFT GROUP PROTOCOL

Version no.6/ Date 19/01/2023

Amendment submitted on the 19th of January 2023: Minor amendment to insert text in the protocol to provide clarity for researchers on accepted methods to gain consent. This is not changing the consent type to be used, just providing detail.

Name of the group: Feeling with Compassion

Note: The group is meant to be therapy delivered in the group format. The group is not intended to be a psychoeducation group. The protocol should serve as a guide for the therapist, but it is important for the therapist to be attuned to the group and the processes happening in it. Therefore, adjustments in sessions should be made if required for the benefit of participants.

Session	Aim	Discussion points/content	Materials
1	• Welcome participants • Introduce the format of the group • Introduce CFT framework.	• **Welcome** group members and introduce yourself • **Explain what the group is about** (a talking therapy group that focuses on exploring and recognising the way people cope with difficult feelings and offering a way of rethinking how we respond to these feelings for better health) • Set out the boundary of the session today and all other sessions, incl. length and frequency; outcome collection; • **Invite participants to set group rules**: these should include: confidentiality, respect, no judgemental stance, giving space to everyone to express themselves, no phones, arriving on time, what to do with lateness; no food and hot drinks allowed during the group; to let therapist know if they are not coming and agree what to tell the group if they will be absent; to agree how to manage if people become upset/distressed. people to share what hopes and concerns they have for the group setting group rules (collaboratively): The role of the therapist is to encourage the group to come up with their own rules about what is acceptable and not acceptable for the group. The	*"Old and new brain"* handout/slide "*Zebra and Lion*" exercise

		facilitative role would be to guide the group to reach this. However, there are certain boundaries that need to be put in place and if these are not spontaneously brought to the room, the therapist can introduce them as items for discussion. Write rules in the document. Ideally, these rules should be shared on the screen before each session **Disclaimer –** in the course of the group therapy patients will be asked to reflect on their experiences and this could evoke some strong emotions. • Ask patients about the qualitative questionnaire they have completed before the session (it is Ok if they have not, just remind them to do it). The questionnaire asks about expectations and concerns about the group; they can share this with the group to invite a conversation . • **Discussion**: invite patients to discuss what their experience has been of making behavioural changes i.e. managing their eating patterns; Establishing all the things they have done that have not worked: dieting, not thinking about food; being good; restriction, etc….and how much this has cost them. (part of the discussion could be: -Feeling ashamed that they have "failed" -Low self-esteem -Non-acceptance of body image; negative body image / perception of self, -Anxiety, low mood, reduced social interaction, etc….) Making a list on the screen can be helpful.	

		• **The "tricky" brain (old and new brain),** how it affects us (*Zebra and Lion*" exercise) Another example of having favourite food in the house. How long can you resist it? After having it you start beating yourself up. This is your evolved human brain stepping in: you reflect what you did, you predict weight gain, ill health. Human brain sees over indulgence as a threat and takes negative and critical tone. Invite participants to reflect how their evolved "tricky" brain can trigger self-critical thoughts, worries or feelings of shame.	
2	• Introducing 3 emotional regulation systems • Introducing compassion	• Encouraging participants to generate a **soothing image** for them to reach out it if they become distressed in future sessions. It can be a memory, a fantasy, something that evokes warm feelings and hope. • Introduce **3 emotional regulation systems** (Drive, Threat and soothing) and how they affect eating. Explain that they may vary in size, they are not necessarily equal. Ask people to draw/imagine map of their regulatory systems, is one or two of them more prominent in size? • This would lead well to the "*How the three systems function*" worksheet. Encourage participants to complete it and facilitate a brief discussion. • **Defining compassion :**"*What is compassion*" exercise and brief discussion	"*How the three systems function*" worksheet "*What is compassion*"

		• **Flow of compassion** (compassion to self, to others and from others) • **How does compassion affects us**? (inviting participants to close their eyes and imagine that they are in the presence of a child or an animal in distress (nothing too triggering). What did you feel in your body? What did you feel motivate to do? Encourage people to use their "soothing" image after. Reflecting with participants that compassion is not "warm and fuzzy" although it may feel like this sometimes. Typically, people do not think of themselves when invited to do this, so this would be a good link to the later points • **Discussion:** Patients can be encouraged to share their experiences of being kind to themselves and others; usually there will be a discrepancy between the way they treat themselves and others; this will be a better way into setting up the premise of CFT	
3	• To understanding what, who and how affected participants in their lives	• **Hands as difficult thoughts/feelings**. Imagine your hands are your difficult thoughts or feelings. Put your hands together like the pages of a book. Open your fingers and put your hands in front of your face. Look around. Mostly what you can see are your difficult thoughts and feelings. Little else gets through when your hands are plastered in front of your face. This is how you live your life most of the time, trying to get through your day looking through your difficult thoughts and feelings. Now, lower your hands. Your difficult thoughts and feelings are still there but you can just let them sit there without interfering with you getting on with your life. • "***Influences on me***" worksheet (sometimes people may feel disloyal to friends or family if they write down how they affected their life in negative way- explore in advance)	"*Influences on me*"

		• Encourage participants to bring the **soothing image** into their mind following the exercise (the image participants prepared in the session 2) • Remind participants that they do not have to share personal details about their lives if they do not wish. • Facilitate discussion about what it was like completing the exercise; Over how many things did they have control? How many things were out of their control?	
4	• To consider compassion in relation to personal story	• **Cadbury Bar exercise.** Say Cadbury Bar out loud and experience what a Cadbury bar means to you. You'll think about the taste, the consistency, the wrapper, licking chocolate off your fingers. Now, say Cadbury bar out loud again and again and keep saying it out loud for 1 minute. At the end of 1 minute, Cadbury bar no longer has anywhere near the emotional impact. The words are more sound than anything related to a chocolate bar. Do this with any food you are craving. • **Discussion about "Influences on me" exercise last week**: what feelings have the participants noticed? How have they changed since? Have they been reflecting on the exercise? If so what thoughts did they have? • Complete and discuss the "*Life story*"" exercise. • Thinking about one's life story and FEELING it is very different- explore both. Both are important.	"*Life story*" worksheet "*Connecting with compassionate qualities*" exercise

		• **Why do we need compassion** (as opposed to deserve)? • It may be helpful to ask people to imagine someone they care about in distress. What did you notice in your body? What did you feel motivated to do? • Could be helpful to ask people to recall a situation when they felt distressed: Imagine that somebody is there supporting you. How does that feel? Do you feel motivated differently in their presence? End this with **soothing image** or memory (generated in the session 2) • **Which type of compassion most difficult** (to self, to others or accepting compassion)? Identifying barriers for that type of compassion • ***"Connecting with compassionate qualities"*** exercise (participants could be asked to finish it at home if running out of time)	
5	• To expand on Self-compassion	• ***Soothing Breathing rhythm"*** exercise (The following does not require to be covered, but could be helpful if participants feel unsure about the helpfulness of the exercise: Autonomic Nervous System (ANS) is made up of two branches: The sympathetic nervous system (SNS) –body's accelerator The parasympathetic nervous system- body's breaks	*"Soothing Breathing rhythm"* exercise *"The captain of the ship"* *"Developing self-compassion"* worksheet

		When you take a deep breath you activate SNS. Burst of adrenaline speeds up your heart. That is why athletes take few short deep breaths before competitions. Exhaling , in turn, activates the PNS, which slows down the heart. Hence in yoga and meditation classes people are instructed to pay particular attention to exhaling.) • **How do we relate to ourselves when things do not go our way?** • It's not just what we say to ourselves that is important , but how we say it-exploration of **emotional tone**. • How does our **behaviour** towards ourselves express compassion to ourselves or the lack of it. • ***"The captain of the ship"*** • ***"Developing self-compassion"* exercise**	
6	• To understand the role of attention in compassion	• **Tug of war with the monster** Imagine you are in a tug of war with the difficult thoughts and feelings monster. The difficult thoughts and feelings monster is very big, very ugly and very strong. Grab the rope with both hands. Between you and the difficult thoughts and feelings monster is a giant pit: the pit of self-loathing. The harder you pull, the harder the monster pulls back. You pull hard and the monster pulls back harder. You are about to get pulled into the pit, you pull harder, the difficult thoughts and feelings monster pulls even harder.	*"How threat and compassion organize our experience* "exercise *"Spotlight" Exercise on Attention* *"Self- criticism monitoring" sheet*

		You can't control your difficult thoughts and feelings. Difficult thoughts and feelings are automatic. They are something that happens to you as a response to complex internal factors and external circumstances. Now, do yourself a favour – drop the rope. • *"How threat and compassion organize our experience* "exercise • **Discuss attention role on thoughts and feelings** (spotlight in the dark room analogy) • ***"Spotlight"*** Exercise on Attention . Brief discussion on what this means for self-critical/self-shaming thoughts • *"**Self- criticism monitoring"*** exercise. Brief discussion after • **Self-critic imagery exercise**…(Read the following slowly) o Take a few moments to get comfortable in your chair. Try to place your feet flat on the ground and get in touch with your breathing… (10 sec) o Now when you are ready, and if you feel comfortable, close your eyes and imagine that your self-critic, could be thought of as a person (LET AT LEAST 30 SECONDS PASS BEFORE MOVING ONTO THE NEXT PROMPT – helpful to watch clock) o What would he or she look like? (30-45 SECONDS) o Imagine their posture (15-20 SECONDS), its facial expressions (30-45 SECONDS). o What does he or she sound like? (30 SECONDS)	

		o What are its inner emotions? (30 SECONDS) o What are the feelings the image arises in you? • Encourage participants to bring ***Soothing image*** following the exercise (generated in the session 2)	
7	• Personal values and compassion	• ***"Soothing Colour Imagery"* exercise** • ***"clarifying my values "*** worksheet • **Discussion** about personal values: Has anything surprised the participants when identifying their values? How much in line with values are participants lives? How does threat, drive and soothing system brings them closer or distance them from their values? • ***"Compassionate thought challenging"***	*"Soothing Colour Imagery"* *"clarifying my values "* worksheet *"Compassionate thought challenging"* worksheet
8	• Applying CFT concepts into behaviour (part1)	• ***"Soothing Breathing rhythm***" exercise (The following does not require to be covered, but could be helpful if participants feel unsure about the helpfulness of the exercise: Autonomic Nervous System (ANS) is made up of two branches: The sympathetic nervous system (SNS) –body's accelerator The parasympathetic nervous system- body's breaks	*"Soothing Breathing rhythm"* exercise *"List of situations I want to face"* *"Compassionate behaviour experiment"*

		When you take a deep breath you activate SNS. Burst of adrenaline speeds up your heart. That is why athletes take few short deep breaths before competitions. Exhaling , in turn, activates the PNS, which slows down the heart. Hence in yoga and meditation classes people are instructed to pay particular attention to exhaling.) • **Discussing** concerns and feelings that participants may have about trying new things in their lives • **Completing and discussing the list of situations participants tend to avoid** ("*List of situations I want to face*")- what emotional regulation system is active? What is the threat in each situation? • ***"Compassionate behaviour experiment"*** • **Linking** the compassionate behaviour experiment to the **values** discussed last week • What **challenges or obstacles** participants anticipate in completing the experiment	
9	• Applying CFT concepts into behaviour (part2)	• **Difficult thoughts and feelings on a stream**. Imagine yourself sitting beside a gently flowing stream with leaves floating gently on the surface of the water. Now, imagine aa difficult thought or a feeling. Allow it to enter your mind and place it on a leaf. Allow it to float by. Put the food on another leaf and allow it to float by. If your thoughts momentarily stop, continue to watch the stream. Sooner or later your thoughts will start up again. Put your difficult thoughts and feelings on a leaf and allow it to float by. Allow the stream to flow at its own pace. Don't try to speed it up and rush your difficult thoughts and feelings. You are not trying to get rid of your difficult thoughts and feelings, you are allowing your difficult thoughts and feelings to come	***"****My reflections on my compassionate behavioural experiment" worksheet* *"Intended and unintended consequences of coping strategies"* worksheet

		and go at their own pace on the leaves. If your mind says: "This is dumb", or "I'm bored" or "I'm not doing it right", place these thoughts on leaves as well and allow them to float by. Then go back to putting your difficult thoughts and feelings on a leaf and allow it to float by. If a leaf gets stuck, allow it to hang around until it is ready to float by. If a stray thought comes up again, put it on a leaf and allow it to float by. Put your difficult thoughts and feelings on a leaf and allow them to float by. • ***"Reflections on behavioural experiment"*** **worksheet**: what went well and what didn't? What was surprising? What did participants learn from the experiment and what other experiments they would like to try in the future? • **Discussion about how we cope with set backs**- could be linked to unhelpful coping strategies (Just for guidance, this is best to elicit from participants: Common coping strategies: Apologising continuously, Avoiding anything out of comfort zone, Doing what others want, Causing yourself pain, Covering up with excessive make up, Criticising or bullying yourself, Ove relying on others, Excessive cleaning or washing, Keeping lid on your emotions, Over eating, Over planning, Pushing yourself over and above what is needed, Saying yes all the time, Seeking reassurance,	*"My own compassionate alternative thoughts and images"*

		Using alcohol, drugs some other common intentions: Avoid conflict, decrease anxiety, avoid criticism, avoid disappointment, void failure, avoid rejection, calm others down feel more confident, improve mood, keep people happy, keep yourself safe, make things more predictable, make you less noticeable, punish yourself, stop you from feeling or thinking something other unintended consequences: Addiction, awkwardness, being taken for granted, conflict, eating problems, exhaustion, guilt, feeling trapped, isolation, low mood, nobody knowing your true you, regret, resentment, shame, unmet needs, overthinking.) • ***"Intended and unintended consequences of coping strategies"*** exercise • ***"My own compassionate alternative thoughts and images"*** • Discuss with the clients **therapy coming to the end**. What feelings does it evoke in them? • Discuss with the participants of **how the ending could be approached by the group so it would be meaningful to them**	
10	• To consider how we relate to ourselves and other people	• **The difficult thoughts and feelings pit**. Imagine you are in a field at night, it's dark and you have tools. Your job is to run around the field. There are deep holes in the field and pits of difficult thoughts and feelings. You run around and fall into a pit. You can't climb out. You reach into your tool bag and the only thing in the bag is a shovel. You start digging and it makes the hole deeper. You try digging stairs to climb out	*"Drama Triangle" exercise*

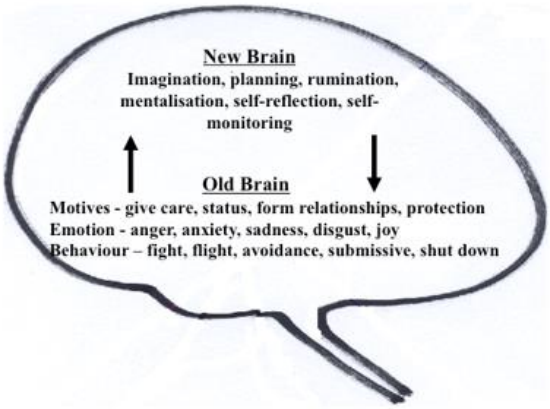
		but the dirt slips and you dig yourself deeper into the pit of difficult thoughts and feelings. The more you dig, the hole keeps getting deeper and deeper. You can't dig your way out of the hole of difficult thoughts and feelings. Digging is what makes holes. You can't control your difficult thoughts and feelings. Difficult thoughts and feelings are automatic. They are something that happens to you as a response to complex internal factors and external circumstances. Now, do yourself a favour – stop using the shovel. • Ask patients to think about the roles they take in their everyday life; i.e. role of parent, child, employee, etc…in a similar way, we can take roles in relation to others on psychological level. These help us meet our needs. The therapist can listen to the different roles that patients will inevitably occupy during the session and then say to them something like: "as I have been listening to you, I have been noticing an interesting trend…X when you say "I am simply lazy", this sounds very critical and unpleasant; very persecutory. Y when you talk about your conviction that you have a food addiction, it seems as though all responsibility falls on that and you are a victim to this addition….and when you all as a group have come here with questions for me, I think you invite me to "rescue you" from your experiences of persecution or being a victim". Then you wait to see what they say to this. Usually "aha, I have never thought about it this way" and then you the therapist introduces the triangle…. • **Explain** Drama triangle • ***"Drama Triangle" exercise*** • **Reflections/discussion**	
11	• Self-compassion in the future	• Difficult thoughts and feelings **soldiers parade**: Imagine there are soldiers marching in front of you on parade. The soldiers are your	

		difficult thoughts and feelings. Watch the parade of your difficult thoughts and feelings marching by. Pick a difficult thought or a feeling. All the soldiers are difficult thoughts and feelings. Watch the parade of your difficult thoughts and feelings go by. It doesn't stop. Don't join the parade. Let the parade of your difficult thoughts and feelings go by. If the parade stops or you join the parade , vine the tape- go back in time, return to the viewing stand and watch your difficult thoughts and feelings. go by. • "***Compassionate future plan***" • Discussion about **hopes and goals for the future.** • "***Three good things***" exercise	"*Compassionate future plan*" worksheet "*Three good things*" worksheet
12	Ending of the group	• **"*Soothing Breathing rhythm*"** exercise • Discussion about endings • Discussion about what participants learn and how they could use it in the future; what are participants taking from the group and what are they leaving behind in the group.	

APPENDIX:

SESSION 1.

Old and new brain



Lion and Zebra

Playful example, but are you willing to use your imagination?

A zebra is grazing on the savannah. It doesn't notice a lion creeping up on it until the lion starts to run towards it. The zebra starts to run too. What emotion will the zebra be experiencing? (fear)

What will be happening inside the zebra's body? (heart racing, breathing faster to get more oxygen, fight or flight response)

The zebra escapes and 1 hour later is grazing on grass again. How will it be feeling? What will have happened in its body (calmed down)

Now, lets imagine you are out for a walk by Regents park zoo. Out of the corner of your eye you spot an escaped lion. How will you feel? What will you experience in your body?

You run away and it chases you but there is a nearby building you just manage to get into in time and shut the door.

1 hour later, what might you be thinking?..... how will you be feeling?..... Will you be relaxed? …….Do you think you would be sleeping well that night?

What is the difference between us and the zebra? We maintain our stress levels through our thinking and imagination – thinking/picturing what could have happened or what might happen in the future. Our 'new brains' conjure up 'what ifs' - what if I had tripped up and it had got me, what if I had decided to walk another route today instead, (past) or what if it is still out there when I leave the building or what if it kills someone else (future).

The zebra just has the 'old brain' which lives in the moment, reacts to current danger and then moves on. As far as we know it doesn't dwell on its narrow escape or worry about whether it will be caught in the future.

SESSION 2.

How three systems function

	Threat system	Drive system	Soothing system
How often is this system triggered?			
What tends to trigger it?			
How long does it stay activated for once it gets triggered?			
How powerful do you experience this system when triggered? (1-weekly, 10-powerfully)			
What type of thought do you ger when this system is activated?			
What do you want to do when this system is activated?			

What is Compassion? EXERCISE

It is probably helpful to get to the rub straight away – what do we mean by compassion, and how can it help you? We will return to this in more detail in the weeks to follow, but for now, it can be helpful for us to start by considering what compassion means to you. So when you hear the word compassion, what does it make you think of? What other, similar words come to mind?

……

For some people, compassion brings to mind ideas of warmth, care, kindness and empathy. However, for some people 'negative' words come to mind, such as weakness, indulgence or even 'letting someone off the hook'. As you might be able to guess already, this is not what we mean by compassion!

So given the different ideas that people often have about the word compassion, it might be helpful to first consider what we are thinking of when we mention compassion. Like many other approaches across the world, we use a common definition of compassion as:

"A sensitivity to the suffering of self and others (and its causes),
with a commitment to try and relieve this and prevent it from returning"

SESSION 3.

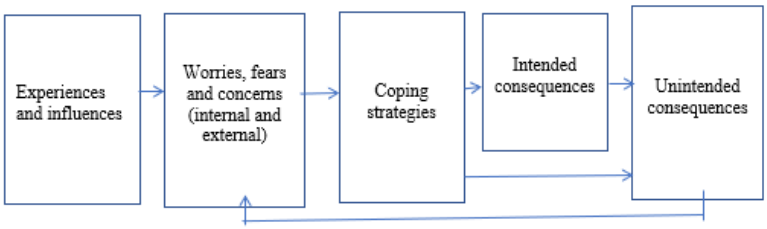
Influences on me

Growing up around people who lacked self-confidence
Growing up around people who were seemingly 'good at everything' when I found myself to be less so
Love and affection being seemingly dependent on success
Being around people who were self-critical and/or critical of me
Experiencing little love and/or affection
Being naturally more introverted or shy
Bereavements
Loss of key friendships – due to moving house, school or both
Having physical difficulties

Unusual experiences such as seeing or hearing things other people don't seem to hear or see
Having difficulties such as dyslexia, dyspraxia, dyscalculia making learning difficult
Experiencing bullying or indifference from my peers or siblings
Difficult relationships – be it friendships or sexual relationships
Traumatic events such as physical, sexual or emotional abuse, being the victim of crime or being involved in some form of accident
Experiencing difficult teaching styles
Looking 'different' from other people
Issues related to my sexuality or identity
Other influences on me:

SESSION 4.

Life story



Connecting with compassionate qualities

To begin let's sit quietly, and allow our breathing to take on a slow, soothing rhythm. Let's spend 30 s to 1 min. breathing in this way, focusing our minds on the sensation of slowing… slowing down the body, slowing down the mind. When you're ready, bring to mind a compassionate quality you'd like to develop. Perhaps it's the kind motivation to be helpful, perhaps it's the confidence and courage to stay and work with difficult situations, even when things get tough- the knowing that whatever arises, you can find a way to work with it. Perhaps it's the ability to tolerate distress. There are many other compassionate qualities you might chose to cultivate, like patience, kindness, warmth, wisdom or perseverance.

Choose one of these qualities and bring it to mind. Imagine what it would be like to be filled with this quality. As you prepare to go about the rest of your day, imagine how you might think, feel, and behave as you embody this compassionate quality. Bring to mind a specific task you might do. How would this quality impact how you understand and go about this activity? Imagine yourself in the activity – thinking, feeling, and acting from a compassionate place of kindness, confidence, wisdom, patience, or gratitude. Spend 5 to 10 min, or as long as you like, in this way. As you finish the practice, try to keep this quality in mind as you go about your day, and see if you can bring it into the actual moments that present themselves in your life

SESSION 5.

Soothing Breathing Rhythm

In soothing breathing rhythm, the purpose is to create a sense of slowing down the

body and slowing down the mind. This slowing can help soften the intensity of threat emotions by activating the parasympathetic nervous system.

Start by getting into a comfortable and alert sitting posture. Place both feet flat on the floor with your hand resting on your legs, palms open & facing upwards. The head is held upright, shoulders back in a dignified and relaxed posture.

If you can close your eyes as you do the practice.

Now bring your awareness to your awareness to the sensation of your breath entering and leaving your body. Just notice this sensation of breathing.

Now begin to slow down the breath. Allow your rate of breathing to slow, taking four or five second on the in-breath, pausing for a moment, and then taking four or five seconds for the out-breath. Breathing in deeply 1-2-3-4, pause for a moment, then slowly breathing out for 1-2-3-4-5-6.

Take a few minutes to breathe in this way counting in your mind as you follow your breath. Focus you attention of a sense of slowing – slowing down your body, slowing down the mind. If you find the rate is too slow just shift it a little to make it comfortable for you. The idea is to breath in a way that is slowing and soothing.

As you breathe out repeat the mantra 'mind slowing down, 'body slowing down', again keeping the same steady flow as you were when you were counting.

Continue this for as long as feels comfortable. When you are ready, allow your breath to return to its normal rate, and gently allow your eyes to open

The captain of the ship

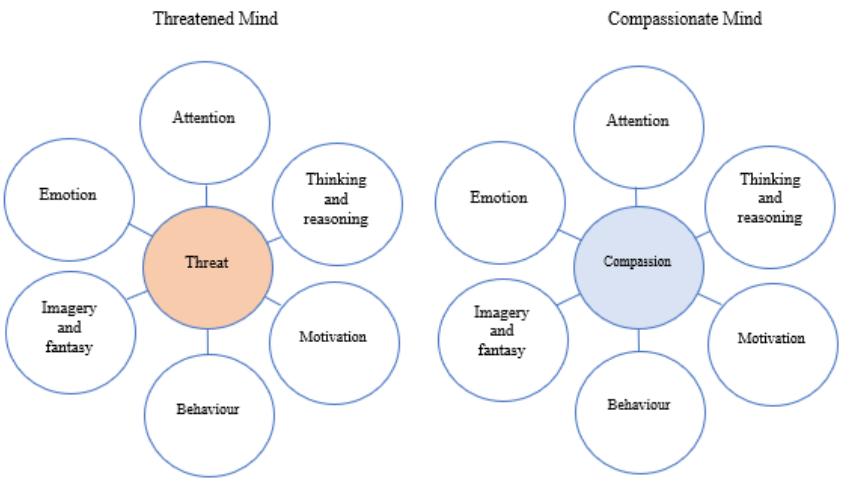
We have the client imagine a ship at sea, with various passengers on board, including the various emotional selves. When the ship encounters a storm (emotional storm in life), we imagine the emotional passengers doing what they do: the angry self rages and criticises; the anxious self worries and cowers; the sad self shrinks and becomes mournful. We when set up the compassionate self as the captain of the ship. Kind, wise, confident this captain understands that storms are just a part of sailing and has the wisdom and experience to guide the ship to safety. The captain also understand that such storm s can be very scary for the passengers, so instead of becoming upset with them, the captain comforts them , reassures them and offers to take care of things.

Developing self-compassion

Pros	Cons	Things you can do or say to yourself to help you with these cons

SESSION 6.

How threat and compassion organise experience



Spotlight Exercise on Attention

Shortly we'll be looking at some compassion exercises and bring compassion into our minds. To start with though it is useful to think about why we practise and the manner of our practise. Part of the reason is related to how our attention works - in terms of bringing things into consciousness – our abilities to use attention is like having a zoom lens in our mind.

Keep in mind that where your attention goes to, and what your mind dwells on, will affect your emotions and body states. So let's do an experiment with our attention and explore this together.

Sit comfortably and when you are and focus on your right foot. Explore the feelings in your toes and then your heel and then your whole foot. Hold your attention there for about 30 seconds. Now switch your attention to your left foot. Again explore your feelings in your toes and then your heel and then your whole foot. Hold your attention there for 30 seconds or so. Now focus on your right hand. Notice the feelings and sensations in your fingers and your thumb. Again hold that attention for about 30 seconds. Next focus on your left foot. Hold your attention there for 30 seconds. Finally, focus your attention on your lips and the sensations around your mouth.

What you might have noticed is that when you focus on your left foot or your hand or your lips, these expand in your field of awareness. That is interesting and important to realise – but in addition, as they do so, the things you have previously been focusing on fade into the background. As you become more aware of your hand or your lips, your awareness of your feet fades into the background. You can see then that your attention is like a spotlight and it helps you to bring things into foreground of consciousness or you can imagine it like a zoom lens.

This raises the issue about what you want to attend to, what you want to zoom in on, what you want to bring into the forefront of your consciousness. It also raises the issue of whether you've learnt to control or choose how you direct that zoom lens – your attention – or whether it tends to zoom in on things simply because they have emotional urgency or power.

Self- criticism monitoring sheet

Situation Who were you with? What were you doing? Where were you? When did it happen?	Self-critical thoughts What went through your mind? (Thoughts, images, or memories)	Emotions & body sensations What did you feel? (Rate intensity 0–100%)	Responses What did you do? How did you cope with what you were feeling?

SESSION 7.

Soothing Colour Imagery exercise

(by Paul Gilbert)

In this compassion focused therapy exercise we are going to use imagery to work on cultivating and building the soothing system. So take a few moments to adopt a grounded upright and confident body posture. Now let your attention settle on the breath wherever feels most clearly- in the belly, the chest or the passing of air through the nose. Without forcing it gently slowing down and deepening the breath. Allowing soothing breathing rhythm to emerge. When you experience the breath movements as soothing let go and allow the breath to flow by itself.

When you're ready imagine a colour that you find calming, soothing or peaceful. Take your time with this-mindfully observing what colour or colours that come to mind.

When you already imagine your colour in front of you -maybe you could imagine it taking the form of a light or a mist.

Imagine this soothing mist is moving towards you. Notice how you feel having this soothing or calming colour surround and support you.

If you can imagine this colour has an awareness -it wants to support you to help you feel soothed and calmed.

Create a friendly or warm facial expression.

You might want to imagine the colours entering your body through the area of your heart or moving through your body soothing and calming you. Continue paying attention to this image noticing sensations as you do so.

I am going to leave you for about two minutes to do that.

[After 2 min]

Recent scientific findings found that imagery has a bigger impact on our emotions, than words alone and that certain types of soothing practices are linked to lower levels of stress. This suggests that imagery can be a powerful tool when working with difficult emotions linked to our threat system.

Clarifying values

	What is my intention in this area? What do I value in this area?	On a scale of 0-10 rate how important this is in your life.	What would help me move towards my valued aims in the long and short term?
Working life			
Family life			
Friends and social life			
Personal development (e.g. education, skills, learning)			
Self-care, health and fitness			

Compassionate thought challenging worksheet

Situation Who were you with? What were you doing? Where were you? When did it happen?	Emotions & body sensations What did you feel? (Rate intensity 0–100%)	Automatic thought What went through your mind? (Thoughts, images, or memories)	Compassionate response What would a truly self-compassionate response be to your negative thought?

SESSION 8.

Soothing Breathing Rhythm

In soothing breathing rhythm, the purpose is to create a sense of slowing down the

body and slowing down the mind. This slowing can help soften the intensity of threat emotions by activating the parasympathetic nervous system.

Start by getting into a comfortable and alert sitting posture. Place both feet flat on the floor with your hand resting on your legs, palms open & facing upwards. The head is held upright, shoulders back in a dignified and relaxed posture.

If you can close your eyes as you do the practice.

Now bring your awareness to your awareness to the sensation of your breath entering and leaving your body. Just notice this sensation of breathing.

Now begin to slow down the breath. Allow your rate of breathing to slow, taking four or five second on the in-breath, pausing for a moment, and then taking four or five seconds for the out-breath. Breathing in deeply 1-2-3-4, pause for a moment, then slowly breathing out for 1-2-3-4-5-6.

Take a few minutes to breathe in this way counting in your mind as you follow your breath. Focus you attention of a sense of slowing – slowing down your body, slowing down the mind. If you find the rate is too slow just shift it a little to make it comfortable for you. The idea is to breath in a way that is slowing and soothing.

As you breathe out repeat the mantra ‘mind slowing down, ‘body slowing down’, again keeping the same steady flow as you were when you were counting.

Continue this for as long as feels comfortable. When you are ready, allow your breath to return to its normal rate, and gently allow your eyes to open

List of situations I want to face (from least anxiety provoking to most challenging)

	Activity
1	
2	
3	
4	
5	
6	
7	

Compassionate behavioural experiment worksheet

The step I am now going to take is:

The things I can do to help me prepare for this are:

The potential obstacles I can see are:

I can do the following things to help me negotiate the obstacles:

SESSION 9.

My reflections on my compassionate behavioural experiment

The step I took was:

How did the exercise go in general?

The things I learnt about myself through the exercise were:

The things I learnt about other people through the exercise were (optional depending on the action taken):

Intended and unintended consequences of your coping strategies

Coping strategy	Intended consequence	Possible unintended consequences or drawbacks

My own compassionate alternative thoughts and images

Undermining thoughts/images	Compassionate alternative thoughts/images

SESSION 10.

The Drama Triangle exercise

This questionnaire can help you look at the way we can relate to ourselves and others.

Answer the questions quickly, do not spend too long thinking about them.

If you cannot think of an answer , then leave it blank for the moment. Keep pondering it . Maybe something will suddenly come to mind.

When was the last time I behaved towards myself or someone else in a persecutory (judgemental) way/ as if I was a persecutor?
What happened?
How did I feel?

Does this remind me of other times in my life when I experienced a similar way of being treated by others?
What did they do?

When was the last time I related to myself as if I was a victim?
What happened?

How did I feel?
Does this remind me of other times in my life when I experienced a similar way of being treated by others?
What happened?

When was the last time I related to others as if I was recuing them?
What happened?
How did I feel?
Does this remind me of other times in my life when I experienced a similar way of being treated by others?
What happened?

Did I find myself more sympathetic to one of the roles? If, so which one?
How does it feel to recognise this?
In the future, when I recognise the bully/persecutor, I will try this:

SESSION 11.

My personal practice plan for the future

Things I have found helpful and would hope to practice daily: What will help me keep up this practice?
Things that I have found helpful and would hope to practice weekly: What will help keep up this practice?
Things that I have found helpful and would hope to practice at certain intervals: What will help me keep up this practice?
Things that I have found helpful and would hope to practice when times are difficult What will help me keep up this practice?
Things that I have found helpful and would hope to practice when things are going well: What will help me keep up this practice?

Three good things

Take a few moments to connect with your soothing breathing. When you feel ready, see if you can look bac over your day , and write down three good things that happened. This could be a wide variety of things such as having enjoyed a nice conversation with a fried, being treated kindly by a shop assistant, having had a good night's sleep or even receiving a compliment from someone. It does not atter how big or small these things are , as long as they give you a sense of happiness, joy or excitement.

As the American neuroscientist Rick Hanson comments, our brain are like Teflon for positives, and Velcro for negatives. It is therefore important that we really invest time focusing on positive experiences, so that they have an opportunity to take root in our brain. To do this we are going to spend some time exploring each of the positive experiences you identified, one at a time.

What lead this good event happening?

How did this event leave you feeling?

What could you do so that more of these events happen in future?

Appendix P: Extract from the coding draft

This has been removed from the electronic copy

Appendix Q: Themes and subthemes -comprehensive table

Qualitative findings. Summary table of themes, subthemes, codes and corresponding quotes

No.	Themes	Subthemes	Codes	Examples of corresponding quotes
1.	Challenges	Dynamics and ruptures	Altercation in the group impacted one's engagement (P4)	"I had a bit of an, I guess, altercation in the group with one of the group members and it kinda really impacted my experience of the rest of the group and my engagement in the group to some extent." (P4)
			Conversations about food were triggering (P3)	"…some people [] just wanted to talk about binge food all the time. I found it quite triggering. [] It got a bit like, you know, people trying to meet up to go to restaurants. I did not find that very therapeutic." (P3)
			Difficulty dealing with dynamics in the group (P6)	"The second was dealing with other people in the group." (P6)
			Some people in the group did not get along (P7, P4)	"I think it was just a fundamental of other person's personality. There was nothing that could be done to change moving forward. Because of that, as I said in the past life, I was a group facilitator and I don't know what I would have done in such a position. It's a clash of personalities." (P4) "I found that some of the people in the group didn't get on. Quite early on. [] It was bizarre, really. It didn't spoil it to me because I know people that kinda supported the /person/ and when there were others who kinda felt more sympathy for the /person/, really." (P7)
		Group format	More challenging than individual therapy (P6)	"I felt I was doing better with */psychotherapist's name/* than I was with the group. With the group, I felt a bit out of place." (P6)
			Sometimes the group intervention was challenging (P1, P4, P8,)	"It can be quite challenging, but I also found it quite rewarding." (P1) "The very nature of the group… it's emotionally heavy group." (P4) "I actually found some parts of the class very difficult." (P8)
		Physical health	Cancer scare made it difficult to engage with the group (P7)	"…sort of halfway through the sessions, they thought I had lymphoma…" (P7)

			Difficulty connecting with mindfulness due to physical health condition (P6, P4)	"because of chronic pain, I can't really engage in mindfulness activities, because focusing on my body then I end up focusing on my pain, so it gets much worse." (P4) "… I just never really connected with mindfulness stuff. Like it was helpful, but not massively so. Breathing exercises and stuff. I have asthma. If I forgot to use my inhaler that day, I couldn't do it. [] It was hit-and-miss." (P6)
		Time and endings	12 sessions group intervention was too short (P3, P7, P1, P2)	"I wish that the group continued for much longer. It did not feel that 12 sessions was long enough." (P1) "I just wish the group went on longer. I think you would benefit from it being like a six-months course rather than a three months course." (P2) "I don't think it had a big enough impact because I don't think it was long enough." (P3) "I just wish it had gone on longer. I got a lot out of it, and I looked forward to it. [] I found it really beneficial." (P7)
			Gradual rather than sudden ending of the group intervention would have been better (P1)	"I think what might have been helpful after weekly sessions if it could be... rather than just suddenly ending, going to fortnightly and when monthly. [] I think when this comes to an end, it needs to be a bit like you take a drug or something and you try to cut down, you don't suddenly stop taking it, you reduce it gradually. (P1)
			It took participants some time to feel comfortable to share (P1, P2)	"It took us a while to get to know each other. And I think we only started to open up a bit more when the group was coming to an end." (P1) "…it literally took us about eight weeks to get to know each other and feel comfortable sharing." (P2)
			Long standing difficulties may require longer term support (P1)	"…obviously something that has been going on, quite possibly, for decades, it will not get sorted out in a few weeks or even in a few months. It is an ongoing process." (P1)
			Sadness over the group ending P7	"It was quite sad when we had our last session, that it was over. I understand resources, there's so many people that need help." (P7)
2.	Connections	Empathy and ongoing bonds	Empathising with others' struggles (P8)	"Made me realise how people suffer and with depression and with anxiety and how their lives are, and how they are affected by it. []. I felt huge empathy towards those people." (P8)
			Feeling heard and understood (P3)	"…also, within, the group were quite empathetic and, you know, made me feel heard and understood." (P3)
			Ongoing communication with group participants (P4,P7)	"I had a positive experience with two others and we went out for a meal so it's nice." (P4)

				"One of the chaps and one of the ladies we went to the theatre the other day to see... Yeah, it was really... Funnily enough, we were talking earlier today and we think we are going to meet up again." (P7)
			Open Conversations (P8, P1)	"You don't meet people like that on day-to-day basis, you talk to people this and that, but it's nothing like it was in the class." (P8)
			Other participants reflections helped one's own reflections (P2)	"…for me, it was better when we discussed it in the group so you could put yourself in the right situation to reflect on it, if that makes sense [] when someone else spoke and shared their scenarios, it made it more clear in my mind so then I could discuss it more.
			Realisation how much others suffer (P8)	"I just I didn't realise that there are people going through such hard time." (P8)
			Shared experience (P1, P2, P7)	"I think sometimes there was a sense of connectedness. I think it's that hearing other people's experiences and being able to share your own and finding those things in common." (P1) "I think, sharing other people's experiences." (P2) "Understanding that there are people who are going through the same thing and people go through much worse psychologically." (P7)
		Containing therapist	Importance of relationship with a therapist (P3, P7, P6, P8)	"Probably the relationship with the therapist." (P3) "/*psychotherapist's name*/, who I saw 1:1, then I had Sarah, who was the facilitator in the group, which I felt like they were both approachable." (P3) "The person running the group, /*name*/, she was good, she was very very good actually. (P6) "I would just say that / facilitators name/ was really professional, really was...Although we had to contribute to the group, although if it wasn't her keeping us on track .She was really really good." (P7) "/*facilitators name*/ did absolutely amazing. She is a very good therapist. She has a very lovely way." (P8)
			Repairs of ruptures felt good (P1)	"I think in a way, once we had a meeting with /*facilitator's name/* and cleared the air a bit, it felt quite cathartic." (P1)
			It was helpful to talk with other participants in the space that is monitored P3	"Also was really good being able to speak with the other participants in the group that was sort of monitored a bit." (P3)

			Therapist staying after the group if someone needed them was helpful P3, P7, P8	"…it was good to have a point of contact with the therapist, even though I did not use it often, outside the sessions." (P3) "She gave us an option to contact her via email if we wanted to contact her outside the group." (P7) "/*facilitator's name*/ managed it very well. / *facilitator's name/* stayed on the call after for people who needed a bit more, like when things opened up. She gave lots of support behind. People stayed online to talk to her." (P8)
3.	Mental health and weight	Emotions fuel larger weight	Hunger is not physical, but emotional (P6)	"I am not even sure what hunger feels like. When I feel emotionally hungry, that's when I switch off…" (P6)
			Mental health has a big impact on weight management difficulties (P7, P1, P6, P2)	"the way I feel about myself just tends to affect how I feel about my body. I put on some weight because I stopped exercising and some comfort eating was going on, especially when I was unwell, that made me feel bad." (P1) "…for me, it was more emotionally based rather than dealing with the food." (P2) "[]Whereas my ones are more emotional." (P6) "The course taught me that your mental health has a lot of bearing on your overeating." (P7)
		External factors	Adversities in life impact one's sense of shame (P4)	"I started a new role in the company I work for and there was a lot of instability and general problems that had a really negative impact on me." (P4)
			Adversities in life make it harder to look after yourself (P1, P2, P7)	"When things are going better, I tend to feel better about myself. I tend to look after myself more, so I eat more healthily, make sure I get enough exercise and enough sleep. And it is not so when I am stressed, all those things tend to go wrong." (P1) ". There's been a couple of family medical emergencies that happened lately. And obviously, because of that and because of situations I have not been eating properly. So again, I have been binging." (P2) "When they started talking about possible chemotherapy or things like that, I thought what a hell I may as well eat what I want to eat." (P7)
			Negative narratives in society (P4)	"obviously there's a constant message from society that being that much weight is really bad for you. And from medical professions as well, obviously ...so...obviously that is not acceptable, which obviously when plays out. Which impacts my body image." (P4)

		Weight impacts one's emotional wellbeing	Difficulty to accepting one's body (P4)	"Possibly for anyone who has been classed as morbidly obsessed to be in a position where you can be accepting of your body." (P4)
			Guilt over eating (P6, P2)	"So again, I have been binging. And it's always wrong things. I do it and when I feel awful afterwards." (P2) "…just general feelings of guilt after eating anything and seeing myself in the reflection." (P6)
			Guilt over seeing one's body (P6)	"…just general feelings of guilt after eating anything and seeing myself in the reflection." (P6)
			Weight affects one's shame and all areas of life (P4)	"Because my weight affects my body shame and so many parts of my life. Even say something simple, like going to a restaurant, I can't sit in a fixed seating, I have to have chairs that pull out , it just goes across so many parts of my life." (P4)
			Weight loss caused saggy skin and that caused distress (P6)	"I've been going quite heavy with exercising, my body shape changed. Skin is a lot more loose and saggy and that is really dysphoric to see. That really messes my head up." (P6)
4.	Ongoing need	Professional support	Group therapy gave confidence to get private support (P6)	"It gave me the confidence to try Suxenda privately." (P6)
			Need for further psychological support (P1)	"I think it needs work.[]. I just applied for some counselling sessions…" (P1)
			Wish for more similar interventions (P2)	"I wish there were more groups like it.! (P2)
		Weight management	Changes in state of mind, but not in relationship with body (P8, P2)	"I am not really sure it had an effect on my body, but it definitely had an effect on my mind." (P2) "I don't think that changed. Not the relationship with my body. I think probably more the state of mind." (P8)
			Difficulties in relationship with food (P6, P2)	"I really don't have a good relationship with food and sadly, I haven't found a way around that yet." (P2) "I still don't have any self-control. Like if the opportunity is there, I will take it." (P6)

5.	Positive changes	Healthier eating	Group intervention helped mindfulness about food (P3, P8)	"…when using some of the group work . Like some of the tasks, we were set to help you reflect on things and help you to look at them from a different perspective." (P2) "…it was understanding a different perspective when how I thought about myself. Like I said it's hard to think about scenarios you put yourself in. I realised it wasn't just me. If I changed something slightly…" (P8) "I am a bit more mindful about the food I eat, yeah." (P3) "Yeah, I think it does affect you, that you can see triggers. You ask: do I need it? what am I doing? You go through those steps and.. I suppose it helped a little bit with the food, I would say." (P8)
			Reduced disordered eating (P6)	"The number of binges went down. It's now only about once a week. Whereas before, it would have been easy three times a week. Maybe more." (P6)
		Increased self-compassion	Group intervention helped to be more self-compassionate (P3, P6, P2)	"You could show compassion to yourself, which I think was what the group was all about." (P2) "I try not to be so hard on myself. That's about it, really, just not being hard on myself." (P3) "Probably being more compassionate towards myself." (P6)
			More accepting of oneself as a person (P4)	"So, kind of more about just accepting me as a person." (P4)
			More compassionate language with oneself (P4)	"There's a lot of language around episodes of binge eating for me. In terms of saying, "I binge", "I am a failure". Actually, I was talking the other day with someone and I reframed it so that now I say, "Ok I overate ", but I recognise in that moment that I need to do to help me cope with what is going the best way I know how to. So, I have been much more gentle with myself in those moments." (P4)
		Information and skills	Information and skills were helpful (P3, P7, P6, P8)	"Exercises and things we learnt, like the knowledge, things about, you know, how your brain works,..." (P3) "There was a lot of stuff, like recognising threat responses, that was interesting, and I really liked that." (P6) "I did and I still try to do mindfulness, where you do relaxation exercises. I find it really helpful." (P7)
			Learned to recognise triggers (P8)	"I can recognise some triggers which we were taught how to do in the class…" (P8)

		Kinder thoughts about one's body	Group intervention allowed to reflect on thoughts about one's body P3	"It just gave me time to reconsider the way I think about my body." (P3)
			Group intervention Increased understanding and respect for one's body P7	"I understand my body a lot better now." (P7)
			Since the intervention thoughts about one's body became more positive P6	"The number of times where I would think about my body it would be horrendously negative, but since starting the group, it is not so much looking at my body positively so much, but I would not look as negatively, I would say. I am not looking at my body "oh wow!", but I am not going, "ugh... God..."" (P6)
		New perspectives	Changes in state of mind, but not in relationship with body (P8, P2)	"I don't think it did really." (P2) "I don't think that changed. Not the relationship with my body. I think probably more the state of mind." (P8)
			Dynamics in the group helped to learn (P1)	"I think it was a learning curve for me where the group dynamics are concerned." (P1)
			Recognising patters in one's life (P4)	"So, kind of just recognising how I ended up with people in my life. Part of that is looking at how to correct that, be in more empowering way." (P4)
			Reflecting on things from a different perspective (P2, P8)	"…when using some of the group work . Like some of the tasks, we were set to help you reflect on things and help you to look at them from a different perspective." (P2) "…it was understanding a different perspective when how I thought about myself. Like I said it's hard to think about scenarios you put yourself in. I realised it wasn't just me. If I changed something slightly…" (P8)

Appendix R: Critical appraisal about qualitative research

Conducting research with qualitative elements about CFT-based online group intervention in weight management service, I should reflect on how my experiences have shaped potential biases and lenses through which I conducted interviews and data analysis.

I had previously worked in eating disorder services where people were underweight. Working in those settings taught me how significant and challenging a relationship with food can be for some people. I learned how the environment and preoccupation with food and eating can influence even people with seemingly healthy eating habits. This further deepened my interest in disordered eating. It is important to note, however, that I do not have previous work experience with people with larger weight or working in weight management service.

My way of thinking about larger weight is influenced by Kathy Leach whom I referenced in the research, ideas about larger weight. She conceptualizes larger weight and excessive eating as a response and coping mechanism to trauma. Additionally, my clinical work is informed by Cognitive Analytic Therapy (CAT), which means that I am influenced by psychodynamic concepts, and I give considerable space for relational patterns in my work, which may have also impacted how I analysed the interviews.

My own experience of group interventions may have impacted my take on the intervention investigated in the study. I found therapeutic groups that I attended challenging at times due to group dynamics that often occur in such a therapeutic format. As it had a big emotional impact on me and, at times, was very challenging to manage, I may have been hypervigilant for similar experiences reported by the participants in the study.

Appendix S: Author guideline notes for chosen journal

About the Journal

Health Psychology Review is an international, peer-reviewed journal publishing high-quality, original research. Please see the journal's Aims & Scope for information about its focus and peer-review policy.

Peer Review

Taylor & Francis is committed to peer-review integrity and upholding the highest standards of review. Once your paper has been assessed for suitability by the editor, it will then be single blind peer reviewed by independent, anonymous expert referees. If you have shared an earlier version of your Author's Original Manuscript on a preprint server, please be aware that anonymity cannot be guaranteed. Further information on our preprints policy and citation requirements can be found on our Preprints Author Services page. Find out more about what to expect during peer review and read our guidance on publishing ethics.

Preparing Your Paper

Manuscripts must be written in English. American or British spelling and punctuation are acceptable, provided authors apply the style consistently throughout the manuscript. Manuscripts with incorrect grammar or errors will be returned to authors. Authors are encouraged to proofread their manuscript prior to submission. Authors requiring English language editing services are directed to the Taylor and Francis Author Services website.

Manuscript Length

The editorial team acknowledge that review articles are usually longer than articles reporting findings of primary research. Health psychology review does not impose any length restrictions on submitted articles. However, it is also recognised that articles should be

appropriately concise and pithy so that the main focus is not lost and the argument is not encumbered by unnecessary detail. Authors can include supplemental materials such as figures and tables not directly germane to the main argument of the manuscript as online supplemental materials. For meta-analyses and systematic reviews, references for studies included in the review should be only appear in a separate supplemental list that the journal will make available as an online supplement. These materials will not count toward the page length of the manuscript, but will be included as a permanent record of supplemental materials alongside the online version of the manuscript (see later). Manuscripts should be compiled in the following order: title page including acknowledgements and funding details as an author note; abstract; keywords; main text; references; table(s) with caption(s) (on individual pages); figures and figure caption(s).

Meta-analyses and systematic reviews

In order to comply with international standards and for academic transparency, authors of meta-analyses and systematic reviews submitted to Health Psychology Review are required to include a statement in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (http://www.prisma-statement.org/) as a supplemental file for review (the final document will be included as online supplemental material). In addition, authors of meta-analyses should include the information recommended by the APA's Meta-Analysis Reporting Methods (MARS) which can be found here (http://www.apastyle.org/manual/related/JARS-MARS.pdf)

Pre-Registration

From January 1, 2021 all reviews with empirical content (e.g., systematic reviews, meta-analyses) will be required to be pre-registered on an appropriate independent, institutional registry such as Prospero https://www.crd.york.ac.uk/prospero/, the Open Science Framework https://osf.io/ or other registry

(e.g., http://clinicaltrials.gov/, http://socialscienceregistry.org/, http://egap.org/designregistration/, http://ridie.3ieimpact.org/). Pre-registration of studies involves registering the study design, variables, and treatment conditions prior to conducting the research. Authors must confirm that the study was registered prior to conducting the research, and that the preregistration adheres to the disclosure requirements of the institutional registry or those required for the preregistered 'badge'maintained by the Center for Open Science: see https://osf.io/tvyxz/wiki/home/. Authors must report the web link to the timestamped pre-registration at the institutional registry or the pre-registration trial number prominently (e.g., in the Methods section) in their manuscript. For registries that do not provide a standard template for pre-registering a review, authors are advised to use a template that includes the required information. An example is provided here. There will be a one year grace period between January 1, 2019 and December 31, 2020 in which pre-registration is not a requirement for submission, but strongly encouraged. From January 1, 2021 pre-registration will be a mandatory requirement for submission for all empirical reviews. It is acceptable to pre-register a review after the initial search has been completed, but not before any screening according to eligibility criteria has been conducted. Post-registration is not acceptable. Conceptual and narrative reviews do not need to be pre-registered.

Structure

Your paper should be compiled in the following order: title page; abstract; keywords; main text introduction, materials and methods, results, discussion; acknowledgments; declaration of interest statement; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figures; figure captions (as a list).

Format-Free Submission

Authors may submit their paper in any scholarly format or layout. Manuscripts may be supplied as single or multiple files. These can be Word, rich text format (rtf), open document format (odt), or PDF files. Figures and tables can be placed within the text or submitted as separate documents. Figures should be of sufficient resolution to enable refereeing.

- There are no strict formatting requirements, but all manuscripts must contain the essential elements needed to evaluate a manuscript: abstract, author affiliation, figures, tables, funder information, and references. Further details may be requested upon acceptance.
- References can be in any style or format, so long as a consistent scholarly citation format is applied. Author name(s), journal or book title, article or chapter title, year of publication, volume and issue (where appropriate) and page numbers are essential. All bibliographic entries must contain a corresponding in-text citation. The addition of DOI (Digital Object Identifier) numbers is recommended but not essential.
- The journal reference style will be applied to the paper post-acceptance by Taylor & Francis.
- Spelling can be US or UK English so long as usage is consistent.

Note that, regardless of the file format of the original submission, an editable version of the article must be supplied at the revision stage.

Checklist: What to Include

1. **The Title Page** (p. 1) should contain the article title, authors' names and affiliations and the address for manuscript correspondence (including e-mail, address and

telephone and fax numbers). No information that would indicate authors' identity or affiliation should be contained in the manuscript itself; all such information should be included on the title page only. Read more on authorship.

2. **Author details** Please ensure all listed authors meet the Taylor & Francis authorship criteria.

3. **The Abstract** (p. 2) must be a single paragraph that summarizes the main findings of the paper in fewer than 200 words. After the abstract a list of six **Keywords** that will be useful for indexing or searching should be included.

4. **Figures.** Figures may be embedded in the manuscript file (preferred), provided at the end, or saved as separate files. All figures must be numbered in the order in which they appear in the manuscript (e.g. Figure 1, Figure 2) and have appropriate captions. Figures should be of sufficient resolution to enable refereeing.

5. **Tables.** Tables may be embedded in the manuscript file (preferred), provided at the end, or saved as separate files. All tables must be numbered in the order in which they appear in the manuscript (e.g. Table 1, Table 2) and have appropriate captions.

6. **Authors' contributions.** All authors are expected to have made substantive intellectual contributions to, and to have been involved in drafting or revising the manuscript. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship. With the submission of a manuscript, it is assumed that all authors have read and approved the final manuscript.

7. **Acknowledgements.** All contributors who do not meet the above criteria for authorship, should be listed in an acknowledgements section in accordance with the

APA guidelines. The acknowledgements should be contained on the title page of the manuscript as making acknowledgements available to reviewers will compromise the masked peer-review process. Examples of those who might be acknowledged include those who provided general, technical, or writing assistance. Acknowledgement of funding/grants are also included in this section.

8. **Funding details.** Please supply all details required by your funding and grant-awarding bodies as follows:

   For single agency grants

   This work was supported by the [Funding Agency] under Grant [number xxxx].

   For multiple agency grants

   This work was supported by the [Funding Agency #1] under Grant [number xxxx]; [Funding Agency #2] under Grant [number xxxx]; and [Funding Agency #3] under Grant [number xxxx].

9. **Supplemental online material.** Supplemental material can be a video, dataset, fileset, sound file or anything which supports (and is pertinent to) your paper. We publish supplemental material online via Figshare. Find out more about supplemental material and how to submit it with your article.

10. **Disclosure statement.** This is to acknowledge any financial or non-financial interest that has arisen from the direct applications of your research. If there are no relevant competing interests to declare please state this within the article, for example: *The authors report there are no competing interests to declare.* Further guidance on what is a conflict of interest and how to disclose it.

11. **Data availability statement.** If there is a data set associated with the paper, please provide information about where the data supporting the results or analyses presented

in the paper can be found. Where applicable, this should include the hyperlink, DOI or other persistent identifier associated with the data set(s). Templates are also available to support authors.

12. **Data deposition.** If you choose to share or make the data underlying the study open, please deposit your data in a recognized data repository prior to or at the time of submission. You will be asked to provide the DOI, pre-reserved DOI, or other persistent identifier for the data set.

13. **Equations.** If you are submitting your manuscript as a Word document, please ensure that equations are editable. More information about mathematical symbols and equations.

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Appendix T: NRES End of study form

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Appendix U: Feedback summary for ethics panel and R&D committee

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Appendix V: End of study report for participants

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Appendix W: Evidence of feedback for the NHS research ethics

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