

## Comparing guided self-help and self-help acceptance and commitment therapy skills-based internet intervention to manage food cravings: a pilot feasibility study

Item Type	Thesis or dissertation
Authors	Pollard, Lorraine
Citation	Pollard, L. (2024) Comparing guided self-help and self-help acceptance and commitment therapy skills-based internet intervention to manage food cravings: a pilot feasibility study. University of Wolverhampton. <a href="http://hdl.handle.net/2436/625765">http://hdl.handle.net/2436/625765</a>
Publisher	University of Wolverhampton
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Comparing guided self-help and self-help Acceptance and Commitment Therapy skills-based internet intervention to manage food cravings:  
a pilot feasibility study

Written by

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A thesis submitted in partial fulfilment of the requirements of the  
University of Wolverhampton  
for the award of  
Professional Doctorate Counselling Psychology (PsychD)

Date: October 2024

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## Abstract

**Background:** Managing food cravings poses a substantial challenge when it comes to dietary control or transitioning to a healthier eating regimen. Furthermore, these cravings often lead to premature discontinuation of weight-loss programmes. Acceptance and Commitment Therapy (ACT) has emerged as an inspiring approach to managing food cravings. A novel direction was to evaluate an ACT based internet intervention for food cravings. **Design/method:** This mixed methods pilot study was designed to investigate the acceptability and effectiveness of a 3-week ACT based online intervention for food cravings. Thirty participants from the community were randomly assigned to either a) a self-help delivery method or b) a guided self-help method, where remote support was provided by the researcher. Psychological flexibility, emotional eating and food cravings were measured by validated questionnaires at pre, post and at 1 month follow-up, where participants partook in a semi-structured feedback interview. **Results:** Many of the participants found the internet intervention acceptable and had a positive experience. Analyses were run with baseline and post scores only, due to participant attrition at follow up. Significant differences between pre and post intervention were found for the following: an increase in psychological flexibility ( $F(1,28) = 26.67, p = .001, \eta^2 = 0.49$ ); a decrease in both emotional eating ( $F(1,28) = 12.93, p = .001, \eta^2 = 0.32$ ) and self-reported frequency of food cravings ( $F(1,28) = 8.045, p = .008, \eta^2 = 0.22$ ). No significant effect was observed between the different delivery method (self-help versus guided self-help). **Discussion/Conclusion:** This study's findings tentatively indicated that an ACT based internet intervention was effective for managing food cravings, regardless of delivery method. This pilot has the potential to inform the design a larger scale study to determine its longer-term effectiveness.

## **Acknowledgements**

To my supervisors, Dr Wendy Nicholls and Dr Joanne Lloyd, thank you so much for your supervision, expertise and efficiency in making this thesis project a reality. Your honest feedback has been invaluable and assisting me in staying focused throughout the different phases of this thesis. Thank you for your ever enduring patience!

My husband Duncan, for showing your constant love in many ways, patience and understanding throughout this course. You had always believed in me during the ebb and flow of this project. Thank you!

Finally, the counselling psychology doctorate team for making the current training course possible, and for their support, commitment and mentorship.

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## Abbreviations

ACT	Acceptance and Commitment Therapy
AAQ-W	Acceptance and Action Questionnaire for Weight Related Difficulties
BMI	Body Mass Index
BPS	British Psychological Society
CBT	Cognitive Behavioural Therapy
DEBQ-EE	Dutch Eating Behaviour Questionnaire: Emotional Eating
FC	Food Cravings
FCI-UK	Food Craving Inventory UK

GSH	Guided Self-Help
iACT	Internet-based Acceptance and Commitment Therapy
NHS	National Health Service
NICE	National Institute of Clinical Excellence
SH	Self-Help
RCTs	Randomized Controlled Trials

## Chapter 1: Introduction

Concerns about obesity and its impacts are never far from headline news. Globally, the number of individuals grappling with obesity surpasses one billion with a Body Mass Index (BMI) exceeding  $30 \text{ kg/m}^2$  (World Health Organization, 2021). The Office for Health Improvement and Disparities, Obesity profile: short statistical commentary (May 2024) reported that in period of 2022 to 2023, 37.8% of adults aged 18 years and over in England were estimated to be overweight, and a further 26.2% of adults were estimated to be living with obesity. These numbers have been on the rise over the past decade and are projected to continue increasing (Office for Health Improvement and Disparities, 2024).

Guh et al. (2009) found a correlation between obesity and a reduction in life expectancy, as it is coupled with an array of diseases, including cardiovascular disease, diabetes, cancer, liver and respiratory disease. In 2020 we saw heightened attention to obesity following the UK Government's Obesity Strategy, because being overweight was considered as a risk factor for serious COVID-19 illness (Department of Health and Social Care, 2020).

Sarwer and Polonsky (2016) found an association between being overweight and poorer mental health, specifically with issues related to mood, such as depression, self-esteem, and body image. A systematic review by Puhl and Heuer (2009) noted that weight stigma and shame can play a role in treatment seeking and can impact on treatment outcomes. Interestingly Dindo et al. (2017) described the relationship between mental health and medical conditions as bidirectional, with mental health influencing medical conditions.

Health Survey for England (2021) statistics for the UK revealed further inequalities are also associated with excess weight, such as socioeconomic status. Baker (2023) noted that in England the highest prevalence rates of excess weight were among individuals with disabilities, and those who lived in the most deprived areas of the UK.

Obesity has far-reaching consequences, not only at an individual level affecting physical and mental well-being but also on a societal level, such as impacting healthcare services. In the 2019/2020 period, obesity played a role either as a primary or secondary factor in over one million NHS hospital admissions (NHS Digital, 2021). The estimated financial cost to the NHS for 2020 was £6.5 billion annually (Frontier Economics, 2022) and Public Health England, (2017) has projected that this will continue to increase to £9.7 billion by 2050.

### *COVID-19 pandemic*

In March 2020 governments issued mandated “lockdowns” and social distancing guidance, (World Health Organization, 2020). These were a cause of great disruption to people’s lives and routines. Khan and Moverly-Smith (2020) theorised that stressful time was likely to effect eating behaviour and physical activity. Robinson et al.’s (2021) online survey, involving UK adults during the pandemic, revealed an increase in weight gained and a decline in physical activity, especially among individuals with higher BMI. Previous research by Bhutani and Cooper (2020) revealed that disruptions to routines, such as school holidays are linked with weight gain, and insinuated that even minor weight increases can become lasting, with individuals who have overweight or obesity being particularly vulnerable to such changes. Brown et al. (2021) conducted a survey in the UK and noted more than half (55%) of individuals

living with obesity reported a deterioration in mental health through the lockdown periods. Persistent stress can lead to emotional eating, as studies indicate that chronic stress triggers an increased appetite and an increased desire for calorie-rich foods (Chao et al., 2017). Emotional eating has become even more of a priority area for tackling obesity since the pandemic.

### *Weight management services*

The UK government has recognised that obesity was a threat to its population's health and has made it a top policy priority (British Psychological Society (BPS), 2019). Various policies have been implemented, including the establishment of nutritional standards in schools, initiatives to promote physical activity, and the introduction of four tiers of NHS weight management services based on BMI. This is a calculation, using an individual's height and weight, to estimate the central adiposity (excess fat in the abdominal area) and can be used as an indicator, as part of other indicators, such as waist to height ratio, as an estimation of health risks (for example, cardiovascular disease, type 2 diabetes) (NICE, 2023).

According to the NICE (2014) guidelines on weight management: lifestyle services for overweight or obese adults, the different tiers of NHS weight management services reflect the activities and service provision provided at each level. Tier 1 is targeted to the general population, and covers public health and health promotion; tier 2 targets people living with obesity and covers lifestyle interventions, such as increased physical activity, and weight management programmes; the next tier 3 targets people living with severe and/or complex obesity and involves more specialist weight loss services, using a range of interventions such as dietitians, and medications and the last tier, tier 4, is pathway which covers surgery for weight

loss, for those with severe obesity and long-term conditions. However, as noted by Public Health England, (2015) provision of these services has been found to be inconsistent nationally, with some areas having gaps in service provision. The pandemic and the social distance guidance (World Health Organization, 2020) which was in place at the time, resulted in substantial disruptions in the provision of existing health-care services (Mueller et al., 2022). In response to this these services, where feasible, moved to remote non-person methods (such as videocalls, internet, telephone) for delivering consultations and interventions (Mueller et al., 2022). At the time of this research project was during the pandemic, and adhering to social guidance in place, the nature of this study changed where it moved to being online. Consequently, this study investigated the feasibility of a prototype online intervention. Before reviewing the effectiveness of weight management interventions, the next section will précis the determinates of obesity.

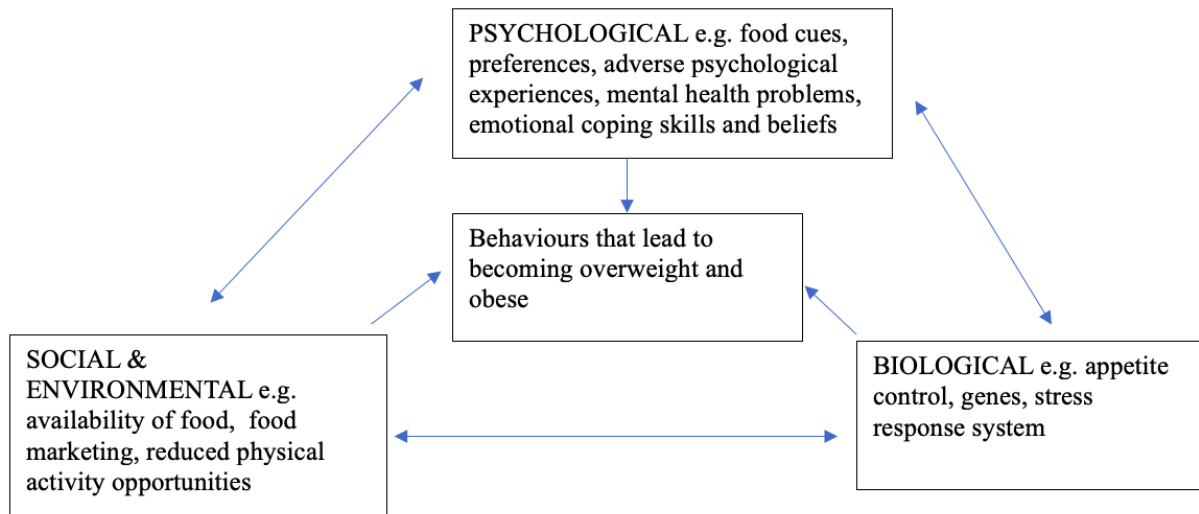
### *Determinants of excessive weight*

Exploring the determinants of excessive weight gain can help to shape an effective response to obesity, through development of targeted policies and the commissioning of services (BPS, 2019). According to the World Health Organization (2020b) obesity stems from an imbalance in energy, between the consumption and expenditure of calories. However, other authors propose alternative perspectives that challenge the simplicity of this explanation. For example, Athanasiadis et al. (2021) argue that the limited long-term success of commercial diet programmes indicates a more complex reality. These programmes often focus solely on reducing calorie intake, neglecting the intricate interplay between emotions, social contexts, and the psychological aspects of food consumption (Berman, 2018). Additionally, previous research has highlighted that food serves

multiple roles, such as in the regulation of emotional experiences (Fahrenkamp et al., 2019; Butland et al., 2007).

In a different vein, Cohen and Babey (2012) suggest that obesity is not merely a result of individual behaviour but is heavily influenced by an "obesogenic" environment, which is the promotion of excessive caloric intake while discouraging physical activity. Although Cohen and Babey (2012) do not directly address the World Health Organisation's definition, their work offers an alternative explanation by focusing on environmental factors that shape behaviours leading to energy imbalance. This perspective implies that addressing obesity requires not only individual dietary changes but also broader environmental and social interventions. The "Foresight: Tackling Obesities: Future Choices" (2007) report revealed a multifaceted interaction of factors in obesity, including biological, psychological, sociological and environmental. The BPS's (2019) "Psychological perspective on obesity: Addressing policy, practice and research priorities" report proposed a biopsychosocial approach, as a theory of how individuals and environments both play a significant part in the development of obesity. The model is depicted in Figure 1.0.

**Figure 1.0:** The BPS's (2019) biopsychosocial approach to obesity.



Source: (BPS, 2019, p.12)

The BPS (2019) concluded that the origins of obesity are complex and multidimensional, and to fully address the complex causes, interventions need to be made at multiple levels e.g., at from the legislation: needing guidance on food marketing, to the individual level: the provision of psychotherapy.

Obesity research is extensive, covering areas such as the role of biology, neurology, nutrition, gut health, lifestyle, marketing, and food technology, and production. While these factors are undoubtedly crucial and form the basis of much of what we already know about obesity. If we take the BPS model (Figure 1.0 above), the psychological aspect is the part we know least about. The biological approach is not effective as demonstrated by the widespread failure of individuals to maintain a lower weight over time using these strategies, so looking to a psychological approach seems a sensible next step. Therefore, this thesis as this has adopted a counselling

psychology perspective. Hence it focused on the individual, considering their social influences, networks, cultural norms, and societal context (BPS, 2020a).

### *Policies and empirical support for standard behavioural interventions*

According to National Institute for Health and Care Excellence (NICE, updated in 2023, 2014): ‘Obesity: Identification, Assessment and Management’ guidelines, the first recommendation at addressing obesity is lifestyle interventions including the standard behavioural interventions (including lifestyle changes such as reduced energy intake and increased physical activity). Research studies have concluded that the standard interventions were moderately successful, in the short term, because the average weight loss tends to be between 7 to 10% of body weight (Lillis & Kendra, 2014). Yet, within two to five years, results showed that the loss is not sustained, as most of the lost weight was regained (Athanasiadis et al., 2021), and for some individuals, restrictive dieting may trigger eating difficulties such as binge eating (Boswell & Kober, 2016). According to NICE, (2014) interventions targeting obesity fall into various categories, producing mixed results. For example, pharmacological and bariatric surgical treatments have shown moderate success with weight management but are accompanied by significant long-term safety and efficacy concerns, making them secondary options reserved for individuals with severe obesity as classified by BMI (NICE, 2023, 2014) (NICE, 2023, BMI Classifications for adults Appendix 7.0.). Athanasiadis’ et al. (2021) review noted that 18% of patients had regained the lost weight; and potentially necessitated further invasive procedures (with bariatric surgery costing upwards of £10,000) and a resurgence of comorbid conditions (Courcoulas et al., 2018). Department of Health and Social Care interventions (updated February 2024) such as the Soft Drinks Industry Levy (which is an increased taxation on drinks

with high sugar content) aimed to reduce the consumption of sugar. However ideally this needs support from all of food manufacturing industry, the public and political, which so far, has been relatively limited (BPS, 2019).

Mason et al. (2018) theorised that a potential factor contributing to the variance in outcomes observed in standard weight loss interventions was their limited success in addressing the psychological aspects of eating. These aspects are highlighted in the Biopsychosocial model in Figure 1.0 above. Specifically, these interventions may not adequately target the internal antecedents, such as emotions, that trigger the desire to eat (Niemeier et al., 2007). This has led to a move, for some researchers, to explore the psychology of eating to evolve weight loss programmes (Schnepper et al., 2019).

### *Psychology's contribution*

The BPS's (2019) report emphasised psychologists' role and how it can contribute to the design, delivery and evaluation of interventions, also to psychological theory and research into the maintaining factors of obesity. For example, a conceptual review by Elfhag and Rossner (2004) revealed that there are psychological aspects involved in weight management and sustaining weight loss. The next step, in standard weight loss interventions was the inclusion of psychological strategies to address psychological factors to improve long-term weight loss maintenance (Forman & Butryn, 2015).

Cognitive-Behavioural Therapy (CBT) is one of the most effective talking therapies due to its robust evidence base for both mental health and some physical health conditions (Thomas &

Drake, 2012). Due to its versatility researchers explored CBT's effectiveness for weight loss maintenance for obesity. However, the findings of these intervention studies revealed limited efficacy regarding maintaining weight loss (e.g., Forman et al., 2013; Wadden & Butryn, 2003). Furthermore, the findings from Cooper et al.'s (2010) CBT-based weight loss maintenance intervention randomized controlled trial study (RCT) reported at the three-year follow-up, weight restoration was observed by most of the participants with the CBT intervention and was no better than the standard behavioural interventions in maintaining weight loss. Cooper et al. (2010) posited that the findings stemmed from the processes outlined by the CBT theory, suggesting that these processes indeed operate but that CBT treatment may not be potent enough to effect change. Cooper et al. (2010) concluded that it remained inconclusive from this study whether the theory itself is flawed or if CBT lacks the necessary efficacy.

Findings from CBT component manipulation empirical interventions such as thought suppression, (e.g., "I mustn't think about cake"), as a method to control cravings, have been found to have a limited impact (Barnes & Tantleff-Dunn, 2010). Another component is cognitive restructuring, and the outcome of empirical studies have shown this strategy to have a marginal success for weight loss maintenance (Moffitt et al., 2012; Forman et al., 2013). Other researchers (Teixeria et al., 2012; Lowe & Levine, 2005) suggested that the ambiguous outcomes of cognitive-based interventions for weight management were attributable to the focus of the approach. Cognitive-based interventions tend to target the content of the thoughts and/or emotions for behavioural change, instead the aim should be understanding the function of the behaviour (e.g., snacking) (Teixeria et al., 2012). One such approach that does aim to do this is Acceptance and Commitment Therapy (ACT) (Hayes et al., 1999, 2012) which has its

foundations are in functional behaviourism. Subsection 2.1.5: *ACT's philosophical heredities* in Chapter 2 discusses this in more depth.

Research has also investigated whether certain psychological characteristics could account for why some people prematurely terminate weight-loss programmes; and/or are unable to maintain lost weight. An example of this work was by Gifford and Lillis (2009) whose mediation analyses revealed avoidance was a coping style within a clinical obese sample. Further evidence, on the role of avoidance, was found from the work into emotion and weight loss maintenance by Byrne et al. (2003). Their qualitative study found that an avoidant coping style was associated with relapses in maintaining weight loss. Furthermore, findings of a systematic review by Schag et al. (2013) supported the notion, that eating was being used in response to stress or negative emotions. Previously Drapkin et al. (1995) found that individuals who regain previously lost weight seem to have a few ways to manage food cravings. These have been associated with certain eating behaviours, like emotional eating (Fahrenkamp et al., 2019) where food is eaten in reaction to feelings (Byrne et al., 2003; Ganley, 1989). As the literature indicated that food cravings seem to be a maintaining factor to disordered eating, and warranted further research, so they became the focus of this research project.

### *Food Cravings*

Most people have experienced food cravings (FCs) at one time or another (Fahrenkamp et al., 2019) as they are experienced by individuals across the weight continuum, including those with a healthy weight (Hofmann et al., 2012). There are interindividual differences in the relationship between FC and consumed foods, as it depends on the context and individual factors (Meule,

2020), which Richard et al. (2017) has coined as trait FCs. Craved foods are influenced by culture; for instance, in the UK chocolate is the highest reported craved food (Schumacher et al., 2017), whereas in Japan, it is rice (Komatsu, 2008).

Sitton (1991) noted that FCs are recognised as a significant challenge in dietary control and transitioning to a healthier diet, often contributing to early dropouts from weight-loss programmes as individuals often struggle with managing FCs (Moffitt et al., 2012). It is theorized that strict calorie intakes diets may increase cravings for those restricted foods (Martin et al., 2006). Support of this is provided by Bradley et al. (2017) who noted that one in five people post bariatric surgery experience weight regain resulting from the return of FCs. FCs have been associated with certain eating behaviours, such as overeating (Kober & Boswell, 2018); binge eating (Joyner et al., 2015); emotional eating (e.g., Fahrenkamp et al., 2019; Jeanes et al., 2017). They are also a predictor of snacking habits which is a factor in the development of obesity (Richard et al., 2017).

### *Defining FCs and physical hunger*

FCs differ from physical hunger as the latter arises from an empty stomach (Rogers & Brunstrom, 2016) and can be eased by consuming any type of foods (Hormes, 2014). FCs on the other hand are characterized as intense specific desires that can typically only be placated by the consumption of craved food or types of food (e.g., foods high in sugar). Furthermore, being hungry is not a necessity for experiencing a FC (Meule, 2020).

In the literature on eating behaviour, cravings have been defined in a myriad of ways. For example, they have been conceptualised as ‘essentially cognitive’ (Cooper & Shafran, 2008) or as a cognitively motivated state (Coffino et al., 2018; Potenza & Grilo, 2014). Indeed, what the definitions have in common are the following features in their descriptions: “*strong, desire, urge or wanting*” (Sun, 2020, p.2). Meule (2020) described the FC experience as multidimensional because it involved physiological activation, such as reward-related brain areas and the psychological aspects such as cognitive (i.e., thoughts about food), and emotions (i.e., desire to change mood). Lastly, they involve looking for and consumption of craved foods, the behavioural response.

#### *FCs and weight management*

The literature on FCs suggests that they are a substantial obstacle to following dietary plans and consequently achieving desired weight changes, and are associated with disordered eating (Meule, 2020). Research has shown that a decline in consumption of craved foods was coupled with more significant weight loss (Smithson & Hill, 2017). In addition, regulating eating behaviours can enhance intuitive eating, characterized by making food choices based on physiological instead of emotional factors, so becoming reliant on the body’s cues for hunger and satiety (Boucher et al., 2016). Enhancing intuitive eating has been shown to lead to optimal nutrition, healthy weight (Schwarz, 1996) and long-term effectiveness in healthy eating interventions (Van Dyke & Drinkwater, 2014). Boswell and Kober (2016) suggested that reducing craving-related consumption may have substantial implications for cumulative calorie intake reductions over weeks, months, and years, making it a sustainable approach to weight loss without the need for restrictive methods, like calorie counting. The next section will briefly visit

some of theories proposed to account for FCs, as understanding the mechanisms that underpin them can inform an intervention to manage/reduce cravings, which in turn can contribute to weight management interventions.

### *FCs as a conditioned response*

There are different theories and models acclaming to have an account for cravings (Skinner & Aubin, 2010; Tapper, 2018). The most recent one by Tapper's (2018) systematic review focused on the most prominent psychological theories and models, such as conditioning, cognitive-behavioural based, to account for FCs. It was evident that most of the models reviewed by Tapper (2018) accepted the role of conditioning processes, such as Skinner's (1963) operant conditioning model learning theory, has a part in both the development and maintenance of FCs. Furthermore, Meule (2020) supported this notion from the conclusion of "*experimental studies show that food craving can be understood as a conditioned response that emerges because internal or external cues*" (p. 251).

Mason et al. (2018) noted that the traditional behavioural weight loss approaches paid very little attention to the habitual behaviours (e.g., snacking whilst watching a film) which can be the reinforcement of craving-related eating (Skinner, 1963 as cited in Mason et al., 2018). Mason et al. (2018) theorised that the roots of reward-driven behaviour lay in Skinner's (1963) operant conditioning learning theory. Skinner (1963) postulated that learning involves acquiring behaviours through positive and negative reinforcement. Mason et al. (2018) suggested that operant learning was adaptive when food resources were scarce but might be less advantageous in environments abundant with calorie-rich options. For example, Volkow et al. (2008) proposed

that repeated consumption of highly pleasurable foods can condition individuals to expect enjoyment both while eating the food (encouraging continued consumption for pleasure) and when exposed to stimuli associated with the food (prompting eating). According to May et al. (2012), food and FCs are part of a broader context of desires, like energy, relaxation, happiness, or self-reward after a challenging day, and food may be a vehicle to fulfil these purposes, thus the reward is also an emotive one, not just a physical response. Empirical support for this proposal is provided by Smithson and Hill, (2017) who concluded that regular consumption of highly pleasant foods reinforces the craving of those foods. Furthermore, Meule (2020) found that FCs often result in the consumption of the craved food especially when the focus is on those highly pleasurable items forming a conditioned response. Meule (2020) noted that this can be triggered by either internal cues and/or those in the environment/external cues such as the aroma or sight of food. These stimuli can trigger learned associations, leading to automatic eating for pleasure or relief even when not hungry (Meule, 2020). This echoed Dallman's (2010) notions of "emotional eating" (i.e., emotions triggering eating) and uncontrolled eating (i.e., overeating when faced with appealing foods or other stimuli, like boredom). In contrast, typical stress responses usually decrease appetite (e.g., Adam & Epel, 2007; van Strien & Ouwens, 2003). Meule (2020) suggested that as FCs are developed by as a conditioned response, they can be unlearned. Meule (2020) theorised that a conditioned response (e.g., watching a film and eating a sweet snack) can be decoupled, so the cue (a film) no longer triggers the response (a snack), however this takes time. This position has been supported by the findings of selective food deprivation studies conducted by Meule (2020). Decoupling through an ACT's lens is referred to as defusion (the decoupling between a thought and the habitual response, Bennett & Oliver, 2019) and will be covered in more depth in subsection 2.1.8 ACT's view on food cravings.

### *Summary*

Addressing FCs is essential because they present a major hurdle for individuals trying to manage their weight or transition to a healthier diet (May, et al., 2012; Moffitt et al., 2012). Furthermore, the eating behaviour literature indicated that FCs are associated with obesity (Chao et al., 2016) and binge eating (Joyner et al., 2015). Furthermore, Meule (2020) noted that research evidence implicated that a conditioned response underpinned FCs, which therefore can be modified.

Therefore, FCs represent an appropriate target for an intervention designed to help identify and better manage these, which could contribute to weight-related interventions. FCs was the focus of this research project as it aimed to design and implement a novel ACT-based intervention.

The outcome will be a change in responding to FCs by targeting the ways of reacting to thoughts and feelings of the FCs experience.

At the time of writing this thesis and best to the author's knowledge there were no published studies on ACT based internet interventions, specially, to manage food cravings. This current research project aimed to explore the potential acceptability, feasibility and effectiveness of a prototype ACT-based internet behaviour change intervention to manage FC. As this was a prototype intervention it was a pilot feasibility study to assess the practicality of this type of intervention.

As there is a paucity of research in this domain, Pears and Sutton (2021) advocated best practice for developing behaviour change interventions should be grounded in theory. Therefore Chapter 2 covers two main strands of literature that were drawn upon in the development of this study's

intervention. The first strand encompasses FC literature, to identify the most consistent evidence-based psychological approaches for managing FCs, such as cognitive-based, and 3<sup>rd</sup> wave CBT approaches such as Mindfulness and ACT.

Another facet of this study pertains to its delivery format, as existing ACT interventions are costly, because they are professionally led, delivered in person and in a health care setting (Lawlor et al., 2020). The second strand of Chapter 2: *ACT Practice*, reviews the literature on internet-based ACT interventions (iACT) in terms the effectiveness, efficacy and acceptability. This need became apparent during the COVID-19 pandemic where health care and psychological therapies went from being delivered in person, to remote ways of interacting such as telephone, videocalls, self-help methods: books, internet, apps, online programmes (Mueller et al., 2022).

## **Chapter 2: Literature review**

### **2.1.0 Overview**

This first strand of the Chapter, as mentioned in the Introduction, reviews the research evidence on the prominent strategies and approaches to manage FCs.

### **2.1.1 Cognitive-behavioural interventions**

This section will precis the empirical literature on use of CBT and/or its components to manage food cravings. CBT (Beck et al., 1979) has empirical support for being an effective psychological therapy for several mental health and health-related issues (Shaw et al., 2005). CBT is a change therapy as it aims to change cognitions to reduce distress symptoms (Beck et al., 1979). A key CBT component is cognitive restructuring, which involves the identification and replacement of certain thoughts, that are unhelpful (e.g., “I need a snack”) that might trigger an unwelcome response (e.g., consuming the snack) (Hofmann & Asmundson, 2008). Cognitive restructuring is recommended as a strategy in behavioural interventions in the NICE (2014) guidelines for weight loss management for obesity. In the updated NICE guidelines (published July 2023) a notable change is the role of psychology, in terms of support, and assessments, this is mentioned as a recommendation much more in the revised guidelines.

CBT is not without its critics, as Waller (2016) commented that it is yet to withstand comparison against other treatment modalities such as ACT (Hayes et al., 1999). For example, Moffitt et al. (2012) conducted a comparative study on cognitive restructuring and cognitive defusion as strategies for managing chocolate cravings. Both strategies involve increasing awareness to the

relationship with our thoughts, however the difference between the two is how to manage those unwanted thoughts. The authors defined CBT's cognitive restructuring "*seeks to modify the content of the thoughts*" (p.75) whereas ACT's cognitive defusion involves "*learning to distance or separate ourselves metaphorically from our thoughts*" (p.75). (A more in-depth description of this is in subsection 2.1.8: *ACT's view on food cravings*.) The outcome was the defusion group consumed less chocolates than the other group. Moffitt et al. (2012) attributed this to the underlying principles of these approaches. Notably, defusion emphasized resisting food-related thoughts or urges by creating psychological distance from them, rather than trying to eliminate or replace them (Moffitt et al., 2012). Furthermore, Moffitt et al. (2012) commented that defusion was a simpler and less cognitively demanding method for managing momentary food-related thoughts. This finding supports the outcomes of previous studies, that of Forman et al. (2007); Juarascio et al. (2010) who also concluded that challenging cognitions about food was an ineffective method, particularly for individuals highly susceptible to food-related cues.

Other researchers, such as Borton et al. (2005), and Wenzlaff and Wegner (2000), have noted that attempting to alter or control private events like thoughts and emotions can sometimes be counterproductive, making it more challenging to cope with FCs and potentially leading to increased consumption of desired foods. For instance, thought suppression, which is described by Hooper et al. (2012) has a cognitive technique involving trying not to think about a craved food (e.g., "I must not think about biscuits"), has been consistently shown in numerous studies (Hooper et al., 2012; Marcks & Woods, 2005) to have the opposite effect, thus aggregates the frequency and strength of those thoughts.

Further studies, like Van den Akker et al. (2016) have found that exposure to food cues is more effective at reducing FCs than cognitive interventions. Longmore and Worrell (2007) concluded from their review, that there was little evidence that certain cognitive interventions (e.g., cognitive restructuring) contribute to the effectiveness of an intervention. Indeed, concern has been raised that some cognitive methods may inevitably be teaching suppression and avoidance of internal states (i.e., thoughts and emotions) (Eifert & Forsyth, 2005). These methods can contribute to the maintenance of an avoidant coping style, which has been associated with emotional eating (Fahrenkamp et al., 2019; Schag et al., 2013). CBT's effectiveness with weight management interventions was briefly mentioned in the Chapter 1: *Introduction*.

In summary, the previous section reviewed the complex picture of CBT's effectiveness to manage FCs, therefore an alternative approach to targeting FCs was needed as an intervention.

### **2.1.2 Third wave CBT therapies**

Many years of research has led to emergence of the "3rd wave of behavioural and cognitive therapies". This referred to a family of behavioural-cognitive models and therapies, where the premise is on one's relationship with their cognitions, instead of their content, as in traditional CBT (Hayes & Hofmann, 2017). For example, a CBT intervention might target restructuring thoughts, whereas a 3<sup>rd</sup> wave intervention might look at how individuals relate to and respond to their thoughts, and other internal experiences (Hayes et al., 2012).

ACT (Hayes et al., 1999) is part of this family of therapies and another 3<sup>rd</sup> wave cognitive behavioural therapy is Mindfulness (Kabat-Zim & Hanh, 2009). The latter is present in the

eating behaviour literature for the management of FCs, this will be reviewed next followed by empirical research literature on ACT (Hayes et al., 1999).

### **2.1.3 Mindfulness and food cravings**

Kabat-Zinn (2003) defined Mindfulness “*as the awareness that arises when individuals intentionally pay attention to the present moment in a non-judgmental manner*” (p.145).

Mindfulness has garnered both scientific and popular attention in recent years (Tapper, 2018). Researchers (like Alberts et al., 2012; Lacaille et al., 2014) have designed and implemented interventions based on mindfulness principles to interrupt habits that sustain craving-related eating, so reducing both craving and consumption of craved foods.

Tapper (2018) reviewed 30 studies to examine the impact of most practiced mindfulness approaches on cravings, including food, cigarettes and alcohol. These included experimental manipulation or intervention studies, twelve of those targeted FCs. Of those studies the findings were mixed, as some researchers reported an observed significant change in FCs, whereas others found the opposite (Tapper, 2018). Overall, the review’s author, Tapper (2018) concluded that there was tentative support for the Buddhist mindfulness approach to manage cravings (food, cigarettes and alcohol). However, the author noted that it was a tentative one because of the heterogeneity of mindfulness practices described in the studies; and called for clearer and accurate definitions to be used in future studies to enhance clarity.

A previous literature review on mindfulness and changing eating behaviour by Warren et al. (2017), reported that the number of studies that included FCs as an outcome measure were small

(four in total). These were all laboratory-based and FCs were measured using self-report questionnaires (like Food Craving Questionnaire -state version by Cepeda-Benito, Gleaves et al., 2001). Warren et al. (2017) noted that four studies that the mindfulness-based intervention varied in length of time, and the reported findings were mixed. Due to the small number of studies the review author concluded that the role of mindfulness in reducing FCs needs further clarification. A review by Olson and Emery (2015) reported that although mindfulness-based interventions can have a positive impact on weight management, however “*the studies did not clarify the degree to which changes in mindfulness are a mechanism responsible for weight loss in mindfulness interventions. Methodological weaknesses and variability across studies limit the strength of the evidence*” (p.59). The conclusion on this review seems to echo that of Tapper’s (2018) review.

In summary, the outcome of the reviews seems to be similar in that, there were some promising findings from the mindfulness-based interventions in managing craved foods and weight management. However, scholars (like Tapper, 2018; Warren et al., 2017) noted that the number of studies was small and given the complexity the of mindfulness concepts which has multiple definitions for what appears to be overlapping constructs the effectiveness of mindfulness is ambiguous.

Research in mindfulness-acceptance based interventions led to a new approach to weight management, and the emergence of growth of empirical studies that explored ACT’s (Hayes et al., 1999) versatility to manage FCs. This evidence will be reviewed in the subsection 2.1.9: *Empirical support for ACT to manage food cravings.*

#### **2.1.4 Acceptance and Commitment Therapy**

Acceptance and Commitment Therapy (ACT) is a behavioural therapy (Hayes et al., 1999, 2004) which has been described as both flexible and versatile in its delivery (Alberts et al., 2012; Dindo et al, 2017). According to Lillis et al. (2014) ACT's primary therapeutic outcome is "*effective living*" (p.4), which the authors have defined as "*behaving consistent with one's personal values*" (p.4).

There are several empirical studies (such as Bradley et al., 2017; Duckyun & Eunjoo, 2019; Forman et al., 2013) which have investigated ACT based interventions to target the experience of FCs however before reviewing this, the section below will explain the theoretical framework of ACT, its assumptions and processes.

#### **2.1.5 ACT's philosophical heredities**

ACT's (Hayes et al., 1999) guiding philosophy is pragmatism due to its derivation in functional contextualism. Hayes et al. (1999) described the latter, "*being concerned with behaviour of whole organisms interacting within their situational and historical contexts*" (p.18).

Furthermore, according to Bennett and Oliver (2019) functional contextualism emphasised the importance of understanding behaviour in its context, including internal and external factors, rather than separating behaviour from its parts (such as viewing a behaviour in isolation like eating). Translated into practice, according to Hayes et al. (1999, 2012) an ACT therapist would help a client to understand the purpose of their behaviour (e.g., avoiding emotions by eating).

### **2.1.6 ACT's theoretical background**

ACT's theoretical model (Hayes et al., 1999; 2006) was developed from Relational Frame Theory (Hayes et al., 2001). Hayes et al., (2006) noted that the basic premise of this contextual behavioural theory was that it examined how the nuances of language and cognition influence and shape human behaviour within the context in which they occur. In other words, as Berman (2018) asserted, behaviour is guided by learned social and verbal rules, many of which have been fashioned and internalized through societal influences, including social media, and persist over time. Furthermore, Berman (2018) theorised that individuals may continue to follow these rules even when their experiences indicate their unhelpfulness or counterproductivity. For example, the rule "I can only eat 1200 calories per day" may override feelings of hunger or even symptoms of starvation or binge eating, and if the rule is broken provokes feelings of failure, shame and guilt (Berman, 2018). These verbal rules can become our beliefs about self, others, and situation, where they are often treated as "truths" (Bennet & Oliver, 2019). Berman's (2018) previously mentioned assertions have been based on her applied research work of using ACT (Hayes et al., 1999, 2012) as a theoretical framework for her Accept Yourself! intervention for obesity (Berman, 2018) for weight concerns and experimental research of using ACT as an intervention for anorexia nervosa (Berman, 2009).

Hayes et al. (1999; 2001) posited that language makes psychological distress (like anxiety) conceivable without an actual event being present, so the triggers to the distress can be multiple. Berman (2018) provided an example of this in relation to those with weight concerns which is, looking at one's mirror reflection, can provoke those unpleasant memories associated with being criticised/judged by one's body shape, although there was no-one else present.

### 2.1.7 ACT's perspective on psychopathology

ACT's position on psychopathology is markedly different compared to some other models e.g., psychiatric model where the premise is that "*psychological pain is abnormal and needs to be corrected to return the client to optimal mental health*" (Berman, 2018, p.48) so the focus becomes symptom reduction within a disorder or condition. Whereas ACT's position was described by Hayes et al. (2012) as '*psychological suffering is a characteristic and natural learning process of human life*' (p.4). This fundamental assumption as led some scholars (like Dindo et al., 2017) to consider ACT as being trans-diagnostic (applies to more than one condition), implying that it is versatile in its application.

#### *Psychological inflexibility*

The founder of ACT Hayes et al. (1999, 2012) theorised that some of the ways individuals manage/cope, such as avoidance coping style, can lead to various forms of psychological distress (e.g., sadness, worry) which maintains psychological inflexibility. Levin et al. (2014a) defined psychological inflexibility has "*a pattern in which behaviour is excessively controlled by one's thoughts, feelings and other internal experiences, or to avoid these experiences, at the expense of more effective and meaningful actions*" (p.2). Hayes et al. (1999; 2012) theorised that there several processes that contribute to psychological inflexibility, as represented in a diagram known as the "Hexaflex" model Figure 2.0. The following is a brief description on these six processes:

a) Cognitive fusion- "*refers to being "fused" or entangled with one's thoughts, such that they are perceived as literal truth*" (Berman, 2018, p.51)

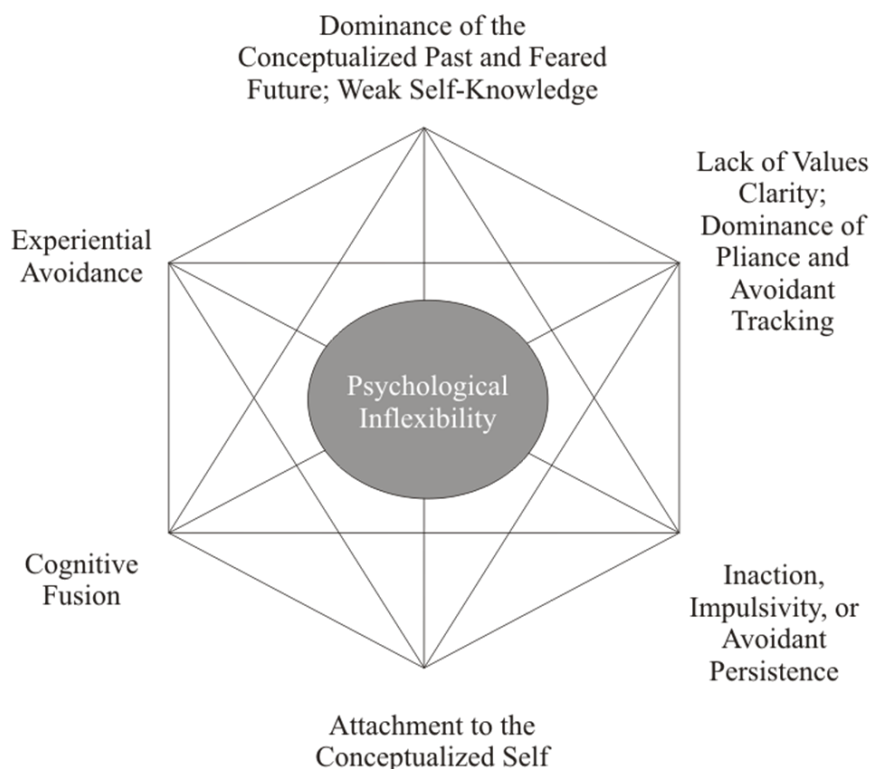
- b) Lack of clarity of values - refers to understanding what is truly important and meaningful to you in life (Hayes et al., 1999). When individuals lack clarity about their values, they may find themselves living according to others' expectations or societal norms rather than their own authentic desires (Berman, 2018).
- c) Experiential avoidance of internal states - refers to the tendency to avoid or suppress 'internal states' like uncomfortable thoughts, emotions, sensations, or memories (Hayes et al., 2006).
- d) Inaction/impulsivity (not being present) - encompasses a range of behaviours that reflect an unwillingness to engage with present-moment experiences (Hayes et al., 2006).
- e) Dominance of the conceptualised past and feared future - involves becoming overly preoccupied with either past events or future possibilities, often at the expense of being fully present in the moment (Hayes et al., 2006).
- f) Attachment to conceptualized self – this is the tendency to identify strongly with one's thoughts, beliefs, and self-narratives, often at the expense of fluidity and openness to new experiences (Hayes et al., 2006). Berman's (2018) version is, individuals become fused with their self-concept, which is shaped by past experiences, social roles, cultural influences, and internalized beliefs about who they are.

#### *ACT's transdiagnostic process*

Dindo et al. (2017) viewed psychological inflexibility as a transdiagnostic process associated with mental health conditions (Levin et al., 2014a) and some somatic/physical conditions (Kashdan & Rottenberg, 2010). There is a growing evidence basis to support this position from reviews, and meta-analyses such Lawlor et al. (2020). In terms of eating-related behaviours and psychological inflexibility, the findings from the research studies by Lillis et al. (2011) and Lillis

and Hayes (2008) have indicated that it may be a maintaining factor to weight management difficulties. Levin et al. (2014a) theoretically, suggested that it is not about levels of distress, rather it is about the response, where a rigid inflexible one can maintain unwanted behaviours. Furthermore, recently published research by Finger et al. (2020) found psychological inflexibility among those who met the criteria for overweight/obesity with the high levels of binge eating behaviour. Due to ACT's transdiagnostic nature, is one of the reasons why ACT has been adopted for this study.

**Figure 2.0:** Hayes et al. (1999; 2006) ACT's Hexaflex model of psychopathology



Source: (Hayes et al. 2006, p.6)

### **2.1.8 ACT's view on food cravings**

The founder of ACT Hayes et al. (1999) has not specifically proposed its theoretical framework (the Hexaflex model) to FCs. Therefore, in this section offers a hypothetical suggestion of ACT's view on FCs, which has been extrapolated from the basic ACT framework and applied to FCs, in term of the development and maintenance. Through ACT's lens of psychopathology food cravings would be part of everyday life so is part of the human experience, and these can become problematic when met with psychological inflexibility (Hayes et al., 1999, 2012).

Psychological inflexibility has been considered by some (e.g., Forman et al., 2007; Lillis et al., 2011) to produce obstacles to behaviour change related to weight-related concerns. Studies have found that both psychological inflexibility (Kauffman et al., 2022) and ACT's experiential avoidance (Fahrenkamp et al.'s, 2019) play crucial roles in both the development and maintenance of FCs. Levin et al.'s, (2014a) previously mentioned definition of psychological inflexibility referred to the rigid and ineffective strategies, such as control to manage unwanted thoughts, emotions, and sensations. In the context of FCs, Kauffman et al. (2022) proposed that these attempts to control or eliminate cravings may manifest through either or all methods of restrictive dieting, strict rules around eating, or other avoidance behaviours. Furthermore, Kuuffman et al. (2022) suggested that this psychological inflexibility process was maintained through difficulty staying in the present moment, combined with appraising thoughts (e.g., breaking dietary rules means that I have failed). This pattern of being stuck with certain thoughts, which tend to be believable which can cause distress, this is referred to as cognitive fusion (Hayes et al. 1999, 2012), as depicted in above Figure 2.0. Empirical evidence for the latter and its role in FCs is provided by Duarte et al. (2016). Furthermore, and/or an unwillingness to experience internal experiences, leads to escape/avoidance behaviour (Bond et

al., 2011; Kuaffman et al., 2022) or in ACT terms, experiential avoidance (Hayes et al., 1999) which is an aspect to ACT's psychological inflexibility.

Hayes et al. (1999, 2001) theorised that humans inherently avoid pain, including psychological discomfort. Some scholars (e.g., Mankad & Gokhale, 2021) described food as pleasurable and hedonistic and there is research evidence of the role of eating behaviour in emotional regulation (Macht, 2008; Pearson et al., 2015). Kauffman et al., (2022) hypothetically proposed that FCs develop because of the natural human tendency to seek pleasure and avoid discomfort.

Furthermore Berman (2018) suggested that experiential avoidance, that is the use of food, provides short-term relief from distress and discomfort (e.g., eating chocolate to alleviate sadness), but it does not address the underlying issues. Berman (2018) suggested that this avoidance of uncomfortable thoughts and emotions can lead to a cycle of cravings and indulgence leading to increased distress in the long term (e.g., feeling ashamed about weight gain). Additionally, Berman (2018) suggested that this experiential avoidance can lead to increased preoccupation with food and potentially unhealthy eating behaviours. Support for the notion that experiential avoidance might be an underlying driver to food cravings has been provided by Fahrenkamp et al. (2019). Their mediation analysis study demonstrated a positive association between emotional eating, FCs and experiential avoidance. Fahrenkamp et al.'s (2019) concluded that food might have been utilized to manage emotions through avoidance or a way to change an emotional state. These findings are congruent with other research studies (i.e., Wu et al., 2018) that found a relationship between emotional eating and FCs. Furthermore, Macht (2008) proposed that the function of non-hungry eating or FCs may be a tactic to change certain unwanted emotions, such as sadness, stress. There is research evidence of the

involvement of alexithymia (the difficulty recognising and labelling one's own emotions) in binge eating among obese women (Pinaquy et al., 2003). A recent published meta-analysis by Di Sante et al.'s (2022) concluded that treatments based on ACT sufficiently reduced emotional eating, while simultaneously enhancing psychological flexibility.

Given previous cited empirical evidence demonstrating the link between eating behaviour and emotional regulation, this current study has included the Dutch Eating Behaviour Questionnaire – Emotional Eating subscale (DEBQ-EE; Van Strien et al., 1986). This subscale assesses individuals' reported inclination to eat in response to negative emotional states, such as stress, anxiety, and depression (Van Strien et al., 1986). The inclusion of this subscale is to ascertain the impact of the prototype online ACT-based intervention had on emotional eating. It recognised that emotional eating and food cravings can sometimes overlap, yet they represent different aspects of eating behaviour. Food cravings focus on the desire for specific foods (Ciarrochi et al., 2014; Meule 2020) while emotional eating revolves around using food as a means of coping with emotional states (Fahrenkamp et al., 2019). Further details of DEBE-EE (Van Strien et al., 1986) questionnaire is in Chapter 3, subsection 3.21: *Standardised self-report questionnaires*.

### *Psychological flexibility*

Hayes et al. (1999) posited that psychological flexibility was central to achieving value-based living and considered it to be the central process of change, so it is core to the ACT's model. Other scholars (e.g., Ciarrochi et al. 2010) have proposed that it is also the approach's facilitator for change. Psychological flexibility has been referred by Harris (2009) “*as the ability to be fully*

*present in the moment and take action guided by one's values*" (p.12). According to Hayes et al. (2012) the objective is not to reduce arousal but to enhance flexibility. Hence allowing for alternative ways of responding which are more aligned to one's values, therefore changing behavioural patterns (Hayes et al., 1999). Psychological flexibility is established through six inter-rated core therapeutic processes (Hayes et al., 1999, 2006), and these are below and illustrated in Figure 2.1 ACT's Hexaflex's model.

a) Acceptance is referred to "*the willingness to have and accept private experiences*", (Hayes et al., 2012, p.982). This is opposite to experiential avoidance because it involves becoming aware of and actively embracing internal experiences without changing them (Hayes et al., 2012). Instead of struggling with or fighting against cravings, the person learns to accept their presence as part of their experience. Albers et al. (2013) suggested that over time the thoughts and/or emotions, will become normalised, so a craving's cues will lose their power due to lack of reinforcement. The conclusion from Fahrenkamp et al.'s (2019) study proposed that it might be essential to incorporate training in acceptance-based strategies (to reduce experiential avoidance) in the design of interventions.

b) Cognitive defusion is depicted by Harris, (2009) "*as the ability to see thoughts as descriptions of one's experience and not actual reality*" (p.69). The individual learns to "defuse" from their thoughts and cravings. This means recognizing that cravings are just thoughts and not necessarily commands that must be followed (Harris, 2009).

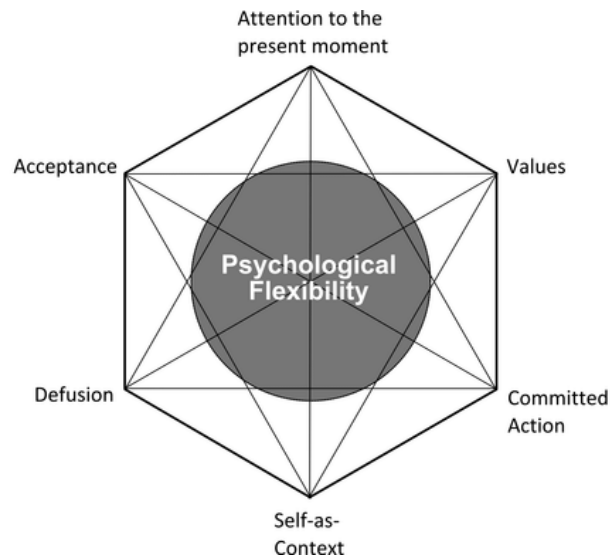
c) Contact with the present moment or "being present". Hayes et al. (2012) explains "*this is the ability to be fully open and aware of what is happening in the present moment*" (p.983). This involves noticing cravings and being with them without reacting.

d) Self-As-Context which Bennet and Oliver (2019) described “*as an awareness of an ‘observing self’, as distinct from the experiences observed; this means that people are not the content of their thoughts or feelings, but rather are the consciousness experiencing or observing the thoughts and feelings*” (p.70). In relation to FCs, self-as-context, encourages observing the experience, for example, instead of immediately identifying with the craving and allowing it to dictate a response (e.g., ‘I need chocolate cake, I can't resist it’), practicing self-as-context by observing the craving without judgment or attachment (e.g. ‘I notice that there is a craving for chocolate cake present in my mind now’) (Berman, 2018).

e) Values are the “*directions in life that an individual can choose to guide their behaviour*”, (Hayes & Smith, 2005; p153). This is like the "reinforcement" in operant conditioning because an individual is connecting their behaviours to meaningful goals (Bennet & Oliver, 2019), so reinforcing wanted behaviours.

f) Committed Action. Hayes et al.'s (2012) description of this, following a behaviour that is steered by one's values. Here, the person takes committed actions that align with their values, despite the presence of cravings. The alternative behaviours are "positively reinforced" by a sense of accomplishment as they are in alignment with an individual's chosen values (Bennet & Oliver, 2019).

**Figure 2.1:** Hayes' et al. (2006) ACT's Hexaflex model



Source: (Hayes et al., 2006, p.8)

More information on the operationalisation of these ACT processes can be found in Chapter 3: *Empirical study*.

#### *Measurement of psychological flexibility*

Psychological flexibility is ACT's (Hayes et al., 1999) core process of change. Initially developed by Hayes et al. (2004) as a standardized self-report questionnaire titled Acceptance and Action Questionnaire (AAQ), and this was revised in 2011 by Bond et al., who coined it as AAQ-II. McLoughlin and Roche (2023) noted that many ACT efficacy research studies were based on a psychometric broad measure of psychological flexibility as this is the central concept in ACT, thus supporting the above Hexaflex model.

Research moved into investigating ACT's applicability into the arena of eating related behaviours. In 2008, Hayes and Lillis declared that their original measure was not sensitive

enough to measure change for specific targeted conditions, specifically health related ones. Thus, Hayes and Lillis (2008) developed an exclusive measure of avoidance and inflexibility for weight related thoughts and feelings, titled the Acceptance and Action Questionnaire for Weight-Related Difficulties, (AAQ-W). This was developed from the findings of studies that investigated factors such as coping styles associated with unsustainable weight management. The coping styles identified were avoidant (Byrne et al., 2003), impulsive, (Ryden et al., 2003) and used eating to regulate emotions (Byrne et al., 2003). The AAQ-W has been employed as an outcome measure of change in a number of empirical studies, such as Sairanen et al. (2017) who investigated the role of psychological flexibility as a mediator of change in an ACT-based intervention for intuitive eating, and a more recent example, was published in 2022, by Mueller et al, whose RCT study investigated the effectiveness of an ACT web-based intervention supporting weight management.

It noteworthy that there is a debate in the literature regarding the psychometric validation of psychological flexibility standardised measures (e.g., AAQ; AAQ-II), as some scholars (e.g., Rochefort et al., 2018; Tyndall et al., 2019) that have implied that these measures are measuring the trait emotion, neuroticism and not flexibility. To address these concerns, recently the Psy-Flex by Cunha et al. (2023); and Personalized Psychological Flexibility Index by Kashdan et al. (2020) has undergone validation, and these are now endorsed to a more accurate measures of psychological flexibility. Despite debates in the literature about the measurement of psychological flexibility, including instruments like the AAQ-W in research projects (such as Mueller, 2022) can still provide valuable insights into how individuals cope with weight-related difficulties and contribute to the advancement of knowledge in the field.

This current study has included Lillis and Hayes' (2008) AAQ-W self-report questionnaire because it is a sensitive measure of avoidance and inflexibility for weight related thoughts and feelings. This questionnaire was included as an evaluation tool to assess the impact a prototype online ACT-based intervention. Further details of this questionnaire are in Chapter 3, subsection 3.2: *Standardised self-report questionnaires*.

### *Summary*

In summary, from an ACT (Hayes et al., 1999) perspective, FCs may develop and be maintained through psychological inflexibility and experiential avoidance. Hayes et al., (1999, 2006) proposed that the therapeutic aim of an ACT intervention is to increase psychological flexibility and reduce experiential avoidance, through the promotion of acceptance of internal experiences, and encourage being connected to the moment so individuals they can make choices based on their values and long-term well-being, even in the face of cravings, thus disrupt the cycle of craving and avoidance. The section below summarizes the predominant empirical evidence of ACT interventions for FCs.

#### **2.1.9 Empirical support for ACT to manage food cravings.**

Researchers have increasingly employed ACT (Hayes et al., 1999) to create interventions targeting obesity and weight management. These interventions were designed to disrupt habits that reinforce craving-driven eating behaviours (e.g., as seen in Forman et al., 2007; Forman et al., 2013; Hooper et al., 2012). Such interventions aimed to reduce reactivity to cues or triggers to FCs, so ultimately curbing unwanted eating, such as snacking, through increasing awareness and the promotion of acceptance of emotional experiences (Forman & Butryn, 2015).

At the time of writing this thesis, the outcome from scoping the empirical literature in the domains of ACT- based interventions and food cravings, revealed that there were no published systematic reviews and/or meta-analyses. Therefore, the synthesis of evidence has been drawn from RCTs and peer- reviewed published studies. In this section the small number of studies (nine in total) that tested *only* ACT methods as a strategy to manage FCs were reviewed.

ACT-based intervention studies often comprise of a range of ACT and non-ACT elements, such as dietetics, physical activity, bariatric surgery. For example, the WeLNES programme (Bricker et al, 2023); and Health at Every Size ® (HAES) (Berman, 2018; Ulian et al, 2018). Bradley et al. (2017) designed and tested the impact of an ACT-based intervention, titled “Project Help” which aimed to support weight loss maintenance post bariatric surgery. Although, the primary aim of this project was weight loss maintenance FCs were included as an outcome measure. The authors reported a reduction in FCs immediately after the intervention, and this reduction was maintained at follow-up. However, since the project also included interventions on lifestyle, diet, and physical activity, it is difficult to attribute changes in cravings specifically to the ACT-based components of the intervention. Additionally, as Bradley et al. (2017) did not include a comparison treatment group in their study. Thus, it becomes difficult to determine whether observed changes are due to the intervention itself or other external factors.

There is empirical evidence of ACT based interventions can support weight loss maintenance, such as Lillis et al.’s (2009) study. This study aimed to reduce avoidant behaviour and increase psychological flexibility in those living with obesity. This intervention study observed 84 participants, who were post six months attendees to a weight loss programme, attended a one-day

ACT workshop, and were provided with a workbook, so they could access the resources anytime. Lillis et al. (2009) found significant improvements across various outcomes, such as reduced obesity-related stigma, enhanced quality of life, increased distress tolerance, greater psychological flexibility, and decreased body mass, among those who attended their workshop compared to a wait-list control group after a three-month follow-up. Although the primary aim of the intervention was not specifically FCs, the authors acknowledged the role of managing them in contributing to these reported changes. Lillis and colleagues concluded that teaching and training ACT skills to embrace emotional discomfort, handle difficult thoughts, reduce experiential avoidance, and promote value-based behaviour was effective.

Forman et al.'s (2007) seminal work was pivotal in shifting the research lens from cognitive-control based methods towards ACT- based approaches. Forman et al.'s (2007) study explored how two strategies could be used in managing FCs, a crucial factor believed to impact weight loss maintenance. The study involved ninety-eight undergraduate students with average BMIs within the healthy range, as those within this range can still experience FCs. The participants were randomly allocated to one of three groups: (a) control group, (b) group that received instruction in control-based coping strategies, including distraction and cognitive restructuring, or (c) group that received instruction in ACT-based, such as acceptance and defusion techniques. Next, they received packets of chocolates and were asked not to consume them for two days. The study employed various measures, including a Psychological Sensitivity Scale (PSS) assessing responses to the food environment, self-reported ratings of chocolate cravings, and the use of diaries to record chocolate consumption. The results of the study indicated that both coping strategies (groups b and c) displayed some effectiveness in assisting individuals in

managing cravings and maintaining abstinence from chocolate. However, the impact of these treatment conditions on cravings and eating appeared to hinge on the individual's susceptibility to food cues. Among those who were presumed to be less susceptible to cravings, specifically those scoring low on the PSS, the control-based intervention seemed to provide an advantage. Conversely, those who were vastly receptive to food cues and thus faced significant challenges with cravings, the acceptance-based intervention demonstrated superior efficacy in managing cravings and promoting abstinence. Forman et al. (2007) suggested that one plausible explanation for these findings is that control- and distraction-based strategies are more effective for individuals with lower susceptibility to food cues. In contrast, for individuals highly susceptible to food cues, distraction-based strategies may have counterproductive effects, making acceptance-based strategies a more effective approach. However, Forman et al. (2007) raised concerns regarding how participants would respond in real-life settings where other types of craved foods were more prevalent, emphasizing the need for further exploration in a broader context. The authors concluded that a potential clinical implication of this result is that an ACT-based intervention might be particularly beneficial to those who are overweight and obese.

Building on the previous study in 2013, Forman et al.'s next experiment included a sample of overweight participants and explored how an ACT intervention compared to a CBT one to manage FCs. Forman et al.'s (2013) pilot study examined the link between psychological qualities, cravings, and consumption. It also compared the efficacy of a) an acceptance-based intervention or b) a standard cognitive-based reappraisal/distraction intervention. The participants attended a two-hour training session, followed by a test period, which required them to carry a packet of sweets on their person for 72 hrs and they were asked not to consume them.

During that timeframe, they were prompted by the research team to complete a food diary to record their cravings and consumption of sweets. Forman et al. (2013) reported that the results indicated that adopting acceptance-based skills led to a reduction in both cravings and consumption, especially among individuals highly susceptible to food cues and to emotional eating. An interesting observation was the authors noted that the effects were only observed for objectively measured (the carried packet of sweets) consumption of sweets, rather than self-reported (diary) sweet consumption. Forman et al. (2013) concluded that the findings of the study provided further support for the notion that ACT might be a viable intervention for those individuals who find it difficult to manage certain thoughts/feelings/sensations and use food to reduce or eradicate them. However, Forman et al. (2013) pointed out that their pilot study was underpowered, restricting the inferences that can be drawn from the data regarding lower cravings and reduced consumption in the ACT group.

There are some studies that have examined the effects of ACT-based components on FCs, with most of the research involving the “acceptance-mindfulness process” (Duckyun & Eunjoo, 2019). This involved four of the six ACT processes (present moment awareness, cognitive defusion, acceptance and self as context) (Duckyun & Eunjoo, 2019). For example, Alberts et al.’s (2010) intervention study demonstrated that a seven-week ACT-based training programme, which taught the processes of mindfulness and acceptance, led to statistically significantly lower reported FCs compared to a control group. Alberts et al.’s (2010) explanation of this outcome was that the acceptance-based strategy allowed, albeit initially uncomfortable, individuals to stay with their FCs experience and to notice how the intensity of the craving diminishes over time, so loosening of the craving and behaviour response, thus reducing reactivity. Alberts et al (2010) referred to confronting FCs as a form of exposure therapy and posited that the ability to resist

immediate consumption of desirable food can enhance a sense of personal control. A similar pattern was found in the intervention study by Alberts et al. (2012) however the eight-week training programme was Mindfulness CBT (MCBT is an integrative evidence-based approach that combines CBT and Mindfulness). Although the findings of these studies show empirical support for acceptance-mindfulness based interventions as an effective approach/s to manage FCs, it was noted by the authors of both studies (Alberts et al., 2010; Alberts et al., 2012) that the lack of a control comparison group was a limitation.

The findings of Forman et al.'s (2007, 2013) previous mentioned studies offer promise and encouragement of ACT as an approach that can be utilised to manage FCs. However, the studies did not comment on whether there was any compensatory eating, so when the participants were asked to resist consuming chocolate/sweets, which they achieve, did they compensate this by eating similar foods, such as eating chocolate biscuits or a food which has a similar content to chocolate (high in fat and sweetness) instead. As, although craved foods although can be specific food, they can also be food types/groups, such as those foods with a high level of sugar and fat, (Rozin et al., 1991), and craved foods have been found to be specific to different cultures (Komatus, 2008). There are also individual differences in experience of FCs, in terms of intensity and frequency (Richard et al., 2017). To capture this variation a tool that has a wide selection of foods is needed to accurately reflect the individuals' differences and range of foods craved. Therefore, the Food Craving Inventory-UK (Nicholls & Hulbert-Williams, 2013) was selected for this study.

Although Alberts et al. (2010, 2012) and Forman et al.'s (2007, 2013) studies provided empirical support of the employment of ACT as a psychological intervention for the management of FCs, a consideration is the transition to clinical practice, and commitment required by healthcare providers, which include: the interventions required a commitment of time, as they were run over seven to eight weeks, which may be costly, and needing specialised staff (Moller et al., 2017).

*ACT process studies in relation to food cravings.*

To address this criticism researchers explored the effectiveness of ACT utilising a briefer format by focusing on its processes in their experimental studies. Most of these studies have investigated the impact of cognitive components on the experience of cravings, as some scholars (like May et al., 2012) have proposed that cravings are cognitive in nature, and cognitive-based interventions, such as ACT's cognitive defusion (Assaz et al., 2018) are the mechanisms of change.

Experimental studies consistently show that cognitive defusion tasks effectively reduce cravings for various foods, as demonstrated by Moffitt et al. (2012), and Hooper et al. (2012). Recent support for cognitive defusion as a useful strategy for targeting both unwanted chocolate cravings and consumption comes from Karekla et al. (2020). This study compared the effects of two cognitive techniques, restructuring and defusion. Both techniques were administered by non-experts in face-to-face settings, involving a 45-minute training session for the participants. The study assessed these skills using a laboratory taste test. Karekla et al. (2020) reported significant decrease in reported FCs and consumption in the defusion group compared to the cognitive restructuring group. The authors suggested that their findings supported the idea that

different cognitive techniques may require varying levels of cognitive resources. They described defusion as being less demanding, as it involved observing thoughts and viewing them as a passing experience, compared to cognitive restructuring, which involves mental modification of thoughts (Wenzlaff & Wegner, 2000).

Despite these studies offering empirical support for cognitive defusion to manage cravings, it remains uncertain whether this ACT process can be applied to handle naturalistic cravings. A critique of these previous studies has been raised by Schumacher et al. (2017) who highlighted that the studies relied on a single "taste test" as a consumption measure, which took place in a laboratory setting. Schumacher et al. (2017) noted that in such controlled environments participants were required to consume at least some of the food provided even if they did not particularly like it, and their consumption may have been influenced by the presence of the researchers. Hulbert-Williams et al. (2017) also noted the researcher-participant effect in their intervention study and suggested a computerised version of ACT-based intervention as the next step. This would be advantageous as the intervention would be within a natural setting and there is little involvement by the researcher/s. This research project builds on Hulbert-Williams et al., (2017) suggestion as it investigated a prototype internet-based ACT intervention.

To address these criticisms researchers conducted intervention field studies. Hinojosa-Aguayo and González (2022) recently investigated the effects of cognitive defusion on a sample of healthy weight students. This two-part study involved a laboratory environment where two groups of participants were assigned to a) the experimental group, trained in a defusion skill, or b) the control group, who listened to a clip from a book. Then they were exposed to food

craving cues. The second part was a two-week intervention period. The experimental group had access to the cognitive defusion instructions, installed on their smartphone via an app, so accessible whenever they experienced FCs. Participants in the defusion group reported a decline in eating craved food compared with those in the control condition. This study provided further support for cognitive defusion as a tactic that can be used for all craved foods in naturalistic settings. A critique of this study noted by the authors was the study's participants were reported to be of healthy weight, leading them to query if the findings of the study are generalisable.

Notably, Schumacher et al. (2018) conducted a study comparing cognitive defusion with guided imagery and obtained different results. Their research investigated the impact of these two methods on naturalistic FCs over a two-week period. During this study, participants used an app via their mobile phones to record their FCs. Participants were allocated to either cognitive defusion, guided imagery, or control conditions, where they listened to a brief audio recording containing their corresponding training. Then for a week, the participants recorded their FCs. The outcome of analysis demonstrated a significant reduction for both the frequency and consumption of craved foods in both intervention groups. Schumacher et al. (2018) proposed that the absence of differences between the groups may be due to the cognitive demands and structured nature of both tasks, as they required participants to form mental images and follow prompts in the tasks. The authors concluded that these methods are effective for managing naturally occurring cravings for a variety of foods and can reduce consumption related to cravings in everyday life. The reflection by Schumacher and colleagues (2018) on the study highlighted the experimental group's use of the self-report technique, suggesting that it may not accurately represent their engagement with the instructions. Ravelli and Schoeller (2020)

highlighted that self-report diaries are vulnerable to inaccuracies due to under-reporting of food consumed in both the types of foods and amounts as participants might have difficulties accurately recalling their food consumption or may be reluctant to record it.

Stelick and Dando, (2018) pointed out a need for more field studies because of their ability to demonstrate ecological validity. Participants were in their own environments, engaged in their daily routines, and exposed to their individual environmental food cues. As in Schumacher et al.'s (2018) study the participants could apply a technique to manage the craving as when it occurred. This exposure can lead to reduced reactivity over time, eventually resulting in a “Pavlovian extinction”, meaning that the connection between the cue and response has loosened (Havermans, 2013). Indeed, exposure to food cues without responding to them has previously shown ability in lessening the influence of those cues (Coelho et al., 2014).

Other ACT process studies have compared the effectiveness of acceptance and cognitive defusion. For instance, in their 2014 study, Jenkins and Tapper assigned participants to one of three groups and employed: a) cognitive defusion, b) acceptance, or c) relaxation (control) techniques over a five-day period to resist chocolate consumption. Participants carried a bag with a measured number of pieces of chocolates, and they recorded instances of chocolate consumption during this period. Additionally, participants completed a questionnaire assessing the frequency of their chocolate consumption before and after the five-day period. The results indicated that individuals in the cognitive defusion group exhibited significantly reduced chocolate consumption, as measured from the number remaining in the bag and based on diary records, compared to the control group. In contrast, the brief acceptance, which was an “urge

surfing” activity, condition had no significant effect on cravings and consumption. These findings led Jenkins and Tapper (2014) to suggest that “*acceptance strategies may not be suitable for enhancing health-related behaviours requiring self-control*” (p.519). Support for this assertion also came from Lacaille et al.’s (2014) study, which reported no significant reduction in craving or craving-related chocolate consumption following a brief acceptance intervention. A strength of Jenkins and Tapper’s (2014) study was the participants were in their own environments, so it considered the ebb and flow of cravings throughout the day, week, and weekends (Richard et al., 2017).

Hulbert-Williams et al. (2017) incorporated the bag method used in Jenkins and Tapper’s (2014) study as a measure of chocolate craving-related consumption. Hulbert-Williams et al.’s (2017) study compared two brief interventions using ACT processes: cognitive defusion and acceptance. Participants recorded both their cravings, and consumption of those foods. The findings revealed significant results for both ACT processes, when compared to the control group, as determined by using the bag method as a measure of craved food eaten. The authors reported that there was no significant change in the self-reported FCs, however there was in consumption of the craved foods. Hulbert- Williams et al.’s (2017) study demonstrated that an intervention strategy delivered in a brief format was effective. Although the outcomes of both Jenkins and Tapper’s (2014) and Hulbert-Williams et al.’s (2017) brief intervention studies demonstrated empirical support for cognitive defusion, an addition of a follow-up would have verified the sustainability of the change.

An explanation of the mixed picture regarding the effectiveness brief ACT acceptance-based interventions on FCs was forwarded by Alberts et al. (2013) who hypothesised that time and practice are needed for acceptance to work, so interventions will be ineffective when tested in the short-term. This assumption was drawn from Alberts and colleagues' previous empirical research studies (2010, 2012) who concluded that acceptance-based strategies are beneficial in the management of FCs. Their research involved intervention studies, that took place over a few weeks, so allowing time for practice and consolidation of the new skill. In their 2013, laboratory-based study, Alberts et al. explored the short-term (immediate) impact on FCs by comparing: a) an acceptance-based strategy; b) with a suppression method and c) a control group. They predicted that those in the acceptance-based method would report more FCs, because exposing oneself to the craving experience will increase awareness of the craving. The findings of the study supported Alberts' et al. (2013) hypothesis, as those assigned to the acceptance group reported an increase in terms of the frequency and intensity, in the cravings. Alberts et al.'s (2013) explanation for this finding was, employing acceptance skills is initially challenging because individuals must be willing to acknowledge and then subsequently ignore their initial reaction (which was either to control or to avoid). Bringing attention to a reaction may increase the intensity of the experience (Alberts et al., 2013).

In summary, there is relatively consistent support for defusion, whereas the evidence for acceptance is ambiguous (e.g., Jenkins & Tapper, 2014). In contrast multi-ACT component interventions, (e.g., Alberts et al., 2010, 2012; Forman et al., 2007; 2013), generally delivered over hours, sometimes over several weeks, tended to result in a reduction in self-reported cravings and related consumption.

### *Summary and this current study*

Over the past two decades, ACT (Hayes et al., 1999) has been extensively researched (Ruiz, 2012) and it is now widely recognized as an effective transdiagnostic intervention (Dindo et al., 2017). The reviewed empirical evidence indicated that ACT has the most consistent findings in managing FCs, so has been adopted for this research project.

This study aimed to fill the gaps from previous empirical studies with one such being the inclusion of a measure of psychological flexibility. Hayes et al. (1999) emphasized the aim of an ACT intervention is to enhance psychological flexibility and reduce experiential avoidance. The forementioned experimental studies, (such as Forman et al., 2007; Forman et al., 2013; Hooper et al., 2012) employed a mixture of behavioural methods (i.e., carrying sweets), and psychometrics to assess the impact of their investigation and the impact ACT had on FCs and consumption, but might have benefited from the inclusion of a psychological flexibility psychometric to cross-validate the findings, so increasing confidence in the overall results. Only a small number of these studies (such as Fahrenkamp et al., 2019; Lillis et al., 2009; Moffitt et al., 2012) included a psychometric measure to assess for psychological flexibility. Therefore, this current research study has included the standardised psychometric: AAQ-W (Lillis & Hayes, 2008) to ascertain the effectiveness of the prototype ACT intervention in improving psychological flexibility.

Hulbert-Williams et al.'s (2017) recommendation for further research was, an experimental ACT-based intervention study to be delivered in a computerised format to reduce any influence that researchers may have implicitly on participants. This study aimed to build on this suggestion, as it investigated a prototype ACT-based online intervention.

Although Part 2 of this Chapter will explore Internet based ACT interventions in more depth, in terms of design for this study's intervention the findings of forementioned studies indicated the ACT skills can be delivered in a brief format (Hulbert-Williams et al., 2017). However, certain ACT components, such as Acceptance, may take time to be effective (Alberts et al., 2013) requiring an intervention over a period of time. The empirical evidence is more consistent for the management of FCs is from ACT based interventions (e.g., Forman et al, 2007, 2013; Lawlor et al, 2020; Lillis et al. 2009) than from component studies (e.g., Jenkins & Tapper, 2014). Therefore, the ACT based intervention designed for this study will cover all six of the ACT processes to test its "full power" (Bennett & Oliver, 2019) and to maximise effectiveness (Hayes, 2019).

#### **2.1.10 Criticisms of ACT**

ACT has not escaped criticism, with several empirical and theoretical concerns receiving attention. One prominent concern, highlighted by researchers (e.g., Hofmann & Asmundson, 2008), centred on some of ACT's theoretical concepts like "self as context" which have been regarded as ambiguous. Hofmann and Asmundson (2008) noted the difficulty both therapists and clients face in grasping these concepts and in quantifying their effectiveness. Others (e.g., Bishop et al., 2004) have pointed out that the shared techniques between ACT and other therapies, such as mindfulness. This overlap complicates attempts to accurately ascertain the impact of ACT (Tapper, 2018).

Fanelli (2012) argued that the available evidence for ACT remains questionable, suggesting that early outcome reports of its efficacy might be overstated due to the novelty and excitement

surrounding this therapeutic approach, which can heighten expectations (Constantino et al., 2016). Another concern has been about the quality of ACT empirical studies, in general, within the ACT literature (Linardon et al., 2019). For example, a meta-analysis conducted by Öst (2008) concluded that ACT did not yet meet the criteria for being considered an "empirically supported treatment". The review found that research methodologies for ACT were less rigorous compared to CBT, and the mean effect size was moderate. Since then, there have been numerous systematic reviews and meta-analyses conducted, and research methodologies have improved (Öst, 2014). Although there is still a need for more direct comparative longitudinal RCTs to ascertain effectiveness of ACT, there is also a need for feasibility studies, like this one, to test the acceptability of a prototype internet-based ACT interventions, to ascertain if this format is effective and to inform potential future research projects.

## **Part 2: ACT practice**

### **2.2.0 Overview**

This second strand of the literature review presents the reviewed literature that investigated ACT internet-based interventions, such as the effectiveness, efficacy and acceptability of this type of delivery. As well as identified characteristics associated with effectiveness such as the inclusion of non-expert support, duration, modality (including self-help and guided self-help) and any other features that enhance retention to the intervention.

### **2.2.1 Brief ACT interventions**

ACT is designed to facilitate behaviour change and is suitable for condensing into concise sessions (Frayn et al., 2019). Multiple studies support this concept, demonstrating that even in shorter formats, such as one-day workshops, ACT can effectively instigate change (Dindo et al., 2015; Lillis et al., 2009). In a mixed-methods study, Frayn et al. (2019) assessed the feasibility and acceptability of a one-day (six-hour) ACT workshop aimed at reducing emotional eating. The intervention designed by the authors used the following ACT components: values clarification, commitment to action, acceptance, and mindfulness. Interestingly the authors chose not to include weight loss as an outcome measure. It was noted that participants appreciated the conciseness of the intervention, and self-reported improvements in emotional eating were sustained at the three months follow-up.

The attractiveness of brief ACT interventions is, if they are more concentrated, time-limited, and need minimal support, they can maximize the reach of psychotherapy and increase dissemination to more people, such as being integrated into healthcare settings (Dindo et al., 2017). This

format is particularly compelling from a counselling psychology perspective as brief interventions can increase access to treatment for a greater number of people. However, most of these interventions were delivered in person (i.e., workshops). A next step in the development of these type of interventions would be a computerised version delivered and accessed by the internet (Hulbert-Williams et al., 2017). The next section explores the research literature in relation to internet-based ACT (iACT) interventions.

### **2.2.2 Internet-based interventions**

Internet-based interventions have significant potential for impacting public health (Boucher et al., 2016). They possess the ability to present complex health information in user-friendly formats such as video, graphics, and audio (Murray, 2012), overcoming barriers of time and travel associated with in-person interventions (Wieland et al., 2012). Furthermore, they can reach a broad audience, mitigate stigma related to overweight or obesity (Hague & White, 2005), and facilitate interventions for weight management (Neve et al., 2010).

Web-based interventions have been suggested to enhance learning because clients are more likely to revisit sessions (e.g., rereading sections or rewatching videos), whereas clients in face-to-face therapies often do not recall 100% of their sessions, even with handouts provided (Andersson, 2016). It is well-documented that computerized protocol interventions (such as internet-based CBT) tend to consistently produce moderate effect sizes, and in many cases have similar outcomes as face-to-face interventions, across a range of mental health conditions, and clinical settings (Andersson et al., 2014).

### **2.2.3 Internet-based ACT (iACT)**

Providing iACT interventions is a logical format for broadening the reach of ACT health interventions, to increase access to interventions reaching a wider audience cost effectively (Moller et al., 2017). This is important as the direction of weight management interventions is travelling towards being internet-based. For example: in 2021, NHS England launched a digital Weight Management program accessible via smartphones or computers with internet access. The target population is adults living with obesity and diagnosed with diabetes, hypertension, or both, needing support in managing their weight and improving their health. Commercial weight management programs like Slimpod© and Noom© are also accessible via smartphones through apps and web-based platforms. Recently NICE (“Treatment options”, 16<sup>th</sup> May 2023) has approved three online CBT courses for NHS patients with mild to moderate mental health conditions.

This project was conducted during the COVID-19 pandemic, a period characterized by social distancing measures and disruptions in the delivery of conventional health services. In response to various challenges, interventions have been delivered remotely through online platforms. This transition to remote health behaviour change interventions has been made possible by the widespread use of the internet, smartphones, and mobile technology (Roberts et al., 2017).

While there is extensive research on the effectiveness of internet-based interventions in the context of internet-based CBT, the evidence base for iACT is still expanding. A small number of meta-analyses, including iACT randomized controlled trials, have been conducted. The most recent was conducted by Han and Kim (2022). They identified 34 RCTs, including both

physical and mental health studies, assessing the efficacy of iACT for process measures (psychological flexibility, mindfulness, valued living, and cognitive defusion). The meta-analysis found that iACT had a medium effect on improving psychological flexibility and small effects on enhancing mindfulness, valued living, and cognitive defusion at post-data collection points. A small effect of iACT on psychological flexibility was also observed at various follow-up durations.

A limited number of empirical studies have explored iACT-based interventions related to weight management. A recently published RCT conducted by Mueller et al. (2022) evaluated an iACT web-based guided self-help intervention aimed at supporting adults who are overweight and obese in preventing weight gain and managing their eating behaviours, especially during the pandemic. Participants were recruited from weight management services and included a wait-list control group. The findings indicated that the intervention led to improved psychological determinants known to contribute to successful long-term weight management (uncontrolled eating, cognitive restraint, and emotional acceptance) and had a positive impact on well-being. It was noted in the study, that due to pandemic restrictions, the study relied on self-reported weight, which may introduce limitations related to accuracy and potential underreporting (Lin et al., 2012). The authors noted that the study had a relatively short follow-up duration. Nevertheless, these findings suggest that iACT interventions are both feasible and well-received by individuals with weight-related concerns.

The landscape of empirically studied internet interventions for FCs is relatively underdeveloped. This study aimed to address this gap by evaluating the acceptability of a prototype iACT-based

brief intervention. There is growing evidence suggesting that interventions focused on modifying eating behaviours, rather than solely promoting weight loss, can lead to improvements in both physical and mental health outcomes (e.g., Berman, 2018; Frayn et al., 2019). While most systematic reviews have found positive effects of iACT interventions, the effect sizes tend to be small, and not all interventions are successful (Thompson et al., 2021). For example, it has become apparent that web-based protocol interventions (such as internet-based CBT) tend to experience high attrition/dropout rates (e.g., Edmonds et al., 2018; Richards et al., 2018a) ranging from 2% to 83% (Melville et al., 2010). The next section will consider iACT attrition rates.

#### **2.2.4 Attrition rates**

For all psychological therapies a key metric of treatment utility is attrition rate (or drop-out rate). The picture for attrition rates for iACT is less known as they are reported in some studies and systematic reviews however not in all. For example, Kelson et al.'s (2019) systematic review on 20 iACT interventions for anxiety conditions reported attrition varied, with a range of 0 to 60.77% and mean of 19.19%. Other review studies on adherence rates (e.g., Brown et al., 2016; Spijkerman et al., 2016) highlighted variation in definitions; measurement of adherence and a lack of clarity how adherence was measured. Individual iACT RCT based studies such as Mueller et al. (2022) guided self-help for weight management reported a retention rate of 84%, from baseline to post-intervention. Boucher et al.'s (2016) web-based ACT weight management study reported a post-intervention retention rate of 65%. Attrition rates present a notable challenge to the effectiveness and cost-efficiency of internet-based interventions, which are key advantages of this delivery format (Brown et al., 2016). To enhance retention rates and

engagement certain web-based interventions have involved participants in the design and development process (e.g., Levin et al., 2014b; Levin et al., 2016). Levin et al.'s (2014b) web-based intervention study, where participants were involved in the development process, had a retention rate of 95% (4 out of 76 participants dropped out); and a usability rating of 92%. Other researchers (e.g., Andersson, 2016; Beintner, 2014) moved away from design features to investigate the role of human support and guidance. This is discussed in subsection 2.2.5: *Self-help vs guided self-help*, below.

A greater understanding of predictors of dropout in iACT can be invaluable in personalizing treatment recommendations and identifying variables that enhance treatment retention, thus bolstering the effectiveness of iACT. Murray (2012) suggested that certain factors such as demographic, psychological, or clinical may facilitate or be a barrier to digital engagement success. In this study the attrition rate was reported, and the data collected from those participants who did not complete the intervention was analysed and reported in the next Chapter.

### **2.2.5 Guided self-help vs self-help**

Whilst psychological interventions are typically available in person, many therapeutic models, such as CBT (Beck et al., 1979) have been adapted into self-help and guided self-help methods (e.g. internet-based CBT).

### *Guided self-help*

Thompson et al.'s (2021) description of guided self-help (GSH) has those interventions which tend to come with some guidance/support (by either a non- or professional). For example, an individual has access to support as they work through a workbook or a computerised intervention. Advantages of this approach are, it can be accessed by a greater number of people, and it is cost-effective, as it requires minimal time from therapeutic professionals (Thompson et al., 2021). For example, it has been estimated that an internet-based CBT intervention, such as SilverCloud<sup>®</sup> (Amwell<sup>®</sup>, 2012) only requires 1.5 hours in total to support an individual taking one of its online courses (Richards et al., 2018). There is empirical support for the effectiveness of the guided self-help approach, (e.g., Andersson, 2016; Andersson et al., 2014) who investigated the effectiveness of internet-based CBT computerised psychological interventions approach, which has a coach to guide an individual through the intervention. The conclusions were internet-based CBT was found to be as efficacious as face-to-face therapy and that the need for specialist trained clinicians for this type of approach was minimal.

In terms of GSH ACT based interventions there is empirical evidence that the inclusion of support, either specialist or non-specialist, with internet-based interventions can be beneficial. For example, in their 2021 review, Thompson and colleagues examined a total of 25 RCTs on iACT. The included studies explored the impact of iACT on various outcomes including anxiety, depression, quality of life, and psychological flexibility with adults presenting a diverse psychological and somatic conditions. The authors reported that their analyses, part of this review, revealed small but statistically significant effects across all measured outcomes at both post-assessment and follow-up time points. Thompson et al. (2021) pointed-out that those

interventions with therapist guidance demonstrated greater effectiveness in improving these outcomes when compared to iACT interventions without therapist guidance. However, Thompson et al. (2021) highlighted a limitation in the generalizability of their findings in terms of stating its efficacy because most of the included studies compared iACT interventions against waitlist controls rather than alternative treatments. Additionally, Thompson and colleagues (2021) emphasized that their conclusions are based on empirically studied internet interventions and may not necessarily reflect the efficacy of commercially developed iACT. Another example to strengthen the case for inclusion of human support in an internet-based intervention comes from a mixed method study by Bradbury et al. (2015). They investigated an internet-based intervention, and the analyses of interviews showed that some type of support from a nurse contributed to the maintenance of weight management. Bradbury et al. (2015) noted that the support was reported to be helpful at times when there were dips of motivation. Further backing for the inclusion for a type of support was provided by Mueller et al. (2022) who developed a web-based ACT based GSH intervention for weight management. They reported a retention rate of 84% and attributed this to its inclusion of support provided via trained non-specialists. However, the results should be interpreted cautiously as the study did not have a control/comparison group (Mueller et al., 2022).

### *Self-help*

Psychological therapies have also been adapted to be available in different self-help (SH) formats. French et al. (2017) described self-help (SH) interventions as those which generally tend to be self-administered, examples of this format are self-help workbooks (sometimes refer to a bibliotherapy), smartphone apps, computerized programmes, all which have grown in

popularity. For example, Nielsen Book Data, UK, reported that from January to October 2022, “38% of purchases were on self-help/popular psychology books (including e-books and audiobooks)” (Nielsen Book Data). French et al. (2017) conducted a systemic review and meta-analysis on the efficacy of SH ACT-based interventions. As the authors, noted that there is lack of peer-reviewed publications in this area and some scholars (like O’Donohue et al., 2016) raised concerns about the robustness of current research in this area. One such concern was about the absence of data from participants who did not complete or dropped out from an intervention (O’Donohue et al., 2016). Another concern was that the empirical support for published self-help books related to ACT might not followed empirically grounded guidelines, so the results might have been inflated (Rosen & Lilienfeld, 2016).

French et al.’s (2017) review included empirical studies on depression, anxiety, and psychological flexibility, due to ACT’s transdiagnostic nature. No eating related behaviour, and weight management-based studies were included in the review. French et al.’s (2017) concluded that there was tentative support that ACT SH may serve as a suitable intervention. This was tentative due to the relatively small effect sizes, a limited number of studies, and significant variability in the results (French et al, 2017). Furthermore French et al. (2017) highlighted that the definitions of SH the studies encompassed a range different format (like apps, computerised interventions). In addition, the authors also highlighted the complexity of the definition of SH. As there seems to be variation in how it has been defined based on what SH involves. For example, some scholars like Newman et al. (2003) included levels of guidance from a coach/therapist, ranging from self-administered to pre-dominantly therapist-administered, so some self-help studies have included some level of guidance/support. French et al. (2017)

commented for the need for clearer definitions of SH as it is challenging to evaluate efficacy without these. In terms of SH formats ACT based interventions and FCs, workbooks have been previously tested as an intervention format in a study for FCs (Rodríguez-Martín et al., 2013). This involved using an SH workbook, and the results of the study concluded that the SH could be a useful resource to reduce FCs. The study concluded that use of SH workbooks could be an effective resource to treat obesity (Rodríguez-Martín et al., 2013).

In summary, the picture of efficacy of ACT SH seems to be unclear in the research literature due to the variation of the definition and the different levels of SH (French et al., 2017; Newman et al., 2003). This present study aimed to add to this area as it compared the delivery formats SH and GSH within an iACT based intervention for FCs. The intervention designed in this study was mostly based on the SH book, titled “The Weight Escape” (2015) by Joseph Ciarrochi, Ann Bailey and Russ Harris, as the authors intervention in the book is based on ACT.

For clarification, in this study the descriptions of SH and GSH are in line with previous research on internet-based interventions, and with the NHS’s Good Practice guidelines (Farrand et al., 2010) definitions of SH and GSH. Specifically:

- Self- help (SH) is, “*where therapist may make contact for assessment, provide information such as self-help books and materials and then no further contact follows this*” (p.3).
- Guided self-help (GSH) is “*a structured treatment method with which the patient can help themselves with some support from another person to work through a workbook or a*

*computer programme. The guidance may be provided face to face or by telephone, email, or websites” (p.3).*

### **2.2.6 Qualitative research**

Most of the research on iACT-based interventions has primarily adopted quantitative experimental research methodologies. While these approaches offer reliable, objective, and generalizable findings (Clarke-Carter, 2018) they tend to lack in-depth accounts of participants' experiences (Tatar et al., 2021). Notably, there is a dearth of publications within the iACT literature that explore participants' experiences. Tatar et al. (2021) raised a valuable point “*it is not known whether intervention instructions are effective for every participant when a study demonstrates their group level effectiveness*” (p.2).

Qualitative methods are particularly suited for exploring acceptability which may not be captured by predetermined questionnaire items (Braun & Clarke, 2006). Tatar et al.'s (2021) qualitative study explored the experiences of learning and applying brief mindfulness-based instructions for managing FCs. They noted that factors such as the use of visual metaphors and the presence of a supportive teacher emerged as beneficial aspects that enhanced learning and engagement. This finding aligns with previous research suggesting that the inclusion of a compassionate role model can be motivational and supportive in promoting change (van Aalderen et al., 2014). Some research studies have implemented a mixed-method approach, like Frayn and colleagues (2019), who investigated the feasibility and acceptability of a one-day ACT workshop using both quantitative and qualitative methods in their trial. They called for more mixed methods studies to determine the effectiveness of brief ACT interventions. The inclusion of qualitative methods

into iACT feasibility studies provides an opportunity to gain participants' insights to the barriers and facilitators to engagement and adherence. In other words, identify the "active ingredients" (Thompson et al., 2021) or mediators of change of complex interventions, such as inclusion of human contact. This study has included a qualitative method; semi-structured interviews, to gain insights into participants' experience of the intervention.

### **2.2.7 Towards a unique contribution to the literature**

In summary, there is enough research evidence in the eating behaviour literature to support the notion of food cravings to be considered as an important target for an intervention. ACT (Hayes et al., 1999) based interventions have produced consistent outcomes for managing FCs across several studies (e.g., Forman et al., 2007; Forman et al., 2013; Hooper, et al., 2012). However, as Schumacher et al. (2017) noted, that these experimental studies have tended to be face-to face, and some have been laboratory-based. Schumacher et al. (2017, 2018) highlighted the need for field-based research or studies to be within participants' natural environments to account for environmental-induced cues. Hinojosa-Aguayo and González (2022) noted that an advantage of a naturalistic setting is ACT skills can be utilized as and when cravings occur. Although there is growth in naturalistic based ACT intervention studies, (such as Hinojosa-Aguayo & González, 2022) there is a need for further research. Internet-based interventions are accessible in naturalistic settings and can reach a broader sample of the target population (Murray, 2012). They are viewed as cost-effective methods that can be scaled to reach those who might benefit, particularly individuals who may have difficulty accessing in-person treatment or intervention (Kazdin & Blasé, 2011). Although the evidence base on iACT based is growing, to the author's knowledge, there seems to be a paucity of empirically studied internet interventions to manage

food cravings with a community population. Given ACT's transdiagnostic approach the next step was to design and test such an intervention. Therefore, this study aimed to bridge the gap by testing the acceptability of a prototype iACT- brief intervention. As this study is investigating a prototype intervention, a qualitative method, in the form of interviews was included to gain the participants' experiences of the iACT intervention.

There is a debate in the literature on the role of non-expert support for internet based psychological interventions as some consider that a presence of coach/non-expert can facilitate engagement and reduce attrition. Therefore, this study included two delivery formats, independent self-help and guided self-help to ascertain if the availability of support from a non-expert (in this case, the researcher) is a mediator in behavioural change.

## **Chapter 3: Empirical study**

### **3.0.0 Study overview**

It is argued (e.g., Meule, 2020) that one of the causes of poor weight loss maintenance is an inability to tolerate distressing thoughts and feelings from food cravings. Acceptance and Commitment Therapy (ACT, Hayes et al., 1999) based intervention was hypothesized to help individuals withstand cravings and distressing “internal events” and thus create psychological flexibility (e.g., Forman et al., 2007, 2013; Sairanen et al., 2017). The findings from emerging research on iACT interventions indicated that this method could be a viable delivery method based on its potential to be both cost and clinically effective (Boucher et al., 2016; Mueller et al., 2022). As this was identified as a promising direction, this study aimed to investigate the effectiveness and acceptability of an internet-based ACT intervention to manage food cravings with a community non-clinical population.

#### **3.1.1 Rationale and aim for this project.**

This thesis set out to examine the acceptability, feasibility and effectiveness, assessed using both quantitative and qualitative methods, of a prototype iACT brief intervention to manage food cravings; whilst comparing guided self-help and self-help delivery methods.

This prototype iACT based intervention to manage food cravings has the potential to increase accessibility to a greater number of people. This aligns to counselling psychology’s practice and social justice agenda on the grounds on reducing inequalities through increasing accessibility and dissemination to the wider community (Vermes, 2017; BPS’s DoCP, 2020).

*Project aims and outcomes of the intervention.*

The aims of the project were: a) to design and implement an internet prototype ACT-based intervention to target food cravings; and then b) to evaluate the effectiveness of this prototype across the outcome measures: psychological flexibility, emotional eating and frequency of food cravings; and c) to explore and gain the participants' experiences of the prototype, and lastly d) to compare delivery methods (purely self- help vs guided self-help).

The intervention's intended primary outcomes were:

- To increase the participants' psychological flexibility
- To increase awareness of eating behaviour and emotion
- To explore whether the internet-based intervention was acceptable to the participants, assessed by quantitative and qualitative methods.

As the primary outcome will be a change in responding to FCs by targeting the ways of reacting to thoughts and feelings of the FCs experience, BMI and weight were not included as an outcome measure. As the findings of previous empirical research, such as the studies by Frayn et al. (2019), and interventions like Health at Every Size (HAES®) (Association for Size Diversity, 2017; Berman, 2018), have shown that participants prefer interventions focused on modifying eating behaviours rather than prioritizing weight loss as the primary goal.

### **3.1.2 Research hypotheses:**

1. Completion of the brief internet ACT-based intervention will lead to a significant difference in the average scores between baseline, post and follow-up, regardless of delivery mode, for the dependent variables (increase in psychological flexibility, decrease in eating in response to food cravings, and emotional eating).
2. The participants allocated to the guided self-help group will have a significantly greater increase in psychological flexibility, decrease in emotional eating and reduction in responding in food cravings than the self-help group over time.

### **3.1.3 Methodology**

As this was a feasibility study of an iACT based intervention the researcher drew on both quantitative and qualitative methods.

#### *Research design*

The present study was a pilot study that used a pre-, post and one-month follow-up design to examine changes in food cravings and related ACT processes (i.e., psychological flexibility).

Acceptability and feasibility of this iACT based intervention on FCs was assessed through mixed methods design. An advantage of this method is that it can provide a more comprehensive understanding of the intervention's feasibility, acceptability, and potential efficacy by combining both methods.

A two-by-two mixed design was applied. The dependent variables were standardized outcome scores (variables: emotional eating, psychological inflexibility and food cravings). The within

subjects independent variable was “time” comprising three levels of data collected at pre-intervention, post-intervention, and one-month follow-up. The between subjects independent variable was group, measured on two levels being “self-help” and “guided self-help”.

Semi-structured interviews were conducted one month follow-up, which provided the secondary, qualitative data. This design follows an explanatory sequential design (Creswell & Plano Clark, 2018). The quantitative methods were given greater emphasis in addressing the study's primary purpose and occurred first, while the qualitative methods were intended to provide insights into participant experiences, barriers, facilitators, and mediators of change, as well as to shape future interventions. Previous ACT-based intervention studies, like Richards et al. (2022) and Frayn et al. (2019), have employed both qualitative and quantitative methods to comprehensively evaluate the feasibility and acceptability of their proposed interventions.

#### **3.1.4 Philosophical considerations.**

Pragmatism is often linked with mixed methods research as a guiding philosophy embraced by numerous mixed methods scholars (Tashakkori & Teddlie, 2003). As it prioritizes the outcomes of research, emphasizes the importance of the research question over the methods employed, and values the use of diverse approaches based on their utility and relevance to the research problem rather than adhering strictly to a particular philosophical tradition (Maxwell, 2012).

Consequently, it is both pluralistic and focused on practical, real-world applications and, Creswell and Plano Clark (2018) suggested that the pragmatism paradigm underpins the design of evaluation studies. Additionally, Creswell and Plano (2018) noted that mixed methods

research may incorporate elements of postpositivism, constructivism, or other philosophical perspectives depending on the specific aims and goals of the study.

This study had two main components which were the quantitative experiment, specifically delivery of the ACT intervention, which dominated the study's design indicating a postpositivist orientation (Creswell & Plano Clark, 2018). This represents “*a more nuanced and flexible approach to research compared to strict scientific research approach, of positivism. Although objective knowledges remain the goal, but observation is acknowledged to be imperfect and influenced by researcher’s culture and values*” (Braun & Clarke, 2022, p.177).

The other main component of this study was the participant’s experience to ascertain if the prototype was acceptable to the target population, to achieve this was through qualitative research methods. Combining findings from both the quantitative and qualitative components of the study provided a comprehensive understanding of the effectiveness and acceptability of the prototype iACT based intervention.

Building on the discussion of pragmatism, another relevant perspective is critical realism, as noted by Maxwell (2012). Critical realism is seen as a valuable perspective in the context of mixed methods research. It is a philosophical approach that acknowledges the existence of an objective reality independent of human perception but also recognizes that our understanding of reality is mediated through our perceptions and experiences (Maxwell, 2012). In the context of mixed methods research, critical realism is valued because it can provide a framework that supports and complements essential elements within both quantitative and qualitative research

approaches (Creswell & Planto, 2018; Maxwell, 2012). In other words, critical realism offers a way to bridge the gap between quantitative and qualitative methodologies, allowing researchers to integrate these approaches more effectively in their studies.

Pilgrim (2016) further suggests that critical realism advocates for methodological pluralism.

As it represents an “*integration of two fundamental philosophical principles: a realist ontology (which posits the existence of an objective reality independent of our perceptions, theories, and constructions) and a constructivist epistemology (which acknowledges that our understanding of this reality is inherently shaped by our unique perspectives and viewpoints)*” (Maxwell, 2012, p.1)

For this study, a postpositivist critical realist paradigm was chosen as it integrated elements of both post-positivism and critical realism. This paradigm aligned with the counselling psychology approach to research and practice, which advocates pluralism (Kasket, 2016). It also accommodated the dual role of counselling psychologists as scientist-practitioners, which encompasses the search of objectivity in evidence-based practice through RCTs, while valuing humanistic principles that emphasize individuality, subjectivity, and intersubjectivity (Woolfe, 2012). For instance, Pilgrim (2016) highlighted the critical realist approach in psychological formulation as it enables the integration of causes, values, and meanings within psychology.

### **3.1.5 Covid 19 pandemic**

In its original inception this project was designed to compare the effectiveness of face-to-face group-based intervention with independent self-help intervention, which had full ethical

approval. However, as part of the UK's Government response to the Covid-19 pandemic (World Health Organization, 2020) guidance on social distancing was issued. Once it was acknowledged the COVID-19 rules was going to be part of everyday life, and with discussion with my research supervisors, it was agreed that adaptation to the project was needed, to keep the project within social distancing guidelines. As this project was an intervention study, the research literature was expanded to explore guided self-help to aid with the re-design and to allow for online recruitment and remote interviews. The revised research proposal was resubmitted to University's ethics committee for approval, which was granted.

### **3.1.6 Ethical approval and considerations**

The Faculty of Education, Health and Wellbeing Ethics Panel, University of Wolverhampton reviewed and approved the study in 2019 and then again in 2020 (after submission due to revisions to change one of the conditions from in-person to guided self-help).

Throughout this research project adherence to the following was maintained: The British Psychological Society's codes: (2013) Guidelines for Internet-mediated research, (2021) Code of Human Research Ethics; (2017) (3<sup>rd</sup> Ed.) Practice Guidelines; and the University of Wolverhampton's (2022) Ethics Policy and (2020/21) Code of Good Research Practice.

Participants were also advised on the study's information sheet that if they had completed the pre-intervention questions (e.g., demographics etc.) and had not accessed the online intervention or stopped engaging with the intervention, that the researcher will assume that the participant had changed their mind regarding participating in the study. In addition, provided participants did

not request their data to be withdrawn, any partial data collected (e.g., demographic, baseline questionnaires) were retained to allow for the reporting of the demographic characteristics of completers and non-completers. If a participant stopped engaging in the intervention, unless otherwise stated, it was assumed by the researcher that consent was granted to use the already collected data. Participants were made aware of this in the information sheet.

### **3.1.7 Data protection**

Confidentiality measures were upheld throughout this study. Only individuals directly involved with the research, including the researcher, the study's supervisors, and examiners, had access to the collected data. Even then, supervisors and examiners could not link data to individual participants due to the anonymized ID-coded data. Qualtrics XM Platform© (2005) generated alternative identifiers to conceal all identifying features and ensure participant anonymity. The participants' email addresses were requested, and participants' consent was granted for contact in the context for this study, so that the researcher could provide study related information e.g., Qualtrics XM Platform© (2005) links. The addresses were kept on a password protected spreadsheet stored on the University's secure drive, which is password protected and has a firewall. This was only accessible to the researcher as it had a unique password. This spreadsheet was kept separate from any other electronically stored information on the researcher's file. The participant's email address was collected separately from the questionnaire data.

The anonymized data were documented in a spreadsheet and stored on a computer secured with a password, specifically for the purpose of conducting statistical analysis. Participants were

informed that they had the option to request a summary of the study's findings upon its completion. Furthermore, they were informed of their prerogative to withdraw their data at any stage before data analysis, without needing to provide a rationale for doing so.

Data collected from the questionnaires were stored on a password protected spreadsheet, and any audio recordings, from the interviews, and feedback/comments from the modules, transcripts, were stored separately under the participant's unique code. These data, again, were stored on the University's secure drive, which is password protected and has a firewall. Any identifiable information was removed during transcribing, and once an interview had been transcribed, the recording was deleted.

All the data collated as part of this study were kept in line with the University's data protection policy (being a student project, data stored for 3 years after publication) and will be destroyed in line with the guidance of that UK GDPR policy (Guide to the UK General Data Protection Regulation, 2018).

### **3.1.8 Study support**

As this study asked participants to explore their feelings about eating, it had the potential to impact on their mood. Before, throughout, and post study, the participants were informed that if they felt a need to speak with someone because they had concerns or/and felt distress they should either contact their own GP or, if a student at the University of Wolverhampton, to access the University's Mental Health and Wellbeing Team. The researcher's contact details were available and for those on the GSH group, the researcher contacted them at the end of each

module. At the end of each module, regardless of group allocation, the participants were debriefed rather than at the end of the intervention. This was because if a participant withdraws from the study, and/or if a participants needed to access support contact details of whom to contact were provided (Appendix 7.8 for copy of the debrief information). This covered the purpose of this study, its' aims, what data was collected and how, for example the frequency of food craving by self-report questionnaires, support services, and the contact details of whom to contact regarding concerns/complaints about the project.

### **3.1.9 Participants**

The final sample for this study were n=30 of which 6 males, and 24 were females. The sample was predominately white and aged between 35-44 years. Further details of the characteristics of the sample can be found in Table 3.2 Characteristics of participants by group. The aim was to recruit 30 participants, as recommended for feasibility studies, (Lancaster et al., 2004) from a purposive non-probability sample of adults. According to Cohen's (1992) guidelines, this sample is sufficient to detect a moderate to large effect size at 0.70 power, (G\*Power 3.1.9.6 software; Faul et al., 2009) with an alpha of 0.05 (Cohen, 1992). Although this power is below the desirable cut off 0.8 or 0.9, (Serdar et al., 2021), this pilot's size was in line with similar online ACT pilot studies, e.g., Frayn et al. (2019) who recruited 32 participants, and the outcome of that study observed a moderate to high effect-size.

### **3.1.10 Recruitment**

Students and staff of the University of Wolverhampton were invited to participate in the study via the University's intranet, email and online platforms. Also, people outside of the University were invited through social media platforms, and through contacts of the researcher and supervisors. In the recruitment materials (Appendix 7.4: for copy of the Recruitment Advertisement) people were asked to pass on this on to others, like family/friends whom they know would be interested in this study. This snowball method aimed to recruit participants from diverse socioeconomic and ethnic backgrounds, ensuring a broad representation of individuals. This study was also promoted in a local magazine within the home county of the researcher.

Recruitment materials framed the study as an opportunity for individuals interested in developing new skills to manage food cravings for long-term weight management, without promoting weight loss. A disclaimer was also included in the adverts and in the study information sheet. This informed potential participants that this study was not a diet plan, and that the researcher was unable to offer advice on exercise nor diet related issues. Those with concerns regarding weight were advised to contact their GP or a healthcare professional.

### **3.1.11 Inclusion and exclusion criteria**

The recruitment materials contained details about whom this study was suitable for, which was: those aged 18 years and over, and who had previously followed a weight loss plan (either independently or via a commercial programme). The rationale for this was twofold, firstly as this was a feasibility study, and having feedback from its target population was one of this project's objectives regarding its acceptability. Therefore, having input from people who have

previous experience of weight management plans, can provide a comparison perspective of this pilot to other programmes/interventions. Feedback from those who have experience can contribute to shaping future interventions designed to target changing unwanted eating behaviours. The other reason is those who have previously engaged in a standard weight management behavioural intervention and it has been unsustainable, suggesting that might be a psychological aspect driving an individual's behaviour, which is the nature of this project intervention.

The exclusion criteria were those who had been and/or were currently under medical supervision for eating or weight related issues; those who were underweight (the latter relied on participants' own judgement; however, height and weight was collected at baseline to calculate BMI); currently pregnant. The rationale for these exclusions is medical and physical grounds. Also, excluded were those participating in weight-loss programme (i.e., subscribed to a commercial plan); who are; and who are in contact with counselling/mental health services were excluded. The rationale for the previous mentioned groups, is if a participant is engaged in another intervention, whilst engaged in this study, makes it difficult to unequivocally attribute any changes observed in this project's outcome measures.

### **3.2.0 Intervention development**

The content of the intervention was guided by evidence-based research in the field (Boucher et al., 2016; Hulbert-Williams et al., 2017) and the researcher's supervision team's experience of teaching, practitioner expertise and research of ACT, food cravings and weight management. The session structure and activities of this project's intervention has been structured mainly on:

- Hulbert-Williams, Nicholls, Vanughan, Parkes and Hulbert-Williams (unpublished) Trainer’s manual for Acceptance and Commitment for Weight Management.
- Ciarrochi, Bailey, and Harris (2014) The Weight Escape self-help book. (This is based on ACT (Hayes et al., 1999))

The researcher gained consent to use the “The Weight Escape” book (Appendix 7.1 Consent from author). Certain materials, such as handouts, were published with the inclusion of a Creative Commons license, thereby making them accessible for research-related activities. All are fully referenced within the online intervention.

After an expert review of the intervention materials, with a specific focus on food cravings and ACT content (WN), the intervention initially existed in paper form but was later adapted by the researcher into an online format using Qualtrics XM Platform© (2005) with the 2022 version.

The next step in the development of the study’s prototype intervention was determining the appropriate length of time and the number of sessions. Given that the target of the intervention was food cravings, and existing sources focus on weight management interventions typically delivered over 7 to 8 weeks, it was important to consider the need for the intervention to be scalable, accessible, and affordable (Moller et al., 2017). Several factors were considered in shaping the structure of this study's intervention. First, modularization of treatment is a widely recognized approach for managing complex interventions such as ACT (Lyon et al., 2014). The ACT model, particularly the Hexaflex (Hayes et al., 2012), comprises six core processes, which can be overwhelming for participants to grasp in a short period. Therefore, breaking this

intervention into modules was considered a practical way to promote better comprehension and application of the ACT principles. Each module focuses on specific ACT components that participants can apply in naturalistic settings during the week, particularly when experiencing food cravings. This modularized approach aligns with evidence from brief ACT protocols, such as the Focused Acceptance and Commitment Therapy (FACT) model, which has demonstrated effectiveness in shorter interventions (1 to 6 sessions) (Strosahl, Robinson, & Gustavsson, 2012). Modularization also supports the objective of this study, which is to explore participants' experiences with different ACT processes and assess the acceptability of the intervention. The FACT model (Strosahl, Robinson, & Gustavsson, 2012) was specifically designed to be flexible and succinct, typically delivered in 1 to 6 sessions of 20 to 30 minutes each. Its effectiveness is supported by research, such as Kanzler et al. (2022), who demonstrated positive outcomes in a three-week, one-hour-per-week FACT intervention for chronic pain delivered in a group setting. This provides a strong rationale for structuring the current study's intervention over a similarly brief timeframe.

Additionally, condensing the intervention into three weeks makes it more appealing to participants who might be discouraged by the time demands of longer programs. This is especially relevant given the high attrition rates commonly observed in internet-based interventions (Kelson et al., 2019). A shorter intervention reduces the commitment required and may help improve retention rates. Another advantage of a brief intervention is that it allows participants to immediately apply the learned ACT processes in response to food cravings, which are often spontaneous and situational. This immediate application reinforces learning and skill development in real-world contexts.

After consultation with the researcher's supervision team, it was decided to pilot a brief intervention consisting of three modules over a three-week period. This format facilitates a rapid, iterative learning process and mirrors successful in-person ACT interventions aimed at managing food cravings, such as Forman et al. (2013), which also utilized one-hour sessions. Finally, a three-week format is advantageous for feasibility testing. A shorter duration allows researchers to quickly collect data on participant satisfaction, platform usability, and initial behavioural changes, which is crucial for determining the intervention's potential before moving to more comprehensive, long-term studies. This aligns with the objective of this study, which focus on assessing the acceptability of this prototype intervention.

### **3.2.1 Intervention testing and changes**

This condensed iACT based intervention was developed through an iterative process involving input from the researcher's (LP) supervisors (WN & LJ) and a small number of the target audience. These were people known to the researcher (LP) who had expressed an interest in the project. They had access to the prototype intervention via Qualtrics, and some read through the intervention, and others completed sections of it, to pre-test it before it was launched. Previous iACT interventions have included members of the target population in the design and development process to enhance adherence and engagement (e.g., Levin et al., 2016). Feedback on the useability of the prototype ensures that both interface and content are understandable and engaging. For example: changes to modify the online intervention and how best to use it. Feedback proposed that the intervention is not suitable on mobile phones and suggested that the module should be completed in one sitting due to how Qualtrics XM Platform© (2005) software records and saves data. Other changes were to layout, format and the removal of an outcome

measure. After consultation with research supervisors, the Valuing Questionnaire (Smout et al., 2014) was removed, to increase engagement as end users reported that there were too many questions in the intervention. The Valuing Questionnaire (Smout et al., 2014) is a self-report questionnaire, that has been used in other ACT based intervention for weight management such as Levin et al., (2018). The questionnaire was initially included in this study as an outcome measure, to assessed to what extent an individual can use their values to change their relationship with food cravings and to ascertain their progress in value-led decisions (i.e. engaging in activity that is aligned with a value. After consultation with research supervisors, the Valuing Questionnaire (Smout et al., 2014) was removed, to increase engagement as end users reported that there were too many questions in the intervention. This questionnaire was chosen to be removed as there was some overlap within the intervention, as participants were asked to select and rate their values in the first module and then in the last module, they are asked re-rate their values. The removal of the questionnaire was to avoid perceived duplication of effort by the participants.

### **3.2.2 ACT internet intervention to manage food cravings.**

The final version of the intervention covered all the ACT skill components (a description of these is in Chapter 2. Subsection 2.1.8 *ACT's view on food cravings*; and in Table 3.0. *ACT processes and activities*, below) and was divided into three modules. Two of the ACT six core processes were covered in each module, over three weeks. The participants had a week to complete a module. Each contained activities for the participants to do in-between modules, to practice and to consolidate the new skill in real-life settings. Each module took between 30–45 minutes to complete. Total time commitment of learning phase of the intervention was 3 hours.

Table 3.0 below presents the ACT processes and activities delivered. The 3 separate modules were made available to the participants on a weekly basis via Qualtrics XM Platform© (2005). More information about administration is covered in the subsection 3.23: *Procedure* of this chapter.

In each module, the ACT processes and their rationale was covered, this involved explaining the process, its purpose and how it could help with food cravings. (A hard copy of the intervention, is in *Supplementary Confidential Appendix*) Where possible, published guided experiential activities videos, via YouTube, were used to deliver training and enhance many of ACT's core process (e.g., awareness and acceptance of thoughts and feelings, "surfing urges" to eat when not physically hungry (i.e., acceptance), and "playing with our thoughts" activities (i.e., defusion).

Each module was designed to be built around interactive type activities and tasks, that encouraged participants to reflect on how practicing the skills would make a difference to their life (i.e., clarification of values) (Harris, 2009). A copy of each module (including the participant's answers) was available for download by the participant. Between modules participants were encouraged to practice the skills presented in the module, and to type their reflections from this practice at the beginning of the next module.

**Table 3.0:** ACT processes and activities.

Module	ACT process	Overview of module & activities
1	Creative Hopelessness Experiential avoidance	<i>Overview</i> <ul style="list-style-type: none"> <li>• Appetite for change</li> <li>• How old is the problem?</li> <li>• Control is the problem.</li> </ul>
	Notion of Acceptance	<i>Activity:</i> Chocolate cake exercise
	Contacting to the present moment	<ul style="list-style-type: none"> <li>• Mindfulness</li> </ul> <i>Activity:</i> Mindfulness eating
	Introduction to values	Identifying values <ul style="list-style-type: none"> <li>• Looking forward – what are my values?</li> </ul> <i>Activity:</i> A value action plan
2	Acceptance	<i>Overview:</i> <ul style="list-style-type: none"> <li>• Promote acceptance of our internal experiences</li> </ul> <i>Activities:</i> Quicksand metaphor Urge surfing.
	Values-base action	<ul style="list-style-type: none"> <li>• Alternative path: willingness and choice</li> </ul> <i>Activity:</i> Choice point
	Defusion	<ul style="list-style-type: none"> <li>• Introduce being stuck in our thoughts.</li> </ul> <i>Activity:</i> Playing with our thoughts exercise
3	Self-as-context	<i>Overview:</i> <ul style="list-style-type: none"> <li>• The stories we tell ourselves.</li> </ul> <i>Activity:</i> Chessboard metaphor Listing dietary rules
	Contacting the present moment: listening to our bodies	<ul style="list-style-type: none"> <li>• Listening to our bodies</li> </ul> <i>Activities:</i> Am I hungry? The Levels of Hunger scale Hunger vs craving.
	Values & commitment action	Values-guided problem- solving <i>Activities:</i> Committed action plan & consider alternatives to urges. Craving journal including rules and internal experiences. Practicing listening to body cues

### 3.2.3 Contents of module 1. Appetite for change

Module 1 aimed to introduce the intervention, assist participants in understanding their experiences with weight control and FCs, and help them identify the reasons for and barriers to change.

The reflective questions within this module included asking participants to (a) identify previous weight control strategies; (b) evaluate those strategies and the barriers to maintaining them, and (c) to reflect on their thoughts and feelings associated with their eating behaviour. Then the next part focussed on control, and how having control of ‘internal events’ (thoughts, feelings, physical sensations) is an illusion (Harris, 2009). The ‘chocolate cake’ (Nicholls, 2019) experiential exercise, where participants were told to imagine this, and then tell themselves, not to think about it, was used to highlight the rebound of thought suppression and how difficult it is to control one’s thoughts. This is part of ‘creative hopelessness’ (Hayes et al., 1999) which is the first part of ACT, as it is often viewed as crucial because it is a reflective process aimed at *“opening-up new way of relating to their internal experiences and is thought to help pave the way for working with the six core processes”* (Harris, 2009, p.81).

The notions of acceptance and mindfulness were introduced via a block of text, and links to videos were included. Participants were invited to connect to their current moment, and by being open, to make room for their internal experiences by noticing and observing them, allowing them to be (Harris, 2009). Another ACT experiential activity was included, called ‘mindfulness eating’ (Harris 2009), this involves paying deliberate, curious attention to the experience of eating, and noticing internal body cues (Harris, 2009). Practical ways to eat more mindfully

were described examples are ‘eat away from distractions such as T.V., laptop; slow down the pace of eating’ (Ciarrochi et al., 2014).

Module 1 also featured a value clarification exercise (Ciarrochi et al., 2014), where participants explored their core values in life. This has been found to be a motivational feature in a behavioural change study (Bryan et al., 2016). In this study, the participants were asked to select their three most important values, then to rate themselves on where they are currently, and where they would like to be. For example, the value of health, current rating: 5/10, desired: 8/10. They were then encouraged to develop a specific action plan to achieve their desired rating.

At the end of each module was a summary and activities for the participants to complete in between modules. The aim of the activities in between sessions was to encourage participants to practice new skills/strategies and apply them to real-life settings (Fairburn, 2013). The activities for module 1 were to practice eating in a mindful way by choosing a time or a meal to do this, and to note their observations when it comes to food desires, and to complete the values activity.

### **3.2.4 Contents of module 2. Acceptance, willingness and being stuck in your thoughts.**

Module 2 started with a brief recap of the first module and expanded on the illusion of control via the ‘quicksand’ metaphor (Harris, 2009): the more one struggles to get out quicksand, the quicker one sinks. The message of the metaphor is that the more one tries to fight or control thoughts/feelings or/and sensations increases, say cravings, can be maintaining the situation.

The concept of acceptance and associated activities were introduced using videos and text, which started by explaining acceptance, in terms of what it is, what it is not, and how it can be utilised

to change the relationship with our thoughts and feelings by examining the language and rules (Ciarrochi et al., 2014).

Module 2 introduced a reflective craving journal to monitor when, where and how the participants reacted to the cravings/urges, as we might not be paying attention to our thoughts, feelings and/or our reaction (Ciarrochi et al., 2014). From this information gathering exercise, the triggers and function of this behaviour and the consequence of this can be highlighted (Ciarrochi et al., 2014). The journal activity was separate from the online module, and participants were informed that their entries would remain confidential and would not be analysed. To support with emotional awareness participants were directed to “The wheel of emotions” (TherapistAid.com©2015) handout, this contains a list of different emotions and was available for download.

ACT, as highlighted by Bennett and Oliver (2019), places significant emphasis on the function of human behaviour. It is based on the concepts of appetitive and aversive control, suggesting that any behaviour primarily serves one of two main purposes for an individual: either to approach desired stimuli and the ensuing consequences of interacting with these stimuli or to evade or avoid undesired stimuli. ACT focuses on understanding the function of a given behaviour and how a client responds to this, are they trying to move towards or away from it? (Bennett & Oliver, 2019). This translates into the Choice Point Model and activity (Ciarrochi et al., 2014) which emphasizes that once we are more aware of our triggers, this opens an alternative pathway, we can move towards or away from our desired outcome, which is our value/s. Next, participants learned techniques to enhance distress tolerance when facing negative emotions that

often trigger food cravings. A primary method was mindfulness or taking a mindful pause, which helped participants focus on the present moment and make purposeful choices aligned with their values (Ciarrochi et al., 2014). The STOP exercise was introduced, to slow down the behavioural response to identified thoughts/cravings. This anagram is for ‘Say it’ (name the craving), ‘Take note’ (of feelings/thoughts), ‘Observe’ (the intensity of the cravings), and then ‘Pause’ (delay responding by engaging in an alternative). For example, “I am having thoughts about food”, instead of responding immediately to those, saying STOP to self may help to delay the behavioural response and to consider options, such as using time, “can I delay going to the fridge for 5 minutes? this might be enough time for the urge to pass”. Saying STOP is a suggested method, however, the participants were encouraged to think of creating one that is personal to them to make it more meaningful, to make it more memorable which may increase effectiveness (Ciarrochi et al, 2014). The STOP technique aligns with the “Urge surfing” as featured in previous research studies (e.g., Bowen & Marlatt, 2019).

A reflective exercise of naming and identifying craving -related thoughts was used to bring attention to these, and the clients were asked to rate the believability of the thought. The next stage consisted of experiential exercises, the “classic defusion” activities (Harris, 2009), these included singing the thought silently in tune of Happy Birthday, then the participants were asked to re-rate the thought’s believability and reflect on what they noticed. The defusion techniques were available as a handout, as a reminder, and as a resource.

Module 2 revisited distress tolerance and encouraged participants to name different activities such as seeking social support from a friend or engaging in breathing exercises that they have

had found beneficial (or are willing to try) to manage certain emotions. Participants were introduced to an acceptance skill (urge surfing), using a video and text explanation, to help them with occurring cravings. This skill can also be used for emotions (Ostafin & Marlatt, 2008). Urge surfing was introduced to draw attention to the transient nature of urges and cravings (Hinojosa-Aguayo & González, 2022).

The next part of this module covered cognitive defusion (Hayes et al., 1999). According to Hayes et al. (2012) individuals are invited to view their thoughts as sheer thoughts, and to consider them as not being an absolute truth. The "Passengers on the bus" metaphor (Harris, 2009) was used to illustrate this concept. This video, also provided in text format, uses the idea of being a bus driver on a journey, where the passengers are one's thoughts/feelings, to demonstrate how these can influence the journey (Harris, 2009). According to Harris (2009) the goal of this was to highlight how we respond to uncomfortable thoughts/feelings and how they influence our decisions. The activities from this module were to keep a craving journal, practice a defusion technique and to continue mindfully eating.

### **3.2.5 Contents of module 3. Listening to our bodies and committed action.**

The final module started with a small number of reflective questions on the tasks set in the previous module, which were to practice the defusion techniques, urge surfing and monitoring cravings. This module continued building on the previous module as it continued with the process of defusion and then moved to the self-as-context process through the 'stories we tell ourselves' and its associated activity, which was to for the participants to note their own ones; (Ciarrochi et al., 2014) and the 'Chessboard' metaphor (Harris, 2009).

A defusion exercise asked the participants to notice and name their dietary rules that they hold, and the impact of these on their eating behaviour e.g. “I am not allowed to eat after 7pm”. Strict and rigid rules tend to lead to unpleasant consequences or lead an individual away from a valued life activity, such as going out for dinner. The aim is noticing the arbitrary nature of the rules, and to consider whether it serves the individual’s values. By observing the of these and the lack of fit between what an individual believes, wants, and intends to pursue versus the rules can lead to the experience of defusion (Berman, 2018).

The ‘self-as-content’ process involves the developing ability to observe oneself as a ‘context’ for thoughts, feelings and experiences, rather than being identified by those experiences (Bennett & Oliver, 2019). The aim of this process is to enable individuals to separate themselves from their thoughts and emotions, allowing them to respond to these experiences differently and more in line with their values. The ‘experiences’ exercises encourage individuals to become aware of internal experiences as they arise, and to observe them with curiosity and openness (Harris, 2009).

The next part of this module focused on ACT’s ‘being present’ process, with the focus on tuning into the body sensations rather than on feelings and cognitions. The aim of these exercises is noticing and connecting with the body’s cues of hunger, fullness and satiety to avoid eating when not physically hungry (Ciarrochi et al., 2014; Kristeller & Wolever, 2011). As periods of irregular eating, such as fasting diets, can lead to a disconnection between body cues and eating behaviour, for example an individual whose eating behaviour is triggered by emotions rather than biological hunger cues (Fairburn, 2013). The final aspect of this module is the process of

committed action. The participants were invited to re-rate their progress towards their identified values from module 1 as an indicator of their progress. To support the participants with their journey in changing their relationship with food, a Values-guided Problem-Solving© (Harris, 2021) technique was included as a self-help resource to support an individual to get back on track if in the future a relapse occurred or there is a future event that might be triggering for the individual.

### **3.2.6 Data collection methods and procedure**

This section will cover the methods of data collection and how this was collated.

### **3.2.7 Measures**

As this was a feasibility study to explore the acceptability and effectiveness of a prototype iACT based intervention data were collected from the participants through standardised self-report questionnaires, monitoring engagement with the intervention, and from interview data. The outcome of the analyses provided a holistic picture of the intervention.

### **3.2.8 Characteristics of the population**

Data on the characteristics of the population were collated and analysed to ascertain if there were any differences between those who completed and those who did not complete the intervention. This was collected at baseline, and encompassed the participants' demographic information, including gender, age, ethnicity; and current weight status by asking if they are currently trying to lose weight, and if they have previously lost weight intentionally.

In this study the participants' height and weight were collected at baseline, so their BMI could be calculated, to ensure that those taking part in the study were not underweight (as this is an exclusion criterion for this study). This data was collected by self-report, due to the social restriction guidance (Gov.UK March 2020). Previous research studies, such as the investigation conducted by Pursey et al., (2014) demonstrated a moderate to high level of agreement between self-reported and objectively measured anthropometric data. This suggests that collecting anthropometric data through self-reported online measures of height and weight can be considered a valid approach.

The last question in this section, asked how the participants heard about the study (i.e., social media, from another person etc.) to assess the source of recruitment.

### **3.2.9 Standardised self-report questionnaires.**

The aim of this intervention was to help people manage food cravings through increasing psychological flexibility (e.g., an increased ability to tolerate internal experiences that occur in response to food). Given the association between FCs, emotions, and psychological inflexibility (Fahrenkamp et al., 2019), this study's predicted that an ACT-based intervention would increase psychological flexibility, and consequently lead to a decrease in eating in response to food cravings, and emotional eating. To ascertain these things, below outcome measures were administered pre-intervention (immediately before the intervention), post-intervention (immediately after completing third module) and, at approximately one-month follow-up, through Qualtrics XM Platform© (2005).

1. *Dutch Eating Behaviour Questionnaire – Emotional Eating subscale (DEBQ-EE; Van Strien, Frijters, Bergers, & Defares, 1986).*

This self-report questionnaire was produced with the aim of capturing eating behaviours associated with the onset and persistence of obesity (Van Strien et al., 1986). It is comprised of three distinct subscales: external eating, restrained eating, and emotional eating. Given the association between FCs and emotional eating (Fahrenkamp et al., 2019) this study included the 13-item emotional eating subscale of the DEBQ-EE. This subscale assesses individuals' reported inclination to eat in response to negative emotional states, such as stress, anxiety, and depression. It encompasses two distinct dimensions, one related to eating in response to diffuse emotions and the other linked to eating in response to clearly labelled emotions. An example of an item is *“If you feel annoyed, do you then like to eat something?”* Participants are asked to rate the frequency with which they engage eating-related behaviours, on a 5-point Likert-type rating scale from 1 (= never) to 5 (= very often). A score on this subscale is obtained by dividing the sum of items scored by the total number of items on that scale, so for the emotional eating scale, that would be summed total/13 items = score. The possible range of scores are 1 – 5, from a mixed community sample (Van Strien et al., 1986) and a high score indicates greater emotional eating. Although this questionnaire does not have a clinical cut off, a score of 3.25 or higher on this scale has been found to represent the 80<sup>th</sup> percentile for emotional eating (Van Strien et al., 1986). Frayn et al., (2019) used a score of 3.25 as a cut-off score as part a screening criterion for inclusion to participate in their project. (Appendix 7.5 for copy of the DEBQ).

It has demonstrated robust psychometric properties (Levin et al., 2018) with subscale scores showing strong internal consistency ( $\alpha = .94$ ) across various weight category groups. In a

sample encompassing normal weight, overweight, and obese individuals from non-clinical backgrounds, for the emotional eating subscale, the coefficient alphas ranged from .96 to .97 (Bohrer et al., 2015). Research conducted with diverse adult populations, including both community and clinical samples, has consistently reported satisfactory psychometric properties for the DEBQ, not only in its original version (Van Strien et al., 1986) but also in its English adaptation (Wardle, 1987). De Carvalho et al. (2023) conducted a reliability test on DEBQ and reported a Cronbach's alpha of 0.70, indicating an acceptable internal consistency.

2. *Acceptance and Action Questionnaire for Weight-Related Difficulties (AAQ-W; Lillis & Hayes, 2008).*

The Acceptance and Action Questionnaire for Weight-Related Difficulties was developed to assess changes in experiential avoidance and psychological inflexibility associated with ACT and similar interventions aimed at managing weight. Comprising of 22 items, this questionnaire gauges the levels of inflexibility and avoidance concerning thoughts and emotions related to weight. The range of possible scores is 22 to 154. Before a sum score is taken, items 1, 6, 7, 14, and 18 are reverse scored. With higher scores indicating the greater than psychological inflexibility and experiential avoidance (Sairanen et al., 2017). The first part of this questionnaire asks participants to rate “*the truth of each statement as it applies to you*”. An example of a question is, “*I am not in control of what I eat*”. Participants are asked to rate an item on a 7-point Likert scale ranging from 1 (= never true) to 7 (= always true). The next part asks to rate “*how valid or believable*” each statement is, with responses ranging from 1 (= not at all believable) to 7 (= completely believable), an example of a statement is “*If I’m overweight, I can’t live the life I want to*”.

Sairanen et al. (2017) conducted reliability analyses on this self-report questionnaire and reported a Cronbach's alpha of 0.90, demonstrating strong internal consistency. Additionally, it exhibits meaningful correlations with various weight-related measures, including indicators such as obesity-related quality of life, binge eating, and exercise. It has also shown associations with objectively measured body mass (Lillis & Hayes, 2008). Notably, past studies, including research by Lillis and Hayes (2009), have consistently established the AAQ-W as a reliable and valid measurement tool. Furthermore, it has proven to be sensitive to the effects of ACT-based treatments, as demonstrated by findings from Levin et al. (2018) (Appendix 7.6 for a copy of the AAQW).

### 3. *Food Craving Inventory UK (FCI-UK, Nicholls & Hulbert-Williams, 2013)*

The above self-report questionnaire comprised of four distinct sub-factors designed to assess cravings for specific types of foods: those with a high-fat content; high in sugar, carbohydrates, and convenience foods. It also generates a total score or sub-total scores. This inventory evaluated not only the frequency of cravings for individual food items but also the level of difficulty participants experiences when resisting these cravings and the subsequent behavioural response; specifically, how often participants succumb to their cravings. This inventory aligns with Meule's (2020) description of the FC experience as being multidimensional involving cognitions (i.e., thoughts about food) and the behavioural response (i.e., consumption of craved foods). The above named inventory lists 24 foods and asks the participants to reflect on the following over the past month: a) the occurrence of cravings (rating from "never" to "almost every day"); b) how often they "give in" to it (same rating), and c) how difficult it was to resist temptation (rating from "easy" to "so difficult that I gave in").

The FCI-UK inventory, adapted from the original US scale (White et al., 2002), exhibits strong reliability across its subscales. Reliability analyses revealed high internal consistency, with Cronbach's alpha coefficients of 0.87 for the craving scale, 0.90 for the difficulty scale, and 0.89 for the giving-in scale, demonstrating robust psychometric properties (Nicholls & Hulbert-Williams, 2013). Its reliability and validity have been well-established, and it has been effectively employed in prior research endeavors. For instance, Hulbert-Williams et al.'s (2017) study on ultra-brief defusion and acceptance exercises for managing food cravings utilized the FCI-UK as a valuable measurement tool. As food cravings may be culturally sensitive (Gibson & Desmond, 1999) this measure was selected as it was representative of the UK diet.

For analysis the rating scales were re-coded by the researcher (LP) to include a numerical value. For the 'frequency of cravings' and 'giving-in' (consumption of craved food) subscales recoded scoring was never = 0, rarely = 1, sometimes =2, often =3 and always = 4. For the "difficulty to resist temptation" subscale the recoded ratings were as the following: easy = 0, a bit difficult = 1, difficult = 2, very difficult = 3 and so difficult = 4. The subscale score was the sum of its items, therefore the scores on the subscales were interpreted as the following: for frequency of craving: higher the score = high frequency; giving in = higher score more craved foods consumed, and difficulty in resisting temptation = higher score is harder to resist temptation (Appendix 7.7 for a copy of this measure).

### **3.2.10 Qualitative data**

An aim of this study was to explore and gain the participants' experience of prototype intervention as mentioned in section 3.2: Rationale and aim for this project. To achieve this after

one month after the intervention ended, those participants who completed all the modules were invited to partake in a brief 10 to 20-minute semi-structured remote feedback interview (either videocall or telephone) and to complete the forementioned questionnaires. A one-month follow-up period is in line with other pilot studies investigating ACT and emotional eating, such as Berbette (2015). The rationale for the one-month follow-up is, it allows the participants sufficient time to practice the skills and strategies learned during the intervention and integrate them into their daily lives. The interviews invited the participants to give feedback on the intervention, and the questions covered the following: interest in participating in the study; comparison to other previous weight management interventions; what was most helpful and what was the least helpful; any changes they had noticed or made, and lastly any additional comments they had (Appendix 7.11. Copy of the interview schedule). The interview schedule was developed from the findings of previous studies by Bradbury et al. (2015) and Frayn et al. (2019). This is discussed in more depth in subsection 3.35. Part 2: *Experience of the intervention: interviews*.

### **3.2.11 Procedure**

Participants accessed the intervention via one of the following ways: scanning a QR code on the recruitment advert, or if, online than clicking on the internet link. The code and link took the participants to Qualtrics XM Platform© (2005) which hosted the intervention. Upon launching this, participants were invited to read the introduction to the intervention, which advised on length of time to complete the intervention and each module, how best to access it, which was via a laptop, desktop or tablet. On the next page was information about the study, including the purpose of it, the participants' right to withdraw, risks and benefits to taking part, confidentiality,

data protection, storage and security, what happens post study, the contact details of whom to contact for any problems/concerns about the study, who has approved it, and contact details of the researcher, and researcher's supervisors. (Appendix 7.3. Copy of the Project information for participants). Next, the participants completed consent questions, (Appendix 7.2. Copy of the Consent questions) this is in line with the Declaration of Helsinki (World Medical Association, 2013). If a "No" was recorded, then the would-be participant was thanked for their time, and exited from the study. Once consent was given, then the participant was provided with their unique identification number, generated by Qualtrics XM Platform© (2005).

Next the participants were invited to complete the "About You" section, which included the following demographic questions: age group, ethnicity, and gender. The participants provided their contact details, which was a telephone contact number and their email address. The latter was used so that the researcher was able to provide study related information e.g., Qualtrics XM Platform© (2005) links. Then they were invited to complete the baseline questionnaires (DEBQ, AAW-Q and FCI-UK). A bespoke piece of coding designed by the researcher's supervisor (WN) instructed Qualtrics XM Platform© (2005) to randomly allocate the participants to either Guided Self Help (GSH) or Self Help (SH) delivery methods. The participants were informed that there was no difference in the content of the intervention, only the delivery method was different. A flow chart of the intervention procedure is illustrated in Figure 3.0, page 105.

*Group A: Guided self-help intervention.*

Participants allocated to this group were informed that the researcher would contact them at the end of each module. Contact was either telephone or videocalls, depending on the participant's

preference. The purpose of this contact was to review the participants' understanding, progress, to discuss the module, and to answer any questions that the participant had. The researcher (LP) followed the questions on a prompt sheet for consistency. The questions were designed to explore the participants' progress, whilst ascertaining if there are any barriers and/or facilitators to implementing the new skills into their daily lives. (Appendix 7.9: Copy of the GSH prompt sheet). This type of exploratory coaching is similar to other evidence based GSH protocols, like 'Overcoming binge eating' by Fairburn (2013).

*Group B: Purely self-help intervention.*

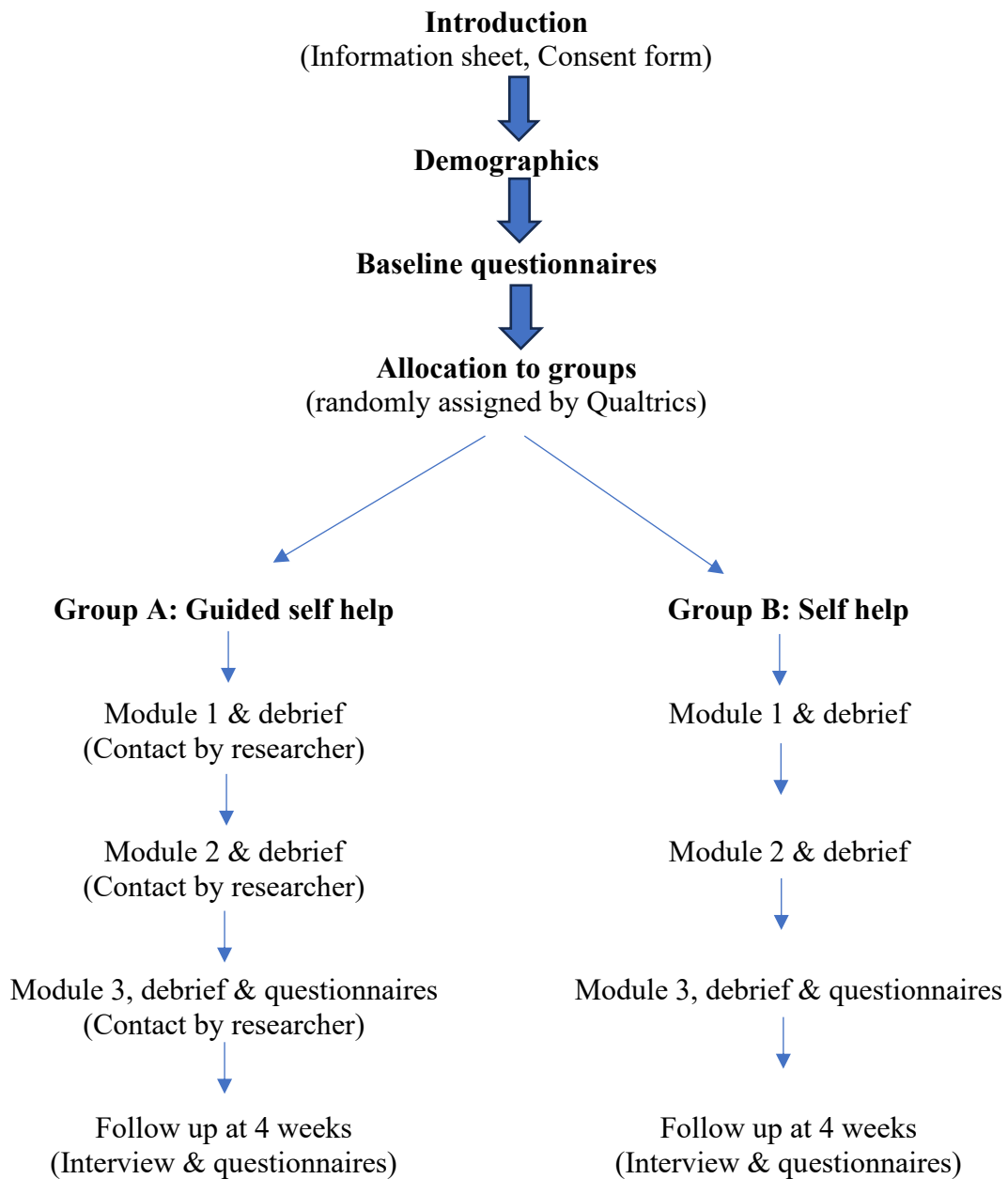
Participants were informed that this was the independent option, and that they would work through the intervention by themselves. Although at the end of each module, the participants were able to leave comments/questions within a free-text box and were informed that the researcher would reply to them within 2 days via their preferred method.

Once the participants were allocated, they then accessed module 1 of the intervention. On completion of a module by a participant, the researcher received an alert email from Qualtrics XM Platform© (2005). Qualtrics was set-up to issue the modules at weekly intervals, with a reminder to complete the module also sent to participants on third day. Then the link to the next to module was emailed via Qualtrics XM Platform© (2005) to the participants, and this was repeated until the end of the intervention. At the end of each module, regardless of group allocation, the researcher's contact details were available, and the participants were debriefed (Appendix 7.8: Copy of the debrief information). The debrief emphasized that if a participant had any concerns raised by this project to contact their GP, or if a student at the University of

Wolverhampton, to access the Counselling and Support Services. As best to the author's knowledge no participants sought support. In addition, the participants were also invited to leave any comments and were asked, "was the module helpful?", to measure satisfaction, answers were from a choice of answers of "yes", "no" and "not sure". This was not a forced answer, so it could be left blank.

Arrangements for the feedback interviews were made at the end of module 3 of the intervention, where the participants were asked for their interview preference (telephone or videocall) and their availability. The researcher contacted the participants to confirm the interview arrangements. They were informed that the interview was going to be audio recorded, using a Dictaphone, and that the recording would be transferred within 24 hours to a password protected PC, and saved on the University's secure drive, which has a firewall. The recordings were stored under the participant's unique identity code, and once the recording had been transcribed it was deleted. The transcriptions were anonymised through the removal of any identifying information to ensure confidentiality. The participants were made aware of this in the study's information sheet.

**Figure 3.0:** Flow chart of the intervention procedure



### **3.3.0 Results**

Data collated for this study were from questionnaires and brief feedback interviews, so the analysis plan employed both quantitative and qualitative analyses.

#### **3.3.1 Component 1: Quantitative data analysis**

Data were stored and analysed using statistics software package IBM SPSS® Statistics v28. The analysis plan entailed exploring the quantitative feasibility data to explore whether iACT intervention was acceptable to the participants, which was one of this study's research aims. This included exploring the participant's characteristics, and retention rates; satisfaction; duration of engagement on the intervention, and analyses of the differences between those completed and not completed the intervention. This included mainly descriptive analyses, which were conducted due to the exploratory nature of this study. Frequencies, percentages and Chi-squared Goodness to fit test for categorical variables: age, gender, ethnicity etc. were calculated to describe the study sample.

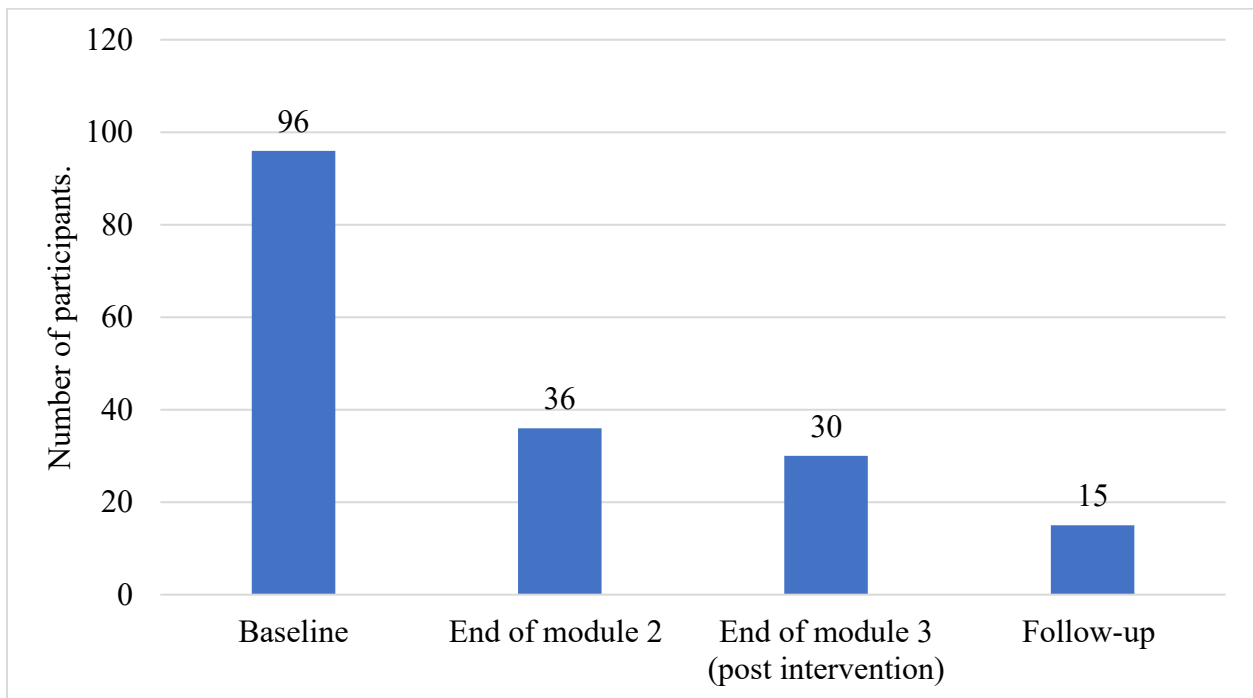
Then the next step was analyses of the scores from the questionnaires from the study sample. T-Tests and Chi-squared Goodness to fit tests were used to explore equivalence between the SH and GSH groups on their participants' characteristics. Means and standard deviations were calculated to demonstrate within group changes from baseline to post-intervention on the scores from the variables: psychological inflexibility, emotional eating and food cravings. To test the predictions of this study research hypotheses, statistical analyses, included three mixed 2 x 2 ANOVA, which were performed via SPSS ® to ascertain if there was a main effect of time, a main effect of group, and then if there was any interaction between time and group, from

baseline to post-intervention and then between the groups. Due to the small cell sizes, follow-up data were not included in the main analysis. However, to explore to longer-term trends of the effects of the intervention over time, one-way ANOVAs were used to examine changes from baseline to the 1-month follow-up.

### 3.3.2 Retention

During the recruitment phase, 96 participants started the intervention as they completed baseline questionnaires, and the retention rate at post was 31% (30/96), as 30 participants completed the intervention from baseline to post-intervention. Of those, 50.0% (15/30) completed the measures at follow up, as shown in Figure 3.1 below. From baseline to follow-up attrition rate was 81% (15/96) and of those who dropped out 56% (37/66) were allocated to the SH condition, and 44% (29/66) were GSH.

**Figure 3.1:** Retention rate: the number of participants across the intervention



It is evident that a high number of participants dropped out from the course at the first module and there was no capture of data on reason for non-completion. As this was an exploratory study, analysis of all the available data took place to explore whether there were any significant differences in the characteristics of completers and non-completers. This may provide an insight in who to target with these interventions, or who may need extra support with adhering to a digital based intervention. The results of this analysis are presented in Confidential Appendix: Supplementary Analysis and summarised below.

### **3.3.3 Summary of non-completers vs completers**

The profile of non-completers was like that of the completers (mainly female and predominantly white) apart for the characteristic of age, where the highest percentage of the non-completers were in the 45-54 age group (27.3%), compared to the completers, where the highest percentage was in 35-44 age group (33.3%). Chi-squared Goodness to fit tests revealed that there was no significant difference on the categorical variables: the participants characteristics of the completers and non-completers (age:  $\chi^2 = 6.435$ ,  $df = 5$ ,  $p = 0.266$ , Cohen's  $w$  effect size  $w = 0.463$ , indicating a medium effect size; ethnicity:  $\chi^2 = 15.632$ ,  $df = 12$ ,  $p = 0.209$ , Cohen's  $w$  effect size  $w = 0.721$ , indicating a large effect size; and gender:  $\chi^2 = 4.661$ ,  $df = 2$ ,  $p = 0.097$ , Cohen's  $w$  effect size  $w = 0.394$ , indicating a medium effect size).

Parametric assumptions were conducted on this data set, the Levene's test for equality of variances was met, thus permitting parametric testing, using an independent T-Test. The analyses revealed that there was a significant difference in BMI between the non-completers and completers ( $t = -1.986$ ,  $df = 89$ ,  $p = 0.05$ , two-tailed). The effect size, as measured by Cohen's  $d$  (1992) was  $d = 0.45$ , indicating a small to medium effect size. The average BMI for the non-

completers was within the obese range, compared to the completers which were in the overweight range.

In terms of the outcome variables: AAQW, DEBQ and FCI the average scores of the non-completers at baseline for all the variables were higher than the completers. However, according to an independent-samples means Welch t-tests, (used due to unequal variances) (Delacre et al., 2017) the only significant difference found between the groups was on the Food Craving Inventory subscale: frequency of cravings ( $t = -2.29$ ,  $df = 76.33$ ,  $p = 0.02$ , two-tailed. The effect size, as measured by Cohen's  $d$  (1992) was  $d = 0.44$ , indicating a small to medium effect size), indicating that the non-completers reported a greater frequency of food cravings than the completers.

Many of the participants who engaged in the study were from the University of Wolverhampton, there was no difference in the proportion of students between those who completed and the non-completers.

### **3.3.4 Satisfaction and duration**

At the end of each module, the participants were asked “did you find the module helpful?” The participants had a choice of answers of “yes”, “no” and “not sure”. At each data collection point, less than 50% participants completed this, and response rates were equally low across conditions. Therefore, there was too little data to draw any assumptions from the analyses. Outcome of the analyses of these are in Confidential Appendix: Supplementary Analysis.

During the development phase of the intervention, the average estimated time to complete a module was between 30 to 45 minutes. Based on analytics, collated by the Qualtrics software, the median times are within the expected timeframe for the completers. Whereas the non-completers for first module, their median time was 21minutes and 34 seconds, suggesting a lack of proper engagement.

### 3.3.5 Preliminary analyses

This section explored the sample of completers' participant characteristics for equivalence between the two groups: self-help (SH) and guided self-help (GSH). At baseline the participants were randomly allocated by Qualtrics XM Platform© (2005) software to the two groups. There was an equal number of participants in each group, as highlighted in Table 3.1 below.

**Table 3.1:** Allocation to group (n=30)

<b>Group</b>	<b>n (%) of completers</b>
Guided self help	n=15 (50.0)
Self help	n=15 (50.0)

*n= number*

#### *Group differences at baseline.*

Table 3.2 displays the characteristics of the participants by their assigned group. The demographics of both groups appear to be equal, as participants were mostly female across a spread of ages. However, the SH group were more diverse ethnically compared to the GSH group, which was comprised primarily of people of white British (80.0%) ethnicity.

**Table 3.2:** Characteristics of participants by group: GSH (n=15) and SH (n=15)

<b>Characteristics:</b>	<b>GSH n (%)</b>	<b>SH n (%)</b>
<b>Sex:</b>		
Female	n=13 (86.7)	n=11 (73.3)
Male	n=2 (13.3)	n=4 (26.7)
<b>Age group:</b>		
18- 24years	n=1 (6.7)	n=2 (13.3)
25-34years	n=3 (20.0)	n=1 (6.7)
35-44years	n=4 (26.7)	n=6 (40.0)
45-54years	n=5 (33.3)	n=3 (20.0)
55-64years	n=2 (13.3)	n=3 (20.0)
<b>Ethnicity:</b>		
Asian or Asian British -Any other Asian background	n=1 (6.7)	n=2 (13.3)
Other ethnic group – any other ethnic group	n=1 (6.7)	n=0 (0.0)
Mixed - White & Asian	n=0 (0.0)	n=1 (6.7)
White – Any other white background	n=1 (6.7)	n=2 (13.3)
White – British	n=12 (80.0)	n=8 (53.3)
White – Irish	n=0 (0.0)	n=2 (13.3)

*n = number*

Chi-squared Goodness to fit tests examined whether there was any significant difference on the categorical variables: the participants characteristics. This was to explore equivalence between the groups and the tests results revealed no difference, as shown in Table 3.3, below. However, it is noted that the Chi-squared tests are not particularly effective when cell sizes (i.e., expected number of participants in each 'cell' or 'subgroup') are less than 5 (Carter & Clarke, 2018). For example, there are small numbers in some of age and ethnicity groups, as shown in the above Table 3.2.

**Table 3.3:** Participants characteristics: Chi-squared Goodness to fit analyses.

Characteristic	Chi-squared value $\chi^2$	Df	Sign. (2-tailed)	Cohen's $w$ Effect size
Age	2.433	4	0.657	0.287
Ethnicity	0.833	5	0.361	0.167
Gender	5.467	1	0.362	0.426

*Body Mass Index (BMI) and weight management*

The mean BMI (self-reported at baseline) for those allocated to the GSH method was 30.00 Kg/m<sup>2</sup> which was on the border for the obese range (National Health Service, UK, BMI ranges). Whereas the mean BMI of those in the SH condition was 28.77 Kg/m<sup>2</sup> which was within the overweight range. However, a t-test revealed no statistically significant difference between the two groups on BMI ( $t= 0.679$ ,  $df=27$ ,  $p= 0.503$ , two-tailed, the effect size, as measured by Cohen's  $d$  (1992) was  $d = 0.16$ , indicating a very small effect size). 60.0% (9/15) of those in the SH were in the overweight range, whereas for the GSH the greatest proportion, 42.8% (6/14) of participants were in the obese range, Table 3.4 as below.

**Table 3.4:** Participants' self-reported BMI and weight management status (n=29) by group.

Weight	GSH n=14 (%)	SH n=15 (%)
BMI (kg/m <sup>2</sup> ) Mean and SD (Range: Min. -Max.)	30.0 ± 8.90 (23.40 - 57.50)	28.77 ± 6.24 (20.20 – 44.00)
<b>*BMI weight ranges:</b>		
Healthy weight (18.5 to 24.9)	n= 4 (28.6)	n= 3 (20.0)
Overweight (25.0 to 29.9)	n= 4 (28.6)	n= 9 (60.0)
Obese (over 30.0)	n= 6 (42.8)	n= 3 (20.0)

\*National Health Service, UK

### *Weight regulation*

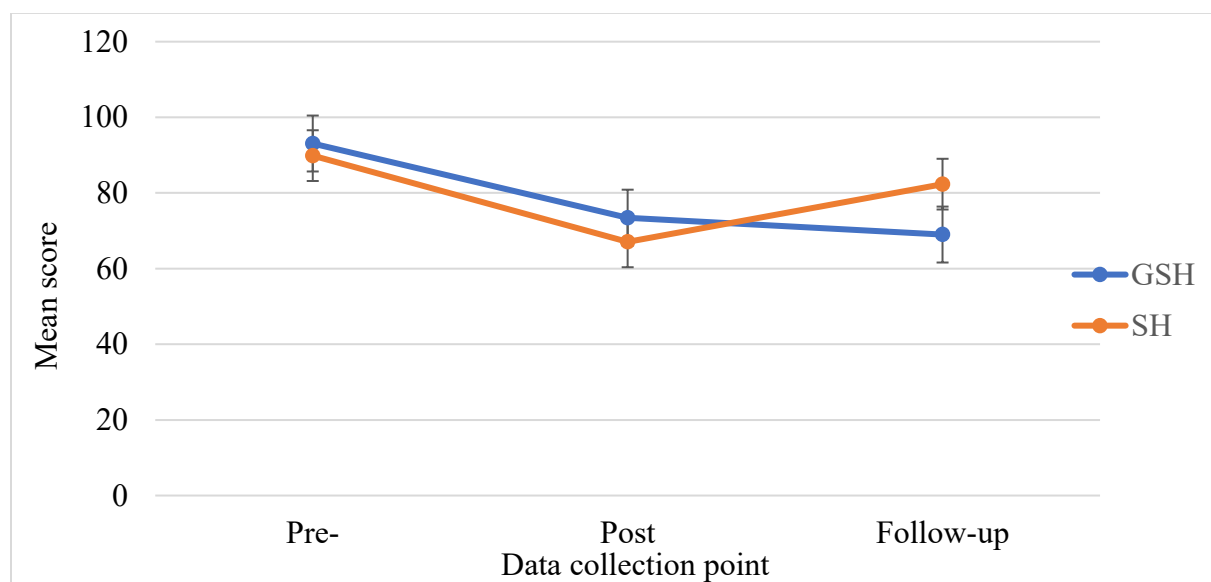
Comparing the groups at baseline, within the GSH group, 86.7% (13/15) of the participants were concerned about their weight management and were actively engaged to manage this. For those in the SH method, the percentage was less at 73.3% (11/15). Although there was a difference, it was not statistically significant, as tested by a Chi-squared Goodness to fit ( $\chi^2 = 0.833$ ,  $df = 1$ ,  $p = 0.361$ , Cohen's  $w$  effect size  $w = 0.167$ , indicating a small effect size).

### **3.3.6 Outcome measures: descriptive statistics**

The totals from the AAQ-W, DEBQ-EE, and FCI-UK questionnaires were the raw scores used in the descriptive analysis. Displayed in Table 3.5 and Figure 3.2 below, psychological inflexibility, as measured by the Acceptance and Action Questionnaire for Weight-Related Difficulties (AAQ-W) (Lillis & Hayes, 2008), where a high score indicates more inflexibility. The analysis revealed that the SH group witnessed the largest decrease in the mean difference (-22.80, SD 24.51) from baseline to post intervention. However, it is notable that for the GSH group decreased mean difference continued from post to the one-month follow-up (-1.33, SD 12.52), indicating a sustained change. This contrasts with the SH group, whom scores were higher at one-month follow-up than at post but lower than the baseline score. A reduction in scores on the AAQ-W (Lillis & Hayes, 2008) from pre- to post-intervention for food cravings suggests an improvement in psychological flexibility. This means that the individual is better able to accept their cravings without being overwhelmed or controlled by them, and can take more effective, goal-directed action despite the presence of these cravings.

This study did not include a clinical cut off score for the Dutch Eating Behaviour Questionnaire-Emotional Eating (DEBQ-EE; Van Strien et al., 1986) as an inclusion criterion. Whereas other ACT intervention studies have, such as Frayn et al., (2019) who used a score of 3.25 or higher as part of pre-screening criteria, as an inclusion criterion. For this study, the DEBQ-EE baseline average scores for both groups were 3.25 and 3.31, which indicates a tendency of emotional eating. The scores depicted in Table 3.5 and Figure 3.3, revealed that there was a decrease in the average scores for both groups across the data collections (baseline, post and follow-up), with the greatest change found in the SH group from baseline to post (-0.61, SD 0.74). A reduction in scores was also observed pre to post – on the emotional eating measure (DEBQ-EE; Van Strien et al., 1986) demonstrating that participants were less likely to eat in reaction to emotional cues. This could indicate that the participants were using alternatives, instead of food to regulate emotional states.

**Figure 3.2:** The psychological flexibility (AAQW) mean scores across the intervention (the number of participants at pre and post was 30, and at follow-up was 15).

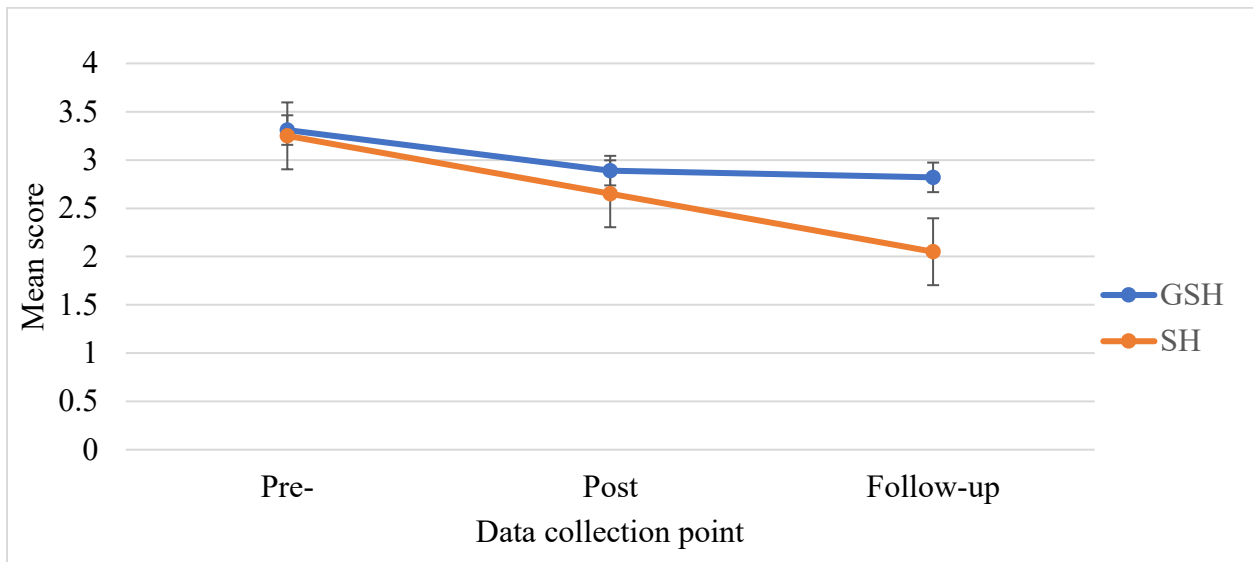


**Table 3.5:** Changes across time for AAQW and DEBQ measures.

<b>Measures:</b>	<b>SH Mean (SD) (n=15)</b>	<b>Change (SD)</b>	<b>GSH Mean (SD) (n=15)</b>	<b>Change (SD)</b>	<b>Whole group Mean (SD) (n=30)</b>	<b>Change (SD)</b>
<i>AAQW</i>						
Baseline	89.87 (18.09)	---	93.07 (25.35)	---	91.47 (21.71)	---
Post	67.07 (19.21)	-22.80 (24.51)	73.47 (20.26)	-19.60 (20.25)	70.27 (19.67)	-21.20 (22.15)
Follow-up	(n=6) 82.33 (24.53)	12.17 (29.44)	(n=9) 69.00 (17.38)	-1.33 (12.52)	(n=15) 74.33 (20.81)	4.06 (21.11)
<i>DEBQ-EE</i>						
Baseline	3.25 (0.97)	---	3.31 (0.96)	---	3.28 (0.95)	---
Post	2.65 (0.76)	-0.61 (0.74)	2.89 (0.76)	-0.41 (0.80)	2.77 (0.76)	-0.51 (0.77)
Follow-up	(n=6) 2.05 (0.84)	-0.17 (0.37)	(n=9) 2.82 (0.47)	-0.11 (0.28)	(n=15) 2.51 (0.73)	-0.14 (0.31)

Footnote: AAQ-W measures psychological inflexibility. DEBQ- EE measures emotional eating.

**Figure 3.3:** The emotional eating (DEBQ-EE) mean scores across the intervention (the number of participants at pre and post was 30, and at follow-up was 15).



From reviewing the overall total average scores in the Table 3.6, below, frequency of food cravings showed a reduction across the intervention (from baseline to follow-up). The largest change was found within the SH group from post to follow up (-12.00, SD 10.35). For the “giving in” (consuming craved foods) subscale, the changes in the average scores echoed the frequency of cravings scale, in terms a decrease was observed from baseline to post-intervention. However, the average score for the SH from post to follow-up increased slightly (22.33, SD 30.22) although the average score is still below the baseline score (30.73, SD 12.82). On the “difficulty to resist temptation” subscale, the average scores for both groups witnessed a reduction from baseline to post, and this continued from post to follow-up, with largest change in the average score was within the SH group from baseline to post (-12.33, SD 19.34), indicating an increase in resistance.

**Table 3.6:** Food Craving Inventory measure: changes from pre, postintervention and to follow-up.

<b>Measure:</b>	<b>SH</b>	<b>Change</b>	<b>GSH</b>	<b>Change</b>	<b>Whole</b>	<b>Change</b>
<b>Food</b>	<b>Mean</b>	<b>(SD)</b>	<b>Mean</b>	<b>(SD)</b>	<b>group</b>	<b>(SD)</b>
<b>Craving</b>	<b>(n=15)</b>		<b>(n=15)</b>		<b>Mean</b>	
<b>Inventory</b>					<b>(SD)</b>	
					<b>(n=30)</b>	
<i>Craving</i>						
Baseline	33.27 (11.06)	---	31.67 (9.03)	---	32.47 (9.95)	---
Post	25.93 (12.37)	-7.33 (16.71)	24.53 (10.56)	-7.13 (10.52)	25.23 (11.32)	-7.23 (13.72)
Follow-up	(n=6) 14.83 (10.59)	-12.00 (10.35)	(n=9) 23.89 (11.24)	-2.56 (12.73)	(n=15) 20.27 (11.55)	-6.33 (0.31)
<i>Giving in</i>						
Baseline	30.73 (12.82)	---	28.60 (8.16)	---	29.67 (10.61)	---
Post	20.73 (12.82)	-10.00 (19.93)	26.80 (15.41)	-1.8 (12.97)	23.77 (14.08)	-5.9 (17.04)
Follow-up	(n=6) 22.33 (30.22)	1.33 (33.62)	(n=9) 18.11 (7.75)	-13.11 13.07	(n=15) 19.80 (19.10)	-7.33 (23.56)
<i>Difficulty</i>						
Baseline	28.00 (14.92)	---	24.13 (10.27)	---	26.07 (12.74)	---
Post	15.67 (10.03)	-12.33 (19.34)	19.47 (12.08)	-4.67 (12.79)	17.57 (11.08)	-8.5 (16.57)
Follow-up	(n=6) 6.67 (3.98)	-8.33 (8.82)	(n=9) 12.11 (7.47)	-9.22 (14.67)	(n=15) 9.93 (6.72)	-8.87 (12.28)

### 3.3.7 Pre-analysis check and assumptions

As recommended by Clarke-Carter, (2018) the data were screened for missing values, potential outliers, violations of assumptions of normality, sphericity using the Mauchly's test; homogeneity of variances and co-variances for a mixed ANOVA were checked (Appendix 7.10 for SPSS outputs).

In this study one of the independent variables was group, which had two levels: SH and GSH, and was a between subjects' variable. The other independent variable, time, had three levels: baseline, post intervention and follow-up; this was a within-subjects variable.

The outcome variables were psychological flexibility, food cravings and emotional eating. Therefore, meeting the criteria for a Mixed design 2 x 3 ANOVA to test this study's research hypotheses, which were:

1. Completion of the ACT-based intervention will lead to a significant difference in the average scores between baseline, post and follow-up, regardless of delivery mode, for the dependent variables (increase in psychological flexibility, decrease in eating in response to food cravings, and decrease in emotional eating).
2. The participants assigned to the guided self-help group will have a significantly greater increase in psychological flexibility, greater decrease in emotional eating and reduction in responding to food cravings than the self-help group over time.

To maximise the available data the main analyses were run with baseline and post mean scores only due to the attrition at follow up. The small cell sizes, collated at follow-up, did not meet the

assumption of the mixed ANOVA. The follow up data were analysed separately, to provide some initial insight into the long-term benefit of the intervention, and this analysis is presented further on.

To address these hypotheses three separate mixed design 2 x 2 ANOVA, one ANOVA per outcome measure, were conducted. The type-1 error rate was controlled with post-hoc Bonferroni corrections. As these research hypotheses focus on quantifying differences between groups, a mixed ANOVA was the most suitable analytical test (Huang, 2020). A MANOVA was not suitable as the focus was not to explore a multivariate effect (Huang, 2020).

### **3.3.8 Mixed Design 2 x 2 ANOVA analysis**

#### *AAQW: Psychological inflexibility*

Psychological inflexibility decreased as shown by the change in means of both groups (SH and GSH), from baseline to post; and there was a significant main effect of time on AAQW ( $F(1,28) = 26.67, p = .001, \eta^2 = 0.49$ ) indicating a medium effect size. However, no significant difference was found between the groups on this variable ( $F(1,28) = 0.56, p = .46, \eta^2 = 0.02$ ), and there was no presence of an interaction between time and group ( $F(1,28) = 1.52, p = .70, \eta^2 = 0.01$ ).

### *DEBQ EE- Emotional eating.*

The means score for both groups from the emotional eating scale show a decrease from baseline to post intervention. The ANOVA revealed a significant main effect of time on emotional eating, with a small to medium effect size ( $F(1, 28) = 12.93, p = .001, \eta^2 = 0.32$ ). However, there was no significant effect on the allocation of group ( $F(1, 28) = 0.284, p = .59, \eta^2 = 0.01$ ), and there was no presence of an interaction between time and group ( $F(1, 28) = 0.49, p = .49, \eta^2 = 0.02$ ).

### *Food cravings inventory*

Analyses of this inventory's subscales: frequency of cravings, giving in and difficulty in resisting craving, showed a decline in the mean scores for each scale in both groups from baseline to post-intervention. The outcome of analyses echoed that of the previous variables, as only the main effect of time was found to be significant decline on the frequency of experiencing food cravings with a small effect size ( $F(1,28) = 8.045, p = .008, \eta^2 = 0.22$ ). For the "difficulty in resisting food cravings", there a decline in mean scores for baseline to post intervention for both groups, suggesting an increase in resistance to temptation, and statistical analysis revealed, that this change was significant, albeit with a small effect size ( $F(1,28) = 8.063, p = .008, \eta^2 = 0.22$ ). Although there was decline in the mean scores for both groups, for the 'give in' (consuming craved foods) subscale, there was no significant main effect from baseline to post-intervention ( $F(1,28) = 3.693, p = .065, \eta^2 = 0.12$ ), suggesting a very small effect size. Furthermore, no presence of an interaction between time and group either of these variables was noted. Table 3.7. shows the outcome of analyses.

**Table 3.7:** Mixed 2x2 ANOVA analysis on the Food Craving Inventory subscales.

<b>Measure: Food Craving</b>	<b>Df</b>	<b>F-Ratio</b>	<b>Sign.</b>	<b>Eta Squared (<math>\eta^2</math>)</b>
<i>Cravings</i>				
by group	1,28	0.247	0.623	0.01
by time	1,28	8.045	0.008	0.22
Interaction: time & group	1,28	0.002	0.969	0.00
<i>Giving In</i>				
by group	1,28	0.342	0.563	0.12
by time	1,28	3.693	0.065	0.12
Interaction: time & group	1,28	1.783	0.193	0.06
<i>Difficulty</i>				
by group	1,28	0.000	0.992	0.00
by time	1,28	8.063	0.008	0.22
Interaction time & group	1,28	1.640	0.211	0.05

### 3.3.9 Exploring trends at follow up.

#### *One-way repeated measures ANOVA*

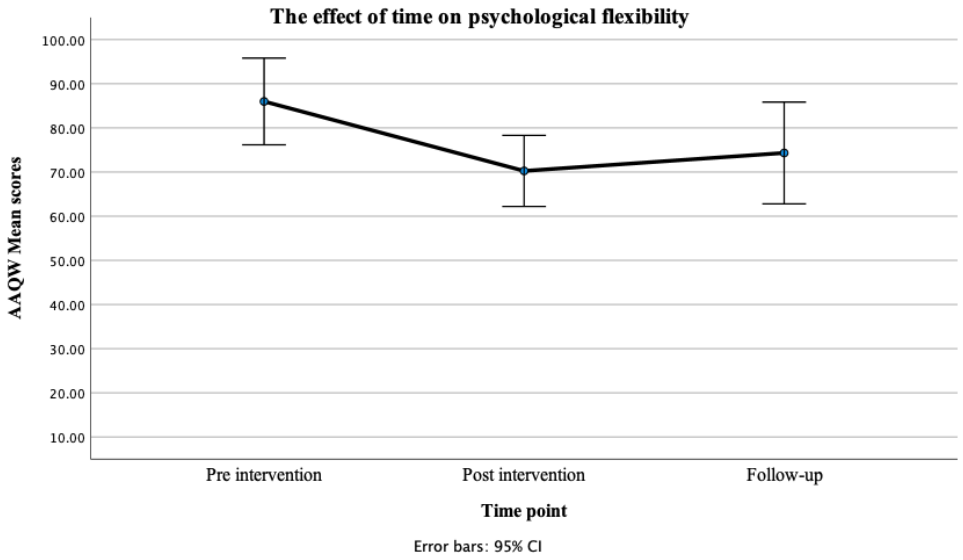
As discussed above due to the small cell sizes the follow-up data were not included in the main analysis. Here the follow up data are examined in exploratory tests to identify the longer-term trends and effects of taking part in the intervention. As no effect of group was found in the main analyses the two groups have been analysed jointly. One way ANOVA was used to explore to see if the previously, observed changes in the variables, continued to the one-month follow-up. The ANOVA was employed from baseline to the one-month follow-up as only 15 (GSH =9 and SH=6) participants completed the outcome measures at that time point. Results are shown in Table 3.10 and Figures from 3.4 to 3.6 shows the trend of change in the mean scores from baseline to follow-up for each variable.

**Table 3.8:** The outcome of the one-way ANOVA

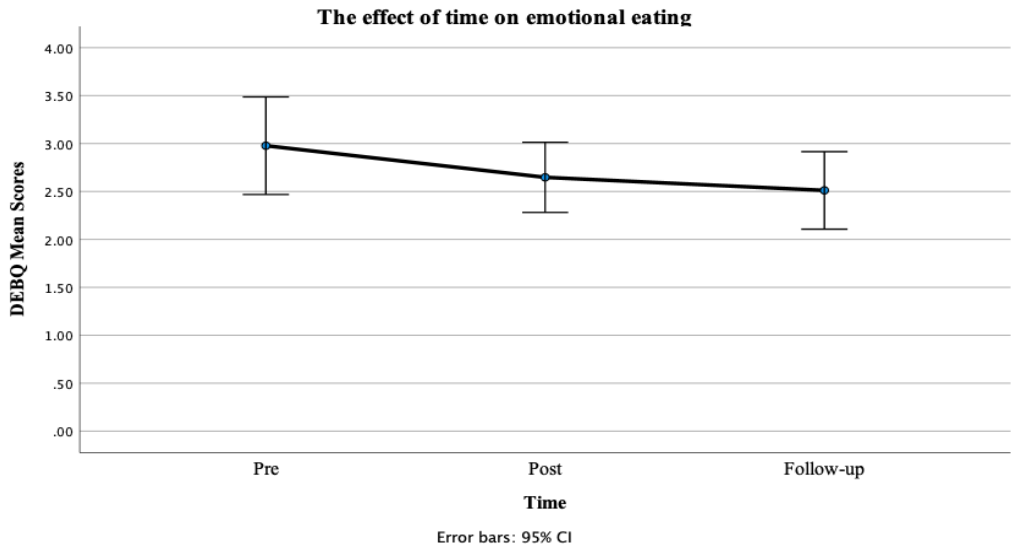
Measure	Df	F value	P value	Eta Squared ( $\eta^2$ )
AAQW	1,14	4.475	0.053	0.24
DEBQ-EE	1,14	9.166	0.009	0.39
FCI: Cravings	1,14	13.561	0.002	0.49
FCI: Giving in	1,14	4.629	0.049	0.24
FCI: Difficulty	1,14	20.323	0.001	0.59

The results in the above Table suggest that the follow up scores were significantly lower than baseline on the emotional eating subscale (DEBQ- EE ( $F(1,14) = 9.166, p < 0.05, \eta^2 = 0.39$ ), indicating a small to medium effect size, from baseline to follow-up. This was echoed on the Food Craving Inventory subscales where the effect of time was significant decline for ‘frequency of cravings’ ( $F(1,14) = 13.561, p < 0.05, \eta^2 = 0.49$ ), indicating a small to medium effect size, and for ‘difficulty in resisting the craving’ ( $F(1,14) = 20.323, p < 0.05, \eta^2 = 0.59$ ) with a medium effect size, indicating increase in resistance. Interestingly, there was a significant result from baseline to follow-up for the subscale ‘giving up’ (consuming craved foods) ( $F(1,14) = 4.629, p < 0.05, \eta^2 = 0.24$ ), suggesting a reduction in consumption of those foods, although with a small effect size. These findings suggest improvements seen at the end of the intervention were maintained a month later. These findings broadly chimed with outcomes from the main analyses apart from the effect of time on psychological inflexibility. In the main analyses this was found to be significant however the trend from baseline to follow-up was not.

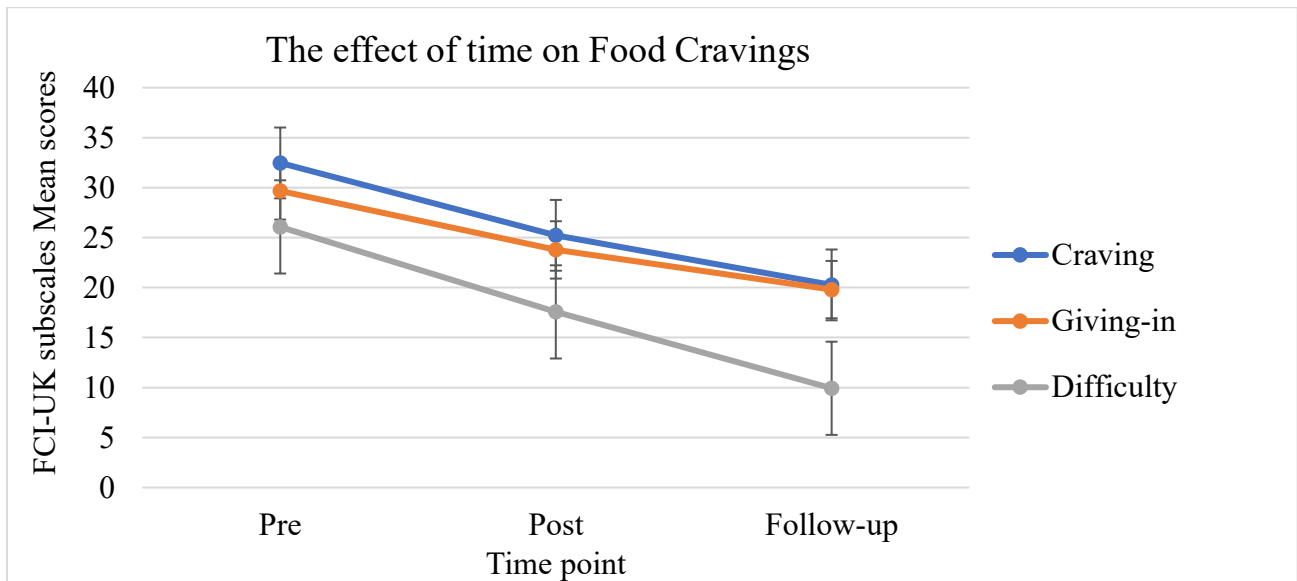
**Figure 3.4:** The effect of time on psychological flexibility from pre- to follow-up (n=15).



**Figure 3.5:** The effect of time on emotional eating from pre- to follow-up (n=15).



**Figure 3.6:** The effect of time on FCI (UK) from pre to follow-up (n=15).



### 3.3.10 Summary of quantitative analysis

The findings of this component have provided an overview of the perceived effect of the intervention based on self-reported questionnaires. Overall, the results indicate that the intervention was effective in the short-term (baseline to post-intervention) in increasing psychological flexibility and in reducing both emotional eating, and food cravings immediately after the intervention, regardless of delivery method (GSH vs SH). While the main analyses showed significant effects over time for most variables, the exploratory follow-up analysis suggests that these gains were generally maintained after one month, especially in terms of emotional eating and craving-related behaviours. Notably, the effect of time on psychological flexibility observed in the main analyses was not significant in the follow-up period, indicating that further research is needed to understand and explore this. These findings highlight the potential of the intervention to produce lasting behavioural changes, however, they do not

provide an insight of the participants' experience of the online intervention, and one of this study's objectives was to explore whether the online intervention was acceptable to the participants. To achieve this, the researcher needed to go beyond the quantitative data by including a qualitative part, the results of which are presented in the next section. This provided an opportunity for a deep dive analysis to explore the participants' experience of the online intervention to gain insight and explore their views of how acceptable this delivery format was, and the perceived usefulness of the intervention in managing their food cravings. The qualitative part also gave the participants a voice to express their experience of the intervention. The findings of both parts can contribute to future development of ACT based online interventions.

### 3.3.11 Component 2: Experiences of the intervention

An objective of this study was to investigate the acceptability of the iACT-based intervention by:

- Exploring how participants perceived the ACT intervention and variations in its outcomes. For instance, identifying the ACT processes that participants felt were most and least beneficial.
- Investigate participants' experiences with different delivery methods, such as Guided Self-Help (GSH) with non-expert support and Self-Help (SH) without support.
- To gain participants' feedback on the structure and format of the online intervention. For example: engagement experience, developments and recommendations for future developments.

#### *Interviews*

As this was a feasibility study and its findings might have implications for practice and the potential to inform further research projects, the structure of this study's interview schedule was based on the findings of previous ACT based pilot intervention studies, like Boucher et al. (2016) who postulated that an internet intervention has three main components:

- 1) Acceptability – this is the degree to which the iACT based intervention was considered suitable, agreeable, and appropriate by the target population. It assesses whether the intervention meets the users' needs and preferences.
- 2) Feasibility – this explores the practicality and viability of implementing an iACT-based intervention. It considers factors like resources, time, accessibility.

- 3) Usage- refers to the actual engagement and interaction of users with the iACT-based intervention. It assesses the extent to which users actively participate and make use of the provided resources e.g., the worksheets.

A copy of the interview schedule is in Appendix 7.11 and Table 3.9 lists each of the questions grouped by component.

At the one-month follow-up point semi-structured interviews were carried out. All 30 participants were invited to partake in the interview and 13 people (females = 12, and males = 1) provided feedback on the intervention (GSH =10 and SH =3). 12 partook in the interview process and one participant provided written answers to the questions.

The length of time for the interviews were ranged from 7 to 20 minutes, average time was 13 mins. The audio recorded interviews were transcribed and the verbatim transcript was line by line numbered. The transcripts were anonymised by the removal of any personal characteristics of the participants such as names.

**Table 3.9:** Components of the interview schedule and questions

<b>Component for an online intervention</b>	<b>Interview schedule questions</b>
Acceptability	What prompted you to participate in this study? Have you previously used any eating/weight management strategies in the past? If so, how do they compare with this course. What was your experience of the online course? Would you recommend Acceptance and Commitment Therapy to a friend/family member?
Feasibility	What would you say was the most helpful aspects of the online course? What would you say was the least helpful aspects of the online course? If this study was re-run, what changes do you think would be needed?
Usage	Have you noticed any changes towards managing food cravings? Have you noticed any other changes e.g., weight changes; in physical activity; change in eating habits, or types of foods? Do you have any comments or anything you would like to add?

### **3.3.12 Qualitative data analysis**

Various qualitative methods for analysing interview data were considered for this study. One such method is Interpretative Phenomenological Analysis (IPA) (Smith et al., 2009), which is an idiographic approach designed to explore how individuals make sense of their experiences within specific contexts. Grounded Theory (Glaser & Strauss, 1967), another method considered, is an inductive approach aimed at discovering new theories or typologies from the data. However, both IPA and Grounded Theory were deemed unsuitable for this study, as the primary objective

was to assess the acceptability and feasibility of a prototype internet-based intervention, rather than to deeply explore personal interpretations of experiences or develop theory.

Thematic Analysis, as outlined by Braun and Clarke (2022), was also considered. This approach is exploratory and flexible, often used to identify patterns and themes across data. While useful for developing broader theoretical insights, Thematic Analysis does not always yield practical recommendations (Gale et al., 2013). Given that the goal of this study was to provide actionable insights for further intervention development, a more structured approach was required. As the study aimed to explore participants' experiences with the prototype intervention and variations in quantitative outcomes, a deductive approach was favoured. To achieve this, Framework Analysis (Ritchie & Spencer, 1994) was selected. This method is specifically designed to produce findings that can inform policy and practice, making it particularly popular among health and social researchers in applied settings. Its structured nature and capacity to generate actionable insights made it the most suitable choice for this study (Gale et al., 2013). Framework Analysis is inherently flexible, allowing for both deductive and inductive development of themes, depending on the research context (discussed in Section 3.37: *Philosophical Considerations*). A key strength of Framework Analysis is its ability to preserve the integrity of participants' narratives throughout the analysis process, ensuring that the nuances of their experiences are captured. This is crucial for understanding how an intervention is perceived by a community and for identifying which ACT processes are most effective in managing food cravings. Another significant advantage of Framework Analysis is its capacity to compare data both across and within individual cases (Ritchie & Spencer, 1994). As noted by Gale et al.

(2013), this method's focus on specific research questions is particularly beneficial in applied research, where findings can directly influence policy and clinical practice. This aligns well with the aims of this feasibility pilot study, which sought to evaluate the acceptability and applicability of a prototype ACT-based computerized intervention to help individuals manage food cravings. The study's results could potentially inform future research and development in this area.

### **3.3.13 Philosophical considerations**

In the literature there is an ongoing debate concerning the philosophical stance of the Framework analysis method. Some authors, like Braun and Clarke (2022), categorized it as neo-positivist due to certain elements, such as the codebook and its thematic approach to themes. However, Gale et al. (2013) argued that it is not aligned with a particular epistemological position and can be employed inductively or deductively. To resolve this debate with a return to the original authors of Framework analysis, Ritchie and Spencer's (1994) position on the approach which was, it is not confined to a specific epistemological position. This flexibility allows it to adapt to the specific aims of research projects, this aligned well with the epistemological position of this research project.

### **3.3.14 Application to this study**

Framework analysis was selected over other methods because it places importance on the development of the analytic framework, guided by both a priori considerations and data-driven themes (Ritchie & Spencer, 2014). This aligned with the aims of this study, which sought to explore predefined areas while remaining open to unexpected discoveries. The goal of this

approach was to gain insights into the experience of participating in an iACT intervention for managing food cravings; to provide insights into both ACT as an intervention, and to delivery format. This information has the potential to be helpful for further research; it also could validate the findings of the quantitative aspect of this study and to assess its acceptability to the target population.

### **3.3.15 Data analysis steps:**

Ritchie and Spencer (1994) described the five steps in Framework analysis these are:

1. Familiarization
2. Coding
3. Indexing
4. Charting
5. Mapping and interpretation.

The sections below explain the steps in more depth and in relation to analysis of interview data.

#### *Steps 1 - 2: Familiarization and coding*

After transcribing the interviews, the researcher (LP) re-read and listened to the audio recordings to familiarize herself with the data. The transcriptions were uploaded to NVivo Pro Qualitative Research Software (Release 1.61), QSR International Pty Ltd. (release in March 2020). This was used for data storage and management, and changes were saved, to allow for the analysis to be independently audited, if an audit process were to be implemented.

The next stage was coding. Several loosely described themes were developed a priori and these were based on the research questions and from the research literature. See Table 3.10 for these a priori themes and explanation/description. One such study was conducted by Frayn et al. (2019) who assessed the acceptability and effectiveness of an ACT based workshop using both qualitative and quantitative methods. The themes that were identified from their study were: expectations of intervention; the most useful aspects/ least useful aspects; dose; recommendation of the intervention; convenience and accessibility. Also drawing from Bradbury et al.'s (2015) mixed methods evaluation study of an online weight management intervention, the main themes that transpired from this, and were different from Frayn et al.'s (2019) findings, were the experiencing of coaching, comparison with other methods, and perceived effects of the intervention. These a priori themes were tentatively used to facilitate the preliminary coding stage.

The initial identification of a priori tentative themes acted as a guide to category development for the framework. Next the researcher tested out the categories on a 40% (6/13) of the data set with the aim of revising them, considering data-driven issues. The data revealed a diverse experience of the intervention. The formation of the framework was a continuous and iterative process, and it went through several iterations where some tentative themes were rejected, such as dose and new ones emerged from the data, such as relationship with food, before settling on a final framework of codes.

**Table 3.10:** A priori themes from previous acceptability and feasibility studies

<b>Tentative theme</b>	<b>Explanation/description</b>
Acceptability	How well an intervention will be received by the target population and the extent this might meet the needs of that population.
Expectations of intervention	Meeting what the participants wanted to gain from the intervention e.g., to gain new skills or to feel supported
Most useful aspects/ least useful	The characteristics of the intervention that were beneficial and those which were not.
Dose	This is about people's perceptions about the how well the length/frequency worked.
Convenience and accessibility	Suitability and ease of access e.g., fitting in with other commitments.
Recommending intervention	Measure of satisfaction and if the intervention should be applied more broadly.
Experience of support	The experience of human support e.g., the impact of this on engagement with the intervention.
Comparison with other methods	Historical use of weight management methods can influence expectations e.g., previous methods not sustainable.
Perceived effects of the intervention	Referring to the capability of producing an effect e.g., a behaviour change, increased awareness.

### *Step 3: Indexing*

Indexing involves systematically organizing transcripts into the framework categories (Ritchie & Spencer, 1994). The researcher carefully reviewed the transcript text, identifying portions of text and assigning them to one or more categories within the framework. During this stage, instances were encountered where data could be coded into more than one category, for example, coding

an ACT process under both the "most helpful" and "usage" categories. Confidential Appendix: *Thematic analysis steps* include an excerpt from NVivo illustrating this process.

#### *Step 4. Charting*

Charting entails summarizing the indexed data for each category and organizing these summaries in a chart format (Ritchie & Spencer, 1994). For example, when charting an interview, the researcher reviewed each framework category, and summarized all the data indexed to that category, creating a summary for each category for each participant. This allowed for exploration of both within cases and between cases for specific themes or categories (Ward et al., 2013).

Confidential Appendix: Thematic analysis steps present an extract from the framework in Excel used in this study. After charting all 13 interviews was the final stage of analysis, which involved mapping and interpretation.

#### *Step 5. Mapping and interpretation*

In this final step, the focus shifted from managing the data to understanding it. As described by Ritchie and Spencer (1994), this step involved consolidating key characteristics of the data to map and interpret the dataset. Activities included describing and clarifying concepts, representing the range and nature of phenomena within the data, creating typologies, establishing relationships, and generating "bottom-up" explanations. If appropriate, strategies for intervention and practice were proposed, depending on the research question. For this research project, the goal was to explore the acceptability of the internet-based intervention.

The initial mapping of the data formed three main concepts: acceptability, effectiveness and feasibility. These are interconnected because they influence each other, the mapping revealed that the concept of acceptability was central. Acceptability refers to how appropriate and suitable an intervention is at meeting the needs of a target population. Further mapping transpired that connected to acceptability are the themes of motivation, and experience of the intervention (both positive and negative).

### *Reflexivity*

Throughout the analysis process, the main researcher (LP) considered her reflexive position, acknowledging the potential influence of her life experiences, values, beliefs, and assumptions on data interpretations (Berger, 2013). A reflective diary was employed by the main researcher to foster reflexivity, with a focus on her dual roles as an interviewer and the non-expert contact for the GSH method. This reflection and discussion are further elaborated upon in Chapter 5: Critical Appraisal.

### **3.3.16 Findings and discussion**

The Framework Analysis (Ritchie & Spencer, 1994) identified thematic content that could be categorized into three layers: overarching themes, themes, and subthemes. Although the conventional framework analysis typically describes the use of themes and subthemes (Gale et al., 2013), for greater clarity, the concept of "overarching" themes was introduced because they serve as umbrella concepts encompassing several themes (Braun & Clarke 2022). The three overarching themes identified were "acceptability, effectiveness, and feasibility". These themes are illustrated in Table 3.11 and discussed in detail below, with references to existing literature

integrated throughout. Detailed findings related to effectiveness are presented in Chapter 5: Discussion, as they are linked to one of this project's aims.

**Table 3.11:** Overarching themes, themes and subthemes from the analysis

<b>Overarching theme</b>	<b>Theme</b>	<b>Subtheme</b>
1. Acceptability	1.1 Engagement experience	1.1.1 Non-expert support 1.1.2 Interaction with the intervention materials 1.1.3 Structure of intervention.
	1.2 Motivation to participate.	1.2.1 Expectations
2. Effectiveness	2.1 ACT processes	2.1.1 Most beneficial processes 2.1.2 Least beneficial processes
	2.2 Impact of intervention	2.2.1 Food cravings e.g., frequency, giving in 2.2.2 Relationship with food 2.2.3 Behavioural changes e.g., physical activity, weight, eating pattern.
3. Feasibility	3.1 Comparison to other approaches	
	3.2 Recommendation of an ACT based intervention	
	3.3 Future developments	3.3.1 Content, format, platform, non-expert support

To qualify the number-range corresponding (Green & Thorogood, 2009) to terms in the results section, so most = 10 and over participants, many = 6 to 9 participants, some 4 to 5, a couple/few = 2 to 3. There were 13 participants who provided feedback.

## *1.0 Acceptability*

This overarching theme explored the participants' narratives regarding how acceptable this iACT based intervention and the extent this might meet the needs of the target population - those who struggle with FCs and weight management concerns.

Acceptability encapsulated two themes: (1.1) engagement experience and (1.2) motivation to participate. These consists of subthemes: (1.1.1) experiences of non-expert support; (1.1.2) interactions with the intervention, (1.1.3) structure of intervention and (1.2.1) participants' expectations.

### *1.1 Engagement experience*

Most of the participants stated that they found the intervention informative, insightful and it met their expectations of learning new ways to manage FCs. They reported gaining an increased awareness of their vulnerabilities to cravings and triggers, and have gaining new skills to help them manage their FCs, for example:

*“I thought it was really useful, I thought it was a really good course, and there was a lot of information that I was able to take on and I really learnt about myself throughout it, and it led to changes...” (Participant 1, lines 37- 39).*

There was an appreciation that the outcome of the intervention was not focused on weight loss. Instead, it provided a different approach, which was focused on the mindset to weight regulation. Whereas past interventions they had tried had tended to be about weight loss. The quote below illustrated the participant's perception of the intervention, and this is tied in with the

effectiveness of it. The participant described finding the intervention more acceptable than restrictive interventions they had tried in the past and appreciated the fact that it did not involve feelings of deprivation. The participant found this intervention less demanding, they found that this made it more effective for them.

*“It is completely different, cos it’s more long term than short term, you know, you keep going to the weight watchers or slimming world for that weekly check, it’s just a goal to try to lose weight, it’s not actually thinking about what you are doing or why you are doing that... It [referring to course] just helps me more. I am not denying myself anything or saying you can’t have it, I just ask myself, “do you really want it?” I’m just taking that time to slow down, and actually let my brain catch up with that I have eaten something, when I do have my dinner, it’s the little things it’s helping me a lot” (Participant 2, lines 10 - 18).*

This finding of appreciation of lack of focus on weight has been echoed in the findings of another brief ACT based intervention by Frayn et al. (2019). The qualitative feedback collected in that study reported that not having weight loss as an outcome, helped to reduce feelings of stigma, which may have been a facilitator to engaging with an intervention.

### *1.1.1 non-expert support*

Within the wider theme of engagement, non-expert support provided as contact appointments for GSH method was mentioned spontaneously by many participants as a factor that enhanced their engagement. These participants reported that they found this feature helpful because the contact appointment was an opportunity to check their understanding of the materials/activity and to

discuss their reflections. Two of the SH participants expressed a desire to have access to support to discuss the content, as illustrated in this quote: *“having someone to reflect on with that would have been helpful”* (Participant 3, line 28). This echoed the outcomes of previous qualitative studies where participants emphasised the importance of a supportive coach which can be motivational and enhance engagement when learning a new skill (e.g., Tatar et al., 2021; van Aalderen et al., 2014). There was one person who was ambivalent about the non-expert support. On one hand they acknowledged the benefits of having access to support, however they also reported that they felt under pressure as they did not want to let the researcher down.

### *1.1.2 Interaction with the intervention*

Within the engagement theme, this subtheme of “interaction with the intervention” emerged from the participants’ narratives. At the end of each module was a module summary and reminder of which activities to practice, to help to consolidate the new skill. Over half of the participants highlighted how the tasks/activities to do in between the modules were helpful because they could practice their new skill in a real-life situation. The emphasis to practice the ACT skills in situ, rather than transferring learning from and to different settings was cited as a positive and encouraging aspect as it provided a quick impact, as highlighted in this quote:

*“...it [the intervention] gave me good skills that I noticed worked almost immediately afterwards, like within the same day”* (Participant 4, lines 11-13).

The opportunity to practice the new skills in the presence of naturalistic occurring food cues may have loosened the bond between the cravings and eating, to ‘decouple’ them (Levin et al., 2015). This will be discussed further in the Discussion Chapter.

Within this subtheme, there were also negative comments and one of the challenges was linked to the Qualtrics platform. A couple of the participants mentioned that they experienced some technical issues with the software, for example if they left the module for a break, and came back to it later, Qualtrics took them back to the start of the module.

### *1.1.3 Structure of the intervention*

Structure of intervention was a prevalent issue mentioned by a small number of the participants as a key feature for engagement. The format of intervention, how it balanced different learning styles, by blending text and videos, for visual learning, was highlighted as a positive feature by a couple of the participants. The use of videos seemed to be one of the most popular formats, and the platform was described as easy to navigate. Having 24-7 access to the intervention was also acknowledged as a helpful addition, as the participants could access the materials as and when needed.

Flexibility, convenience and brevity of the intervention were highlighted as aspects that facilitated engagement. The intervention asked participants to commit about 4.5 hours to encompass both working through the content and undertaking skills practice, feedback from some participants was that they found the length of time required was achievable and realistic. An example: *“the fact that is not a time-consuming course, it’s digestible, is precise and concise in the information that it provides; and is practical and useful”* (Participant 5, lines 55-56).

These findings are in line with other research studies that explored the design of web-based self-care interventions (i.e., how the content is delivered) to understand why some interventions are

more effective than others. Murray (2012) found having information that can be presented in an accessible and comprehensible format, in bite-size chunks, using video, graphics, and audio are “key ingredients”. In addition, from a user’s perspective web-based interventions can be highly attractive because they are convenient, and easily accessible (Morrison et al., 2012; Murray, 2012).

### *1.2 Motivation to participate.*

This theme captured the participants’ reasons and drivers for participation in this study. Motivation plays a significant role in determining whether an individual will actively engage with a particular intervention (Fairburn, 2013). If individuals are motivated and perceive the intervention as acceptable, (if its personally relevant, and fits with someone’s needs, values and goals) they are more likely to actively participate (Fairburn, 2013). As an outcome of this intervention was managing FCs, ascertaining the participant’s motivation can influence the effectiveness of the intervention. Motivation can also influence a person’s resistance or ambivalence towards change, as some people may have mixed feelings about this (Fairburn, 2013).

The most prevalent reason given in the narratives for participating in the study were weight regulation concerns, and then FCs. Some of the participants described having previous knowledge of ACT, either professionally or personally, through their own self-help research, indicating that they were willing and open to a psychological approach to manage their cravings and weight regulation.

A small number of the participants were students at the University of Wolverhampton, but although they received points for partaking in research studies, they mentioned that cravings and concerns about weight were the primary reasons for engaging in this project.

### *1.2.1 Expectations of intervention*

This subtheme was linked to motivation, as expectations played a significant role in shaping an individual's drive and decision to participate in this research study. According to the literature there are many ways in which expectations can influence motivation, such as perceived benefits, altruism, social impact, and personal relevance (Schilling et al., 2019). Most of the participants reported that their expectations for the intervention were met as they had learnt and gained new skills to manage FCs. However, one participant cited that they wanted to lose weight, and this did not happen during the timeframe of the intervention, so it did not meet their expectations.

## *2.0 Effectiveness*

The second overarching theme was the effectiveness of the intervention, this encapsulated the participants' perceptions on how the intervention impacted on their ability to manage their FCs. In other words, what the participants gained from the intervention and if any changes had occurred. It was broken down into two themes which are: (2.1) ACT processes, and subthemes of (2.1.1) the most beneficial processes and (2.1.2) the least beneficial processes. The other theme identified was (2.2) impact of the intervention, which was broken down into the three further subthemes of: (2.2.1) FCs; (2.2.2) relationship with food and (2.2.3) behaviour changes.

### 2.1.1 ACT processes: the beneficial features

Participants were invited to discuss which of the ACT processes they found the most beneficial and how they implemented them. Acceptance, cognitive defusion, and being present, were the processes cited the most by the participants as being advantageous to managing their FCs and were implemented the most.

*“The big thing for me was acknowledging the cravings, it’s definitely the acceptance side of things rather than beating yourself up for having it in the first place, I found that really useful because I am like “typical (name) is going for the biscuits again” (Participant 6, lines 22-25).*

The participants appreciated the acceptance and cognitive defusion aspects could be use together to manage their cravings, as captured below:

*“...so what I took away the most from it was the broader terms of kindness and patience with yourself, then this something that does not have to done in black and white, and not perfectly, the ability to step back and being able to see that is just a thought rolling around” (Participant 7, lines 38-40).*

The “Passengers on a bus” metaphor was mentioned as having facilitated defusion of the thoughts and behaviours, and one participant felt the video format connected to a visual learning style, as this quote highlights:

*“The one on the bus, that has really stuck with me, and that has really helped a lot. I have been aware of observing my thoughts and not falling into them but having that visual aid and seeing them has somehow helped me to integrate it more, to be more observing of*

*cravings and my thoughts and reflect on them rather than act on them, so having a more understanding of what is going on, rather than you are reacting to them” (Participant 3, lines 43-48).*

The inclusion and use of visual metaphors has previously been highlighted as a factor by participants in facilitating learning (van Aalderen et al., 2014).

In terms of activities, the self-regulation method, i.e., monitoring food cravings, seemed to have provided the participants with insights into their feelings, thoughts and context of their cravings. This increased the participants awareness of their behavioural patterns and provided an understanding of the function of their food cravings and its drivers.

Re-connecting to the body, whilst being present and distinguishing the difference between hunger and non-hunger was also cited as being helpful:

*“...the monitoring of the urges, it helped to identify those emotional triggers for me, realizing that urges are being triggered by stress and not by hunger, so I thought the urge monitoring was really good initially and then in the third module where you were paying attention to your body a bit more, attention to those hunger signals, that has been really useful and making sure that I am eating regularly but with my portion sizes um the other thing I really liked was the part about distancing yourself from your thoughts, so I still do use some of those exercises as well, that has helped me to be kinder to myself” (Participant 1, lines 53-60).*

Mindfulness/being present was a popular aspect of the intervention, particularly the mindful eating activity. Participants used this outside of the intervention, and noticed how it slowed the process of eating. This aligned with findings of emotional eating studies (e.g., Frayn et al., 2018) where mindfulness was associated with increased awareness of hunger and satiety cues. Indeed, Lattimore (2019) noted that mindfulness-based interventions aimed to increase awareness of physical and emotional cues related to food and eating, have been shown to reduce emotional eating.

Chiming with findings of previous studies, such as Bowen and Marlatt (2019), urge surfing featured as a helpful tool to manage craving, the participants reported becoming able to recognise the temporary nature of these and were open to trying this exercise.

*“It’s just about thinking when you do want to eat for the sake of eating something because you are not hungry, actually knowing that you are not hungry, reading that thing about riding it, [urge surfing] just acknowledging it, giving it a name and just see, don’t fight it, just to see if I can distract myself, or see if ...have a drink of water and try to let it go rather than panic and have something ...” (Participant 2, lines 34-38).*

The ‘values clarification and commitment to action’ processes had a mixed response by the participants, as there was some who did not find this beneficial, covered more in the next subsection. In contrast, a small number of them spontaneously reported that connecting with their values was a facilitator for change, for example:

*“one of my values was my physical health and mental health...” (Participant 1, lines 80 -81) “...if I manage the mental health side of things by going for a walk, to get a bit of*

*fresh air, it's good for me, it's in line with my values, moving closer towards my goals of being physically healthy, which will have long term impacts on my mental health, a positive impact.” (lines 84-87, Participant 1).*

This echoes the findings of previous studies, such as Frayn et al. (2019) who reported that connecting to values and deciding to engage in behaviours aligned with those was an effective process in mediating change.

The ACT process the ‘self-as-context’ involves the ability to observe oneself as a “context” for thoughts, feelings and experiences, rather than being identified by those experiences (Bennett & Oliver, 2019). The aim of this process is to enable individuals to separate themselves from their thoughts and emotions, allowing them to respond to these experiences differently and more in line with their values. This was delivered by a metaphor called the Chessboard and an activity called the Stories we tell ourselves, for example, “I can only go swimming when I have lost weight”. This process divided the participants, some reported that the chessboard metaphor really resonated with them, and enabled them to distance themselves from their thoughts, as below:

*“that was something I have never come across before, it [chessboard activity] was a new helpful way to stop and watch yourself think um but seriously you brought in a great perspective to... just get separate from automated reflexes and urges, um allow yourself to just be that was very new and very helpful, that should continue” (Participant 7, lines 55-58).*

Interestingly not everyone had the same experience with the values and commitment and the self as context processes, as discussed in the next section.

### *2.1.2 The least beneficial ACT processes*

This subtheme focused on which of the ACT skills and processes that the participants found the least beneficial.

The first one highlighted in the participants' narratives was the values clarification and commitment activity. As one person, from the GSH group, mentioned that they could not connect with the component straight away, although from a theoretical level they could see potential in this as illustrated by this quote: *“I didn't quite gelled using the values for my goals, but I think I've just not dug into that enough yet, I do think that there is potential there to use”* (Participant 7, lines 47-49).

The other process that some participants struggled to comprehend was, the “Stories we tell ourselves” activity, as they found it hard to relate to as this quote shows:

*“The main thing I struggled to gel with was, it was in module three, there was a thing about stories, I'd struggled to make that relevant to me, I don't know what it was about it I just couldn't... the other stuff clicked, and I thought yeah ok. The stories one, I couldn't gel with it, I don't know why, I found it hard to make it relate to me and to my goal”* (Participant 8, lines 44-50).

## *2.2 Impact of intervention*

Participants were asked if they had noticed or made any changes since the intervention. There was a wide range of responses in their answers, from one realizing that the timing was not right to make changes, to those who reporting making behavioural changes. It was evident from the participants' answers that, although there were similarities, there were also a lot of differences. Suggesting that each person took away something different from the intervention and this seemed to be dependent on upon the participant's relationship with food. In other words, how the participants were using the FCs, or the function of the craved food. For example, did the food provide pleasure, comfort, stimulation, or a distraction? Due to the diversity in the participants' narratives, this theme consisted of the following subthemes of FCs, relationship with food and behavioural changes.

### *2.2.1 Food cravings*

Following the intervention most of the participants reported that they had gained an increased awareness of their cravings, in terms of the triggers to craved foods, the context in which they occur and the maintaining factors of the cravings. For some they realized that having certain craved foods was linked to certain events and this had become habitual, as illustrated in the below quote:

*“I have noticed that am associating things with foods, with times of days. I am associating with activities, such as watching a football match, you know. To give you an example, I would be...let's say it's eight o'clock in the evening, and a football match comes on, I notice a feeling of hunger...you know, that slight like rumble of hunger but doing this course, I should have said that in the previous answer, you know where you*

*examine the hunger feeling, that mindfulness exercise, after doing that it, it like “I’m not actually hungry” (Participant 8, lines 56-63).*

### *2.2.2 Relationship with food*

Most of the participants reflected on their relationship with food, and how this had changed.

Others reported that they gained an understanding of the function of their cravings and linked this with emotions. For example, one participant identified that the role of craved foods was to manage their feelings of stress, as in the quote below. The person reported that this intervention provided them with an insight to their use of craved foods, and they went on to make changes through exploring alternative ways to manage these feelings, such as going for a walk, listening to music. This change does span into another subtheme of behavioural changes, as below:

*“I found that doing the course that my urges were driven by emotional factors, so if I was feeling stressed or if I was by myself or I guess feeling a bit lonely I suppose, I would use food for those reasons, whereas before I thought it was because I was always hungry, that was not the case at all, it’s been really good” (Participant 1, lines 28 -31).*

This finding is comparable to research on emotional eating where it has been theorized that food is used as a coping mechanism to tolerate negative emotions such as sadness or anger (Frayn et al, 2019). Tamir (2009) theorised that to reduce emotional distress, some individuals engaged in an activity, (e.g., eating) to regulate emotional status by increasing the more pleasant welcoming emotions (e.g., pleasure) to reduce/change the intensity of unwanted ones (e.g., sadness), and this can be a reinforcing behaviour. Consequently, by incorporating ACT processes, it becomes plausible to enhance one's capacity to acknowledge and endure negative emotions.

Consequently, this might reduce the likelihood of resorting to food as a coping mechanism (Hooper et al., 2012).

In the participants' narratives another notable change that two participants described was a change in how they responded to their own strict dietary rules e.g. "I can't have a dessert". After the intervention they reported that this has led to reframing the strict rule, for example: "*I am not denying myself anything or saying you can't have it, I just asking myself, "do you really want it?"*" (Participant 2, lines 15-16). Reframing the rule allows for greater flexibility, being non-restrictive allows a choice in how to react to it.

Through the intervention, an individual spoke about how they had gained an understanding of their current eating behaviour, (see quote below) and how the pandemic had led to a change in this. During the lockdown periods the participant was not able to engage in activities which they had previously used for stress management, so food become a replacement for these, resulting in overeating and an irregular eating pattern.

*"Understanding why this happened; how it started and being able to recognise that there's a solution, helped me to start to manage it. For me the most valuable aspect of this is being conscious about my problem, the food I had and how feeding emotions were my escape to me."* (Participant 5, lines 71 -73).

The participant described how this awareness had led them to develop a routine in relation to their eating, and planning to look after their mental wellbeing, as highlighted here: "*My plan is*

*to follow a conscious way of eating, taking care of both as possible as it will be for me: my mental-emotional health and my physical health (Participant 5, lines 88-89).*

Another change in the relationship with food that participants described because of the intervention was a shift in mindset from one of diet, where there are lots of dietary rules and food groups labelled as unhealthy/healthy”; “good/bad”, towards a more balanced perception of food. Loosening the rules on food allowed for more flexibility in thinking, and reduction in feelings of guilt and anxiety, as this quote highlights: *“I am thinking about those urges and making a decision, and if I make the decision to have the chocolate than that’s ok, chocolate is not the devil’ (Participant 1, lines 50-52).*

Other participants cited how they had noticed that certain thoughts triggered their eating behaviour, and the intervention had provided them with a different way to react to those thoughts. They described how they were now seeing thoughts as thoughts, and this distance gave them a choice of how they reacted to them, for example:

*“it was a new helpful way to stop and watch yourself think (line 55) ...that is actually quite peaceful to reduce that self-bullying, telling myself “It’s just a moment, its ok, what do you want to do next? it’s so useful and reduces the pressure” (Participant 7, line 74 - 75)*

### *2.2.3 Behavioural changes*

In the interviews, the participants were asked if they had noticed any changes following the intervention. As already mentioned in the previous section, some participants reported

behavioural changes, by connecting to a meaningful value led to the development of alternatives to manage certain feelings. For example, feelings of stress are the cue, and the reactivity is to eat, whereas the new behaviour is going for a walk. Three participants reported a small loss in weight; however, they did not say if this was directly connected to the intervention. Two participants cited an increase in physical activity.

### *3.0 Feasibility*

This last overarching theme captured the participants' views on how feasible the intervention was, in other words, should it proceed and how it should be developed. It comprised of the following themes: (3.1) comparison to other approaches, (3.2) recommendation of an iACT based intervention and (3.3) future developments.

The participants were asked about previous weight regulation methods and how this intervention compared to those. This was to ascertain if the participants' previous experiences influenced and shaped their expectations for this intervention. They were asked if they would recommend an ACT based intervention, to evaluate satisfaction, and suggestions for improvements for future development.

### *3.1 Comparison to other approaches*

Nearly 60% of the participants had previously engaged with a structured eating plan, such as a commercial plan with the aim to lose weight. They cited that although they did lose weight in the short term, the change was not maintained, because these approaches were too rigid, restrictive, and demoralizing. Some participants independently sought out their own methods

from the internet, such as watching internet videos or using apps; however, these approaches were not consistently maintained over time. The remainder, although they were asked about previous approaches, did not provide an answer to the question as they could not remember, or they moved on without giving a relevant response.

The participants described ACT as a positive sustainable approach that was more holistic than other approaches as it went beyond eating behaviour. A small number of participants mentioned the applicability of ACT and how they used this for their mental health, such as applying this to manage their feelings of anxiety and emotional regulation, as illustrated below:

*“It (the course) includes everything, your feelings, lifestyle, it’s not just about what you are eating, it’s not focused on that. It’s everything else, that can help with your mood, you know, sometimes the way you feel can make you eat so. The course covers everything”*  
*(Participant 2, line 87- 90)*

### 3.2 Recommendations

Overarchingly most of the participants endorsed the ACT based intervention and would recommend it to family/friends as they found the approach non-judgmental and validating, as it resonated with their experiences. A couple of SH participants stated that the intervention could have benefitted from addition of human support and with the target population being those who are interested in a psychological approach, who are interested in gaining an understanding of their relationship with the cravings.

### *3.3 Future developments*

The participants were asked for suggestions to develop and improve the intervention, and the ideas gathered were grouped into the below topic areas.

#### *3.3.1 Content, format, platform and support*

Changes to the software package, such as using an educational platform were proposed because some participants had experienced technical issues with the Qualtrics software, such as changing devices resulting in having to restart the module. Other widely cited suggestions were to make it more accessible on mobile phones or as an app. This suggestion for further research into more novel methods has been echoed in the findings of other ACT-based studies such as Schumacher et al. (2018) who used smart phones. Interventions of this kind offer the advantage of being discreetly deployable in real-time and accessible anytime and anywhere, providing support on-demand.

In terms of content of the intervention, one participant wished for more visual aids, specifically to explain the “Stories we tell ourselves” (self-as-context process) more. Other participants suggested the following: the inclusion of a guided meditation, physical activity, flexible diet plan and a module on body image. A couple of the participants suggested changes to the method of recording FCs, to be more inclusive of all dietary preferences and requirements. They would have liked to have been able to list their own foods, rather than using a standardized questionnaire.

Regarding the format of the intervention, suggestions put forward included the use of reminders, a progress bar, the text to be broken in smaller sections, each section to be summarized and lastly, for it to be available as a workbook as a hard copy; with a planned schedule included. A couple of the participants would have liked the intervention to have been longer, and one expressed a preference for it to be available in-person.

Five of the participants did not put forward any suggestions for improvements to the intervention as they were satisfied with its current format. For example: *“I liked the way you have done it, you got reading, and then a bit of visual, then a bit thinking and writing, it’s nicely paced out, there’s not too much”* (Participant 2, lines 80-81).

### **3.3.17 Summary**

Overall, the findings indicated that the iACT based intervention was generally acceptable to the target audience as they had a positive experience, they found the intervention interesting, and it met their expectations as they had gained new skills to manage food cravings. It provided an invaluable insight to the participants’ experience of ACT intervention and the variation in the utilization of the different ACT processes. However, this feedback is from a small number of the participants that partook in this study.

## **Chapter 4: Discussion**

### **4.1 Interpretation of results**

This pilot study investigated the feasibility, acceptability, and effectiveness of a prototype iACT based intervention and compared two intervention formats (SH versus GSH) for a community population who were looking to manage their food cravings.

This study hypothesised: a) an internet ACT-based intervention would improve psychological flexibility, consequently decreasing in eating in response to food cravings and emotional eating; and b) those allocated to the guided self-help group would have a greater increase in psychological flexibility, decrease in emotional eating and a reduction in responding to food cravings than the self-help group over time. An objective of the study was to discover if the internet intervention was acceptable to the participants, using semi-structured interviews.

The findings of the quantitative analysis revealed that there were overall positive changes in the outcome variables: psychological flexibility increasing, emotional eating and in consumption of craved foods. Tentatively indicating that the iACT intervention may be effective in managing food cravings, regardless of delivery method.

In harmony with the ACT (Hayes et al., 1999) model, as this study's quantitative findings indicated that at post- intervention participants showed greater psychological flexibility, with a large effect size. Suggesting that ACT skills were implemented, consequently reducing patterns of experiential avoidance, subsequently leading to a behaviour change (i.e., changed response to

FCs). By increasing psychological flexibility, one has more strategies/options to manage cravings (Berman, 2018). This chimes with ACT's therapeutic goal, "*to increase psychological flexibility whilst reducing experiential avoidance*" (Hayes et al., 2012, p.982).

A possible explanation of these findings lays within ACT's view of FCs, which was informed by empirical evidence, provided by Fahrenkamp et al. (2019) who concluded that psychological inflexibility leads to experiential avoidance which maintains FCs behavioural cycle. Hayes et al. (1999, 2006) theorised that psychological flexibility can be enhanced through the utilisation of its six therapeutic processes: acceptance, being present, self-as-context, cognitive defusion, clarifying values and committed action. This study's findings are in parallel with previous ACT based empirical studies, like Forman et al. (2013); Lillis et al. (2009) which demonstrated the benefits of ACT on the management of food cravings. However, the empirical evidence of ACT individual process studies (such as cognitive defusion by Karekla et al., (2020); mindfulness-acceptance by Alberts et al., 2012)) revealed a mixed picture.

An advantage of this study is that it fills a gap in the empirical literature on ACT as an intervention for FCs, which is the experiences of the participants. This study not only investigated the effectiveness of a prototype iACT intervention, but also set out to explore the participants' experiences of this intervention. Analysis of the interview data divulged which of the ACT processes/skills resonated with the participants and which they found the most beneficial. These were acceptance, cognitive defusion, and being present (aka mindfulness) processes, which were cited the most by the participants as being advantageous to managing their food cravings and were implemented the most. The outcome for the ACT process,

acceptance, is an interesting finding as the empirical literature on the effectiveness of this was ambiguous. In the food cravings literature, were a couple of suggestions by scholars to explain this. Alberts et al. (2013) suggested, and demonstrated with a research study, that the ACT acceptance process takes time and practice to work. Alternatively, Jenkins and Tapper (2014) suggested that the variation reported in the FCs literature on the acceptance process is attributed to the way it has been measured (e.g., self-report consumption). The findings from this study's feedback interviews add to the debate on acceptance as a process for change and may warrant further exploration.

Participants in the study found that the elements of acceptance and cognitive defusion complemented each other well, allowing them to address cravings effectively by enhancing their tolerance and flexibility in thinking. This finding resonates with previous research on ACT processes, such as the study by Hinojosa-Aguayo and González (2022). The authors concluded that cognitive defusion helped participants manage intrusive craving thoughts by increasing their awareness to these, while regarding them as a transient experience that does not necessitate an action. Meule (2020) theorized that there is decoupling of the connection between thoughts and behavioural responses, allowing individuals to respond to internal and external cues in a deliberate and meaningful manner. This has an overlap with the self-as-context process, as this aims to encourage observing the experience, for example, instead of immediately identifying with the craving and allowing it to dictate a response (e.g., 'I need chocolate cake, I can't resist it'), practicing self-as-context by observing the craving without judgment or attachment.

Hayes et al. (2006, 2012) proposed that the values clarification and commitment processes in ACT are key processes for sustained behavioural change. Research findings (e.g., Boucher et al., 2016) have shown that ACT's emphasis on values-guided behaviour may strengthen participants' commitment to intuitive eating. Boucher et al. (2016) theorised that the clarifying values ACT activity, supported individuals with the process of transitioning from eating being about weight-focused; to being an act that is enjoyable, sustainable, and health-focused. One of the findings from the interviews revealed that the participants had a differing opinion on these processes as a potential facilitator of change to their behaviour. The differing options may be a reflection on the different stages of change model (Prochaska & DiClemente, 1983). The premise of Prochaska and DiClemente's (1983) model describes how people change and the different stages that someone may go through before successfully implementing a behavioural change. Prochaska and DiClemente (1983) suggested that the five stages are precontemplation, contemplation, action, maintenance, and relapse. The contemplation stage refers to being aware of a behaviour (e.g., smoking, snacking) and there is no commitment to action (Prochaska and DiClemente, 1983). This stage resonated with a couple of this study's participants as they commented that they found the value clarification activity the least beneficial, and another participant commented that they reflected on not being at the right time to make a change.

The results from the psychological flexibility measure used in this study suggest an improvement in flexibility, indicating that participants engaged with the ACT intervention. The study predicted that increased psychological flexibility would lead to a reduction in experiential avoidance, which in turn could decrease emotional eating and food cravings. This would signify a change in how participants manage and respond to 'internal states' (such as feelings, thoughts,

and body sensations) associated with food cravings. The following section will discuss the findings related to emotional eating.

### *Emotional eating*

This project's statistical results revealed a notable decrease in emotional eating across the intervention, and this was maintained at the one-month follow up. An explanation for this through an ACT lens is, many of the skills taught in ACT (Hayes et al., 1999) were designed to enhance awareness and acceptance of internal experiences, these included thoughts, feelings and bodily sensations. The findings of this study's qualitative component revealed that some of participants reflected on how they had gained an understanding of the function of their cravings and how this was linked this to their emotions. For example, one participant identified that the role of craved foods was to manage their feelings of stress. In the narratives of the participants highlighted how the ACT intervention enabled them to tolerant unwanted thoughts more. Meule (2020) described the experience of food cravings, as being multidimensional as it involves physical, and psychological aspects: cognitive, emotions, and behavioural, the forementioned findings seems that the ACT (Hayes et al. 1999) skills can reach all these aspects consequently reducing patterns of experiential avoidance, subsequently leading to a behaviour change.

Through the utilisation of the ACT skills such being curious about one's in-the-moment experiences, and developing the ACT's skills (e.g., acceptance, cognitive defusion), to coexist with the discomfort associated with cravings can enable individuals to observe cravings until they naturally subside (Hayes et al., 2012). The findings from this study, demonstrated how the ACT skill, 'being present' was a popular amongst the participants as it helped them to re-connect

with their body's hunger cues, and acceptance enabled them to acknowledge the FC as a transient experience.

This project's findings indicated the ACT skills were effective at the physical and psychological levels, as the narratives from the participants revealed, that the being present skill facilitated a re-connection to the body's hunger signals. Berman (2018) noted that helping individuals become more attuned to and trusting of their body's hunger and satiety cues can reduce impulsive reactions to emotions and cravings for food. This has support from empirical evidence of ACT-based intervention by Frayn et al. (2018) who found that increasing awareness of physical and emotional cues related to eating can reduce emotional eating. In terms of emotional regulation, Conner et al. (2019) theorised that the regulation of emotions depended on the level of emotional awareness, with lower emotional awareness associated with less adaptive regulatory strategies. The reduction in emotional eating reported in this study, supports Fahrenkamp et al.'s (2019) assertion that increasing awareness of emotions and their connection to eating can lead to a reduction in experiential avoidance and encourages the use of strategies other than food to cope with emotions. Participants in this study reported that gaining insight into the function of their food cravings, such as managing stress, led them to develop alternative ways to manage this, such as going for a walk.

### *Food cravings*

The findings on the Food Cravings Inventory UK (Nicholls & Hulbert-Williams, 2013) signified that overall, the intervention has helped the participants to manage their food cravings. They self-reported less occurrence of cravings across the duration of the intervention and at the one-

month follow-up, suggesting the reduction might be a sustainable change. This aligns with the findings of other ACT intervention studies, such as Alberts et al. (2010) who demonstrated that a seven-week training programme that aimed to promote acceptance-based craving regulation resulted in significant decline in cravings for food, compared to a control group. Similarly, Forman, et al. (2013) discovered that teaching ACT-based skills can lower the occurrence of FCs.

Analyses of the FCs inventory subscales ‘giving in’ and ‘difficulty in resisting temptation’ revealed that there was an overall reduction in the scores for both, across the intervention. However, a significant result was only found for the ‘difficulty’ subscale, as there was a non-significant result found for the ‘giving in’ subscale from baseline to post-intervention, and no difference being the SH or GSH groups. Indicating when FCs did occur that the participants gave-in to the craving and consumed the desired food with a similar frequency to pre-intervention. Interestingly the trend analysis of the amalgamated data from both conditions found a significant reduction in ‘giving in’ at follow-up compared to baseline.

A possible explanation of the reduction in frequency of food cravings noted across the duration of the study might be linked to the length of time of the intervention. The duration of this study was designed on the research findings of previous ACT based interventions (such as Alberts et al., 2013, 2012; Hulbert-Williams et al., 2017). The training of the ACT skills was brief (three hours) over a three-week period, an hour per week. This might have provided the participants an opportunity to practice their newly acquired ACT skill in a real-life situation. At the follow-up, the further changes in the food craving inventory scores, across all the subscales

might indicate that an increase in self-efficacy (Bandura, 1977) and the time allowed the participants to consolidate their skills, which helped them relate flexibly to their internal experiences and regulate their behaviour, which, in turn, appeared to change their relationship with food and eating. Practising the new ACT skill in the present of cues that trigger cravings may have facilitated the ‘decoupling’, of cue - behaviour response, although the desire may still be present, the response has changed. This is support for this possible explanation provided by Meule’s (2020) findings from their own research studies, on selective food deprivation. Meule (2020) concluded that FCs developed through a conditioned response, so these can be unlearned through an exposure-like process, over a period (Coelho et al., 2014; Haverman, 2013). Therefore, a learned associations (e.g., TV show and eating a sweet snack) can be decoupled, so the cue (TV show) no longer triggers the response (consuming a sweet snack), however this takes time as “*extinction learning takes longer than acquisition*” (Van den Akker et al., 2018 cited in Meule, 2020, p.252).

### *SH vs GSH*

Contrary to this study’s second hypothesis, that allocation to the GSH would yield a greater difference in the outcome measures than the SH method, there was no significant difference between the delivery methods. In other words, the independent SH method was equally effective as the GSH method, so the research hypothesis was rejected. Yet, the majority of those who partook in the interviews, at the one-month follow-up point, were from the GSH method, which may be indicative of the rapport with the researcher and a willingness to help with the feedback. The analyses of the interview data revealed that the non-expert support was appreciated and helpful as it was an opportunity to review their understanding and to reflect on the contents.

Although not all the participants felt the same, as one reported felt that contact placed pressure on them.

A possible reason why the participants tended to give positive feedback about the GSH condition was about having support available for those engaged in an intervention when it is needed, such as needing clarity on an activity, or help with a dip in motivation, as this can changeable (Fairburn, 2013). This is in keeping with the findings of previous research studies, like Bradbury et al. (2015) who found that the provision of support enhances engagement in an intervention when it is flexible and tailored to meet one's needs. This indicates that having non-expert support may have facilitated engagement in the intervention rather than being a direct mediator of change.

A possible explanation of the lack of difference in the outcome measures between the groups, might be the level of support. Although this project followed the guidelines noted by Farrand et al. (2010) on SH, which were following the initial contact with a therapist, and the provision of SH materials, there is to be no further contact. However, in this study, the SH group participants, had the option to contact the researcher to ask questions at the end of each module, although no SH participants did, it could be questioned if this is truly self-help, as the participants were not truly independent (French et al. 2017). An alternative explanation is the SH participants learning with prompted by their need to be autonomous.

As the findings suggest that the two groups' scores on the outcome measure were comparable so the picture of the role of support, in terms effectiveness and adherence to an intervention, is

unclear, the debate on provision of support for iACT interventions will continue and need further exploration.

### *Post- pandemic life*

A consideration needs to be highlighted regarding the findings of this study, as it is difficult to truly attribute the changes solely to the iACT intervention as there may have been wider society factors that may contributed to the changes in the participants' management of food cravings. This intervention was run during the Covid-19 pandemic, and at a time when the UK was slowly emerging from the social restrictions, and people were re-connecting with their pre-pandemic lives and routines. A small number of the participants reported in the interviews how the pandemic had impacted on their eating habits, however they acknowledge that this was a reaction to the situation so their difficulties with food cravings, might have been a temporary experience. Therefore, as people's routines were returning to their pre-pandemic ways, and re-connecting to those activities that maintained well-being, such as connecting with others, which may have a positive impact on eating behaviour and cravings.

### *Acceptability of an iACT based intervention.*

An aim of this study, mentioned previously in Section 3.1: Rationale and aims of the study, was to gain feedback from the participants on the iACT -based intervention. Overall, the findings of the qualitative analysis suggested that most of the participants found the internet intervention acceptable as they reported to have had a positive experience. They found the intervention interesting, and it met their expectations as they had gained new skills to manage their food cravings.

Previous experience of weight loss interventions played a role in the participants' expectations and engagement in this study. The participants described ACT as a sustainable approach that was more holistic than other approaches as it went beyond eating behaviour. A small number of participants mentioned the applicability of ACT to other areas, such as how they used this for their mental health, such as applying this to manage their feelings of anxiety.

Overall, the findings of this study tentatively indicated that the prototype iACT based intervention can be efficacious in managing food cravings for adults, regardless of delivery method (SH or GSH). It was also generally accepted by the target audience, as they had a positive experience, found the intervention interesting and it met their expectations as they had gained new skills to manage their food cravings. However further research, including longitudinal RCTs, are necessary to truly ascertain the effectiveness of iACT-based intervention targeted at food cravings. The next section will consider the implications these findings could have for clinical practice and research.

#### **4.2 Implications for clinical practice and research**

The data from this study has produced some useful insights which can have potential implications for practice. For example, the finding of no difference between guided self-help versus self-help only, might have benefits in terms of reducing costs of an intervention (like needing fewer staff). Independent self-help interventions may also be useful in terms of allowing individuals to engage in an intervention without having to involve others. For example, on this study's participants who commented on how they felt pressurised by GSH, and would have preferred SH. An advantage of an independent intervention is an option for those feel

weight stigma (Berman, 2018). Stigma has been found to be a barrier in both, accessing professional support and adherence to weight management face to face programmes (Berman, 2018). A recent qualitative evaluation study of remote and digital interventions for weight management by Nicholls et al. (2023) revealed that many weight management patients reported the benefits in an e-health approach.

Another clinical implication is, its contribution to the evidence base for brief interventions, and how they can be implemented within a stepped care-based approach (Kroska et al., 2020). The stepped care approach is the organisation of care and psychological treatment provision, providing the appropriate intensity of treatment based on the outcome of an assessment (NHS's Good Practice guidelines, Farrand et al., 2010). Brief interventions, such as self-help, feature in the stepped care approach and have been found to be beneficial, effective and the outcome can be individuals may not choose to pursue further treatment (Kroska et al., 2020). Brief interventions, such as this one, may be beneficial to those who are self-motivated and only need minimal support. Noted, in Chapter 3, in the subsection 3.27: *Summary of non-completers vs completers*, an interesting finding from this analysis revealed that there was a significant difference on the frequency of food cravings reported between those who completed the intervention compared to those who terminated it prematurely, with the latter reporting more food cravings than the completers. This may suggest that this intervention did not meet their needs, which may need further exploratory regarding ascertaining what additional support may be needed.

The results of empirical studies emphasize the potential applicability of ACT (Hayes et., 2012) to community settings. Given the current economic challenges in the UK, where individuals are grappling with the rising cost of living and considering the surge in NHS referrals for treatment following the pandemic, there is a clear need for psychological interventions tailored to community groups. Such interventions would greatly enhance access to support for individuals who would otherwise struggle with weight regulation or transitioning to a healthier eating style.

The move to the provision of online interventions may have implications for those counselling psychology training providers in the UK. Maybe the inclusion of a short course on training for the online world e.g., advising therapists on everything from using emojis to avoiding misinterpretations (Weinberg & Rolnick, 2020). Other key factors are risk management, confidentiality and data protection (Lee, 2010). As counselling psychologists in the NHS increasingly assume leadership roles and supervise others in delivering interventions, including remote delivery by non-qualified staff, the need for training programs to adapt by integrating courses addressing online interventions and supervision techniques becomes more evident, as emphasized by Weinberg and Rolnick (2020).

### ***Evaluation: Strengths***

A notable strength of this study was its mixed methods design, which played a pivotal role in the evaluation of an iACT intervention. Maxwell (2012) commented on how the application of a multiple methods approach can cross-validate findings and provide a more robust interpretation of the results. For example, in this study the quantitative data suggested improvements, and the interviews enabled the researcher to drill down into these findings further, by gaining feedback

and explore the participants' thoughts, views and opinions of the prototype iACT. Consequently, these interviews offered fresh perspectives on an iACT based intervention.

Although mixed methods design has some advantages (e.g., Creswell & Plano Clark, 2018), however, not everyone agrees with mixed methods approach. There are concerns raised by some scholars (e.g., Fàbregues et al., 2021) about the process of mixed-methods research design. One concern revolves around the limited guidance available on how to reconcile discrepancies that may arise between the two types of data (Flick, 2017). Since there is no single "correct" way to use mixed methods, this design may result in unequal emphasis on the two methods, leading to uneven evidence within a study. This can be a drawback when interpreting the results (Bergman, 2011; Fàbregues et al., 2021). For this study, there was not an issue as the two methods complemented one another, for example, there was an improved score on the psychological flexibility measure and the interviews provided a window into which ACT processes may have contributed to that the change.

Another significant strength of this study is its recruitment strategy, which involved advertising to the community to attract participants from diverse ethnic backgrounds and a wide range of socio-economic statuses. This approach helped ensure a more representative sample, increasing the generalizability of the study's findings.

A notable strength of this study is it was developed on previous findings by Hulbert-Williams' et al. (2017) whose recommendation for further research, was an experimental ACT-based intervention study to be delivered in a computerised format to reduce any influence that researchers may have implicitly on participants. This study was designed and implemented

online, and participants were allocated to either SH or GSH groups via the Qualtrics platform. Thus, there was very little contact between the researcher and participants during the recruitment phase, and the intervention phase for the SH participants, thus reducing researcher – participant bias. The findings of this study expand the research evidence on ACT interventions, as it indicates that ACT can be translated into a deliverable computerised format that is effective and acceptable. Future research, including longitudinal RCTs are necessary to truly ascertain the effectiveness of iACT-based intervention targeted at food cravings.

Moreover, an advantage of the online intervention format is that it allows participants to practice applying the new skills they learn in their own environments. They can do so at the moments when food cravings naturally occur, without the immediate presence of a researcher. This autonomy can reduce potential biases associated with the researcher’s direct influence, such as altering their behaviour to align with perceived expectations (Clarke-Carter, 2018).

Additionally, the online nature of the intervention ensured standardization, meaning that all participants received the same content, instructions, and guidance. Coulson (2015) advocated that this uniformity reduces variability that might otherwise be introduced by different researchers administering the intervention in person, thereby enhancing the reliability and validity of the study outcomes.

Furthermore, in this study, participants assigned to the self-help group had no direct contact with the researcher. This relative anonymity can significantly reduce social desirability bias, as participants may feel less compelled to provide responses, they believe are more socially acceptable or favourable. Instead, they are more likely to provide honest and authentic responses, thereby improving the accuracy of the data collected.

### *Limitations*

The findings of this study indicate that iACT based intervention for food cravings is acceptable to the target population and there were changes in the observed in the scores of the outcome measures. Yet, this study does have several limitations. Firstly, a degree of caution is needed regarding the assumptions drawn from the feedback interviews. Of those who participated in the interviews 67% were assigned to the GSH method and only 23% to the SH method. Therefore, the findings are not representative of all the participants. As there might have been a proportion of the SH group who had less positive experience and did not participate in the interview, and whose views are therefore not represented in the feedback.

### *Comparison group*

A weakness of this study's design was the dearth of a comparison group or/and alternative intervention, e.g., a CBT based intervention, or a mindfulness-based intervention, to ascertain if the changes reported were associated with the ACT intervention. For example, as CBT (e.g., cognitive restructuring) is recommended psychological approach in the NICE (2014) guidelines for assessment and management of obesity, it would be of interest to examine how the current ACT-based intervention compares with this approach.

### *Sample size*

It is important to note that the sample size in this study was relatively small, comprising 30 participants from baseline to post-intervention. A post-hoc power analysis for this pilot study revealed that it was underpowered (0.7 or 70%), which is below the general recommended threshold (0.8 or 80%) (Serdar et al., 2021). However, the pilot's size was in line with other

similar online ACT pilot studies, such as Frayn et al. (2019), who reported the recruitment of 32 participants and observed a moderate to high effect size. Nonetheless, this study's power level has implications for the generalizability of the study's findings.

Most participants were female postgraduate students, a trend observed in several online-based eating behaviour studies (e.g., Mueller et al., 2022; Yardley et al., 2014). Consequently, the experiences of males regarding food cravings were underrepresented (Sabinsky et al., 2007; Wolfe & Smith, 2002). Furthermore, the study exclusively included English-speaking adult participants, making it uncertain how this intervention would translate into other languages and cultural contexts. Due to the lack of diversity in the sample, caution must be exercised when generalising the findings. Future research should aim to recruit a more diverse participant pool, encompassing various socioeconomic statuses, ethnicities, ages, and genders to enhance the generalizability of such interventions.

### *Gender and diversity*

It is important to note that the sample in this study was relatively small, comprised mostly of the participants were female, postgraduate students, a trend observed in several online-based eating behaviour studies (e.g., Mueller et al., 2022; Yardley et al., 2014). Consequently, the experiences of males with regards to food cravings were underrepresented (Sabinsky et al., 2007; Wolfe & Smith, 2002).

In the broader literature, there is no clear consensus on whether men and women respond differently to ACT, with evidence varying across studies. For instance, Fernández-Jiménez et al.

(2021) conducted an experimental study comparing an ACT-based intervention with a mindfulness-based approach, focusing on cognitive flexibility and gender. Their findings supported the effectiveness of the ACT-based intervention but revealed no significant gender differences in treatment outcomes. In contrast, a study by Gobin et al. (2019) explored gender differences in ACT response among veterans with PTSD. While they found no gender differences in general emotional distress, significant differences emerged in post-traumatic stress disorder symptoms, suggesting a potential gender-specific effect in trauma-related outcomes. However, more research is necessary to determine whether gender consistently influences ACT's effectiveness across different contexts and populations.

Furthermore, the study exclusively included English-speaking adult participants, making it uncertain how this intervention would translate into other languages and cultural contexts. Due to the lack of diversity in the sample, caution must be exercised when generalizing the findings. Future research should aim to recruit a more diverse participant pool, encompassing various socioeconomic statuses, ethnicities, ages, and genders to enhance the generalizability of such interventions.

### *Duration*

This study took place over a small number of weeks (seven weeks in total). Although the participants in this study appreciated the conciseness of the intervention, the short duration could be considered as a limitation, as acknowledged as a limitation in other iACT based studies (e.g., Mueller et al., 2022). Future research should extend its investigation of the effects of iACT-based interventions over longer durations to assess the sustainability of their impact on eating

behavior and potential implications for weight management. This could involve conducting larger longitudinal RCTs.

### *E-health and accessibility*

While internet-based interventions offer advantages like reduced travel, lower costs, and greater convenience, they may not be suitable or accessible for everyone. According to the Office for National Statistics (2019), a segment of the population has never utilized the internet, often due to factors such as limited access, lack of knowledge, or disinterest. This group primarily includes individuals aged over 65 years, those with long-term health conditions or disabilities, and those without internet access (Healthwatch, 2021). Consequently, these groups are likely to be under-represented in this study and unlikely to benefit from an intervention of this kind if rolled out more widely. It is worth noting that individuals with lower socioeconomic status may also have limited internet access (Hudson, 2005). The pandemic demonstrated that lack of broadband internet access had the potential to exacerbate existing health inequalities due to some being less able to access health-enhancing resources during the social-distancing orders (Benda et al., 2020).

### *Attrition rate*

This study observed an attrition rate of 69.4% from the pre-intervention to post-intervention phase. 98 participants started the intervention, and only 30 remaining at the post-intervention assessment. Of these 50% (15 participants) were lost by the one-month follow-up. The reasons for non-completion were not gathered and only having the findings from those who had a positive experience could potentially have skewed the findings and any inferences drawn from it.

This study shared a high attrition common to many online-based interventions and results were founded on a small sample of people, who completed the study. For example, Griffiths et al. (2022) study which investigated the effectiveness of an internet-based mindfulness training reported an observed attrition rate of 89%. Devonport et al.'s (2022) brief intervention for food craving had a 79% attrition rate. A possible reason proposed for the high rate in the latter study was that participants were at different stages of change (Prochaska & DiClemente, 1983), with some individuals recognising a need to change, as documented by participants' feedback, while others may not have been ready to act yet. This chimes with the findings from the qualitative aspect of this study. However, further research may consider the inclusion of measures of participants' motivation and readiness to change before starting the intervention. The attrition rate observed in this study may, in part, be attributed to the lenient enrolment procedures. Unlike other intervention studies and typical large-scale RCTs for weight loss (e.g., Frayn et al., 2019; The Look Ahead Research Group, 2003), this study did not include a stringent screening process to determine suitability and motivation.

### *Objective measure*

A limitation of this study was the lack of an objective measure for craving-related consumption. The reliance on self-report questionnaires may introduce potential biases, through misunderstanding of the questions or the social desirability effect (Dovey, 2010). In hindsight the inclusion of a behavioural objective method (i.e., the bag method) could have cross-validated the findings with the observed outcomes of the self-reported questionnaires.

A final limitation worth noting, as observed in other studies such as Hulbert-Williams et al. (2017), is the absence of a fidelity check, to ascertain if the participants consistently applied ACT-based skills to cope with cravings. Fidelity measures are used in research for the purpose to ascertain the efficacy of an approach, by measuring how closely it is being delivered to the theoretical protocol (Bond et al., 2011a). An example of an ACT fidelity tool is the Acceptance and Commitment Therapy Fidelity Measure, by O'Neil et al. (2019).

#### **4.4 Further research**

The evaluation of this study's methodology and its findings has generated avenues for further research. For example, as this study utilised one standardised questionnaire to measure psychological flexibility to ascertain the impact of ACT, whereas other mixed method studies like Frayn et al. (2019) included more standardised questionnaires, related to the ACT processes, such as being present and the findings of the interviews were used to cross-validate the findings, so increasing confidence in the overall results. As there are a small number of studies employing this method, this could be a recommendation for further research.

This study used a self-report questionnaire to measure food cravings before and after the intervention, which participants completed in their own settings. However, this method may not accurately capture food cravings, as their frequency and intensity can vary between individuals, and they can be difficult for people to accurately report retrospectively (Richard et al., 2017). Future research will address this gap by employing Ecological Momentary Assessment (EMA) (Shiffman, 2009), a method that prompts participants to report their cravings multiple times throughout the day in their natural environments. This approach allows for real-time tracking of cravings and behaviours, providing more accurate and context-sensitive data. EMA is

recognized as one of the most advanced methods for self-monitoring and has been recommended for investigating emotional eating across different weight groups (Devonport et al., 2019). In future studies, this method could be integrated to evaluate the effectiveness of digital health interventions in managing food cravings.

Despite the advantages of iACT based interventions in terms of convenience and flexibility, there was no opportunity for participants to have a discussion with others about what they had learned and how they could apply it to their everyday life. Other brief ACT studies reported that participants appreciated the opportunity to have discussions (e.g., Frayn et al., 2019). Maybe a consideration for future iACT is the inclusion of a means for participants to share their experiences of the ACT processes, for example, through online discussion forums, or having an online drop-in session.

Before proceeding to a large-scale randomized controlled trial (RCT), further research is necessary to explore innovative approaches to increase participant engagement and enhance intervention completion rates. One promising direction is the adaptation of the intervention for smart mobile phone platforms, such as the development of a dedicated mobile app. As demonstrated by Järvelä-Reijonen et al. (2018), mobile-based interventions can provide an accessible and user-friendly means of delivering health behaviour change content, offering the flexibility for individuals to engage with the material at their own convenience. Given the growing use of mobile phones and the widespread adoption of health and wellness apps, these platforms allow for discreet, in-the-moment access to intervention materials, which can be critical for addressing health behaviours like managing food cravings or emotional eating.

Moreover, mobile apps can integrate features such as real-time notifications, personalized reminders, and interactive elements (e.g., goal-setting tools or progress tracking), which may not only sustain user engagement but also foster a sense of accountability and motivation throughout the intervention.

Another crucial area for further exploration is the understanding of non-completers within the study. Initial findings suggest that individuals who did not complete the intervention were more likely to report heightened food cravings, pointing to a potential psychological or behavioural barrier that hindered their progress. This group may represent those with specific needs that were not adequately addressed by the intervention's current structure. Future research should prioritize a deeper investigation into the characteristics and challenges faced by non-completers to better tailor interventions that can accommodate their unique struggles. One potential strategy is to incorporate pre-intervention assessments aimed at identifying participants at risk of non-completion early on, followed by targeted support mechanisms such as motivational techniques to retain them throughout the intervention.

Moreover, gathering qualitative data from both completers and non-completers will provide a more comprehensive understanding of the intervention's strengths and limitations. In this prototype study, only those who completed the intervention were invited to participate in feedback interviews, leaving a critical gap in understanding why some individuals disengaged. Inviting non-completers to provide feedback in future research could shed light on specific

barriers such as difficulties with self-regulation, external life stressors, or dissatisfaction with the intervention format which could go on to inform further intervention development, such as offering more providing additional support for participants who struggle with cravings, at a time that suits them

Feedback from the semi-structured interviews included some suggestions for consideration for future development work in this area. The suggestions included a reduction or a change in the questionnaires used to assess effectiveness. For example, this study used a standardized food craving measure where foods craved were already predetermined, and this may not be representative of the diversity of foods craved. Future studies could ask people to list their own food cravings, to accommodate the diversity in food choices.

Future research endeavours could incorporate standardized measures of motivation for change and/or other measures linked to adherence (Bogg & Roberts, 2013). The advantage of this information is shaping the intervention to meet the needs of people, for example, using motivational tools/activities. Although some consideration would be needed regarding the inclusion of more inventories/questionnaires on optimal data collection, and the impact on attrition rates as feedback from test-users in this study indicated that too many questions can be a barrier to engaging with an intervention. To address the challenges of internet-based recruitment methods, studies must devise innovative strategies to discern genuine interest among potential participants (Mason et al., 2018). While this study's prototype intervention was initially developed with input from a limited number of individuals from the target population, the next phase of development should involve a broader engagement through a larger Patient and Public

Involvement group. Adopting a more structured approach, such as applying a standardised framework, as seen in other web-based intervention studies, can provide invaluable guidance throughout this process. For example: Richards et al., (2022) developed an internet-based, GSH, ACT-based intervention for weight loss maintenance. This study followed an iterative intervention development process guided by three frameworks: the Medical Research Council (Craig et al., 2008), the Intervention Mapping Protocol (Eldredge et al., 2011), and a person-centred approach aimed at enhancing the acceptability and feasibility of interventions (Yardley et al., 2015). Another example is Boucher et al.'s (2016) computerised ACT-based intervention study, as part of development process commissioned digital graphic designers to aid with the technical side.

Although the present study's sample size has already been noted, future research could benefit from conducting mediation analyses (Fritz & MacKinnon, 2007) to explore the underlying mechanisms of change. While this was not an aim of the current study, incorporating formal mediation analyses in future work could help identify the active ingredients of the intervention and clarify the pathways through which change occurs, potentially offering greater insight into causal relationships.

Lastly, although this study suggested that an iACT intervention may be cost effective, there was no formal cost analysis conducted, which may be a suggestion for any future studies. As cost effectiveness analysis can help decision-makers who want to achieve a specific health objective.

## 4.5 Conclusion

To conclude, this is the first study to investigate the acceptability, feasibility and effectiveness of an internet Acceptance and Commitment Therapy based prototype intervention to manage food cravings. This was generally acceptable to the target audience as they had a positive experience, found the intervention interesting and it met their expectations as they had gained new skills to manage their food cravings. This pilot study showed general improvement in psychological flexibility, a reduction in emotional eating, and decrease in the frequency of food cravings. This tentatively indicates that an iACT intervention is effective for food cravings, regardless of delivery method (self-help versus guided self-help).

Being a mixed methods design allowed for the integrating of findings from both the qualitative and quantitative aspects, which provided far richer insights than would have been gained using only a single method of inquiry. Qualitative research is occasionally underestimated in the creation and assessment of internet-based interventions. However, in this study, it has proven to be equally valuable as the quantitative component. In these contexts, qualitative methods can contribute significantly to the further development of a more acceptable and feasible intervention. For this study it provided an opportunity to learn more about the mechanisms that might influence the effectiveness of internet-based intervention and non-expert support.

The brief internet-based interventions are particularly compelling from a counselling psychology perspective, as they can increase access and reduce wait time to treatment to a larger number of people, however it does not eliminate all barriers to treatment. The outcome of this study has implications for future intervention development, as both delivery methods were comparable,

indicating that independent self-help may also be useful in terms of allowing individuals to engage in an intervention without having to involve others, or with minimal support, so could be a cost-effective intervention.

The findings of this study contribute to the expanding body of empirical evidence, suggesting that brief online interventions based on Acceptance and Commitment Therapy present a potential solution for managing food cravings. These interventions have the future potential to be a valuable addition to other weight management strategies. However, this study had several limitations such as being underpowered, it lacked a comparison group and had a high attrition rate. The results from this study can be used to inform and develop a larger scale randomized controlled trial to determine the efficacy and its longer-term effectiveness of the intervention in a larger sample and eventually disseminate it in other real-world settings.

## **Chapter 5: Critical Appraisal**

### **5.1 Critical appraisal**

This chapter is the author's reflective account of their professional research development through this component of the Doctoral training, including reflections on the learning, the challenges and achievements as part of the author's research experience. It is an account of the author's experiences on her journey toward becoming a qualified counselling psychologist and of integrating research within clinical practice. It will cover the author's current position including her own personal experiences, assumptions, values and biases that have shaped and contributed to the author's identity as a counselling psychologist. Lastly, it will discuss the author's next steps and plans. As this is a reflective section, the author will switch to writing in first person.

### **5.2 On becoming a researcher and a counselling psychologist.**

My previous experiences in both healthcare research and clinical settings have enhanced my reflective practice, and the sections below are peppered with my reflections.

#### *Research experience.*

My master's in forensic psychology, coupled with my occupational experiences had significantly enriched my research skills and knowledge. This growth in expertise and experience was particularly nurtured during my time at the University of Leicester. As a research assistant, I was a member of a collaborative programme of work that bridged both academia and a select few NHS Trusts. The overarching objectives of this programme of work was a) to evaluate the implementation of certain NICE guidelines; b) to conduct healthcare related research projects

and c) to produce initiatives geared towards enhancing health outcomes, such as research evidence summaries. I was involved in several small-scale research projects and NHS service evaluations employing mixed methods designs. My involvement spanned a spectrum of research activities, including data collection through techniques such as interviews and data extractions. Additionally, I was responsible for the crucial task of applying for NHS ethics approvals and actively participated in project steering group meetings. The outcome from this programme of work, were the implementation of service enhancements within the partnered NHS Trusts. Furthermore, these endeavours bore fruit, for me personally, in the form of a handful of peer-reviewed publications. These experiences provided a foundation of research skills and knowledge that would be particularly helpful in my doctoral research project.

### *Professional experience*

My enduring interest in psychology has guided my journey through various roles within the NHS, spanning Public Health, Research, and Clinical and Counselling Psychology settings. These diverse experiences have enriched my knowledge and practical skills, allowing me to professionally care for others within the framework of the NHS.

My career has mostly been within the healthcare sector, including several years as an assistant psychologist, where I worked across various mental health settings, including child and adolescent mental health services, in-patient hospital care, rehabilitation facilities, and community-based teams. Through these roles, I have acquired valuable insights into the responsibilities of a psychologist, a solid foundation in clinical skills, and being part of research opportunities, such as being involved in service evaluations and clinical audit projects.

However, my career path took a different direction due to my desire to prioritize family life. My next professional venture led me into the realm of Public Health. In this capacity, I contributed to the planning and the implementation of mental health services and initiatives, such as the Activity on Referral programme (Pavey et al., 2011). This National Institute for Health Research funded project explored the use of physical activity as an alternative to medication for the treatment of mild depression. Although my day-to-day work had changed, my interest in mental health remained, as I continued to make a positive impact by working at a population-level, where the focus is on early intervention and prevention. The experience of being employed by an NHS commissioning organization also afforded me valuable insights into the operational aspects of healthcare, particularly the commissioning of services, and applied healthcare research.

### *Personal motivators*

Through my own personal early life adverse experiences, and through some of my immediate family members experiences', attracted me and triggered my passion for psychology. My decision to pursue a Doctoral qualification in Counselling Psychology was influenced by the following: professionally, it has been an ambition of mine to gain a professional qualification in psychology; my occupational healthcare experiences of delivering patient-centred care; and lastly, my own values, beliefs and assumptions. I discovered that the core principles and values of counselling psychology resonated deeply with my own convictions, particularly my belief and commitment to social justice and my aspiration to effect positive change. I found myself in harmony with the philosophical foundation of counselling psychology, including its humanistic value base; and its profound emphasis on fostering collaborative therapeutic relationships. Also,

its dedication to respecting clients' subjective perspectives, experiences, and contexts, and its distinctive perspective to the medical model (Rogers, 1961). Although I have had a varied career, the desire to achieve my ambition to become a qualified psychologist has been constantly with me. I value my previous research and clinical experiences, as those opportunities have provided me with a diverse set of clinical and transferrable skills that I believe will serve me well in the role of a counselling psychologist.

### **5.3 Research and Counselling Psychology**

In the BPS's Division of Counselling Psychology (DCoP) professional practice guidelines (2020) defined counselling psychology has the following: "*Counselling psychology draws upon and seeks to develop phenomenological models of practice and enquiry in addition to that of traditional scientific psychology*" (DCoP, 2020, p.1).

In practice counselling psychologists, occupies a scientist- reflective position, which is emphasized in the following documentations: Health and Care Professions Council's (2015) 'standards of proficiency for practitioner psychologists'; and the BPS (2020a) 'Division of Counselling Psychology: Professional Practice Guidelines'. These guidelines highlight the core components of the counselling psychologist's role, with an emphasis placed on research inclusion, consequently it is a central component to the role and is mandatory in Doctoral level training. Through my own occupational experience and academic studies, I appreciate the importance of research and how it is crucial to counselling psychology. Personally, I consider counselling psychology and research as complementary partners, as the overall objective is similar in terms of the pursuit of knowledge and improving quality of life. Research is

fundamental to the following areas: clinically- evidence-based practice; the validation, and tailoring interventions; patient/client outcomes; continuous development and advancement of knowledge, professional development, its role in the development of policies and contribution to ethical guidelines.

From my occupational experiences, I have witnessed how counselling psychologists are now being trained to undertake leadership roles, particularly within the NHS, to enhance the role through those following activities: research, supervision, teaching, training; and consultancy, alongside therapeutic work. Counselling psychologists have an essential part in leadership within clinical services and are being involved in other areas such as research, where they are to undertake appropriate research and may become a Research Project Lead or a Clinical Collaborator. Counselling psychologists also provide research advice to other staff undertaking research, including doctoral trainees and assistant psychologists. As counselling psychologists are engaged in more senior roles, they are involved in developing and shaping policies, and services. Hence having a strong foundation in research methodology and skills is a core requirement and an essential skill of employment for most healthcare providers. As highlighted in the previous mentioned guidelines, it is the ethical responsibility of counselling psychologists to continually stay up to date on the latest developments and to disseminate the news of those to fellow colleagues and implement them, as appropriately, into clinical practice to enhance outcomes for our clients (Woolfe, 2012).

The union of counselling psychology and research is a partnership rooted in the acknowledgment that the complexities of human behaviour cannot be fully understood through a single lens or

method. Personally, I believe the partnership thrives on the diversity of perspectives and methodologies, recognizing that each contributes a unique facet to the ever-evolving psychological understanding. In this partnership, counselling psychologists wear the dual hats of practitioners and researchers. Counselling psychologists navigate the delicate balance between the subjective phenomenological position and the rigorously empirical position, drawing inspiration from both positions to enhance their practice and knowledge (Woofle, 2012). My own epistemological stance has been changeable during the Doctoral training, but I now favour an integrative and pluralistic perspective, which enables me to consider and incorporate multiple therapeutic frameworks tailored to needs of clients, irrespective of differing epistemologies. In essence, this approach aligns with the authentic principles of person-centred therapy, as advocated by Rogers (1961). While pluralism within counselling psychology has faced criticism for potentially generating theoretical confusion or conflict (Draghi-Lorenz, 2010), personally I believe that it signifies an appreciation for the full diversity of therapeutic approaches.

In regards how this is reflected into practice as a researcher, I tend to lean towards being an applied researcher, testing and evaluating the implementation of the theory/model into practice, seeking to answer the question, 'does it work?' When it came to designing this project, a mixed methods approach was in keeping with my own pluralistic position and the project's research questions. Pluralism in the context of research, recognizes that different methods have their own strengths and weaknesses, and that no single method can provide a complete and comprehensive understanding of a complex research issue (Maxwell, 2012).

Pluralism is linked to mixed method methodology approach as it acknowledges that different research questions may require different methods for a comprehensive understanding (Maxwell, 2012). In mixed methods research, this means providing a more holistic view of the research problem as it can use multiple methods to cross-validate findings (Maxwell, 2012). For example, if quantitative data suggests a certain trend, qualitative methods can be used to explore the reasons behind that trend, providing a more robust interpretation of the results.

#### **5.4 Interest in ACT & eating behaviour.**

My personal interest in undertaking a research project into ACT (Hayes et al., 1999) and eating behaviour developed from both my personal experiences and clinical work. During my first clinical placement, which was within an Improving Access to Psychological Treatments (IAPT) service, I attended an inhouse training session on ACT, and immediately it resonated with me. During this placement the modality employed by IAPT was CBT, and although this approach has strong evidence based for being effective at treating several mental health conditions, as a trainee, I felt that the approach was not for everyone. Several clients mentioned that they had struggled with some of the cognitive aspects of the approach, such as challenging thoughts, and some found it invalidating of their experience. The more I read about ACT (Hayes et al., 1999, 2012) the more my interest in the approach increased, so I attended a BPS approved two-day 'Introduction to ACT' (Hayes et al., 1999) training.

My personal interest in conducting research into eating behaviour stemmed from my clinical work. Initially I joined the NHS adult community eating disorders team as a senior assistant psychologist, then I was fortunate to secure a paid trainee placement, and then more recently

permanent employment with the team. Although this client group has a reputation for being difficult to treat, the great majority can be helped and many, if not most, can make a full and lasting recovery. As a trainee, I have worked with non-underweight individuals with disordered eating and binge eating disorder. Although binge eating disorder has only recently been recognized by the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) this does not mean it has not existed. Researchers have estimated, that in the UK, that the latter is the most dominant eating disorder. It is heartening to hear that services and psychological interventions have been commissioned by the NHS and recommended by NICE guideline for 'Eating Disorders: recognition and treatment (ng69)' (2017), however the availability and access to these is still patchy, as not all eating disorders services have a service for binge eating. Those who meet the criteria for the diagnosis of binge eating disorder experience their difficulties with eating differently - for example, night-time eating, secret eating, hoarding food, graze eating, and restrict- binge cycle. Often people also experience anxiety, depression, and their quality of life is impacted. For those who are of a higher weight their physical health can be impacted, such as mobility difficulties. Initially, I was struck by the intense stigma and discrimination that people of a higher weight face in most areas of their lives. Feelings of shame, guilt and embarrassment are often experienced and when individuals finally pluck-up the courage and reach out for professional support, and it is often met with experiences of further stigmatization by some healthcare professions (Berman, 2018). Empirical studies, based on ACT (Hayes et al., 1999), have demonstrated its success in reducing discrimination. For example, Lillis and Hayes (2007) addressed bias toward ethnic minorities in USA. Similarly, overweight individuals encounter intense stigma and discrimination in most aspects of life, including medical and psychological care and obesity treatment as demonstrated

by Puhl and Heuer (2009). Additionally, Berman (2018) conducted research on reducing bias against overweight individuals through the Accept yourself! programme, which is ACT informed, and acceptance based. On a personal level, I have reflected on my own attitudes and biases towards clients of a higher weight in supervision and in personal therapy, as both are central to my practice. Working in the specialism of eating disorders, specifically with binge eating disorder, it became evident how food cravings are a factor in both the development and maintaining dysregulated eating. The research literature indicates that there is an association between food cravings and weight management issues, such as binge eating, difficulty maintaining weight loss, and obesity. It has been suggested that food cravings should be a target for interventions to change behaviour for those who are struggling with disordered eating. Through a counselling psychology lens, I conceptualised food cravings as a behavioural response triggered by internal and external cues. This enhanced my practice by working collaboratively with clients to help them to understand their relationship with food, by exploring the function of craved food, for example, is it a distraction from an emotion.

During my time with this service, I have had the opportunity to integrate ACT (Hayes et al., 2012) into my clinical practice with clients. Clients appreciated its applicability to their everyday lives, and that its focus is not on weight, but the relationship with food, and how they have gained an understanding of the function of their eating behaviour. Clients enjoyed the use of metaphors, the validation of their emotional difficulties and greater repertoire of skills to manage their emotions. Although the causes of binge eating disorder are multifactorial, emotional invalidation and regulation are some of the central features in the development and its maintenance (Fairburn, 2013).

ACT (Hayes et al., 1999) shares common philosophical roots with counselling psychology, such as contextualistic approaches, constructivism, narrative psychology, social constructionism, feminist psychology. ACT (Hayes et al., 1999) has an evidence base for being not only an effective psychological therapy, also for its application to organizations, and at a societal level (Bennet & Oliver, 2019).

Drawing all the different threads from my interests in ACT, eating behaviour together and combined with my occupational experience within Public Health and clinical counselling practice. This project channelled these interests and experience. My personal observation is both public health and counselling psychology share the principle of reducing health inequalities, albeit from different angles. As counselling psychology has noted that health inequalities are a social justice issue, this is something that I am passionate about. Combining my interests of eating behaviour, tackling health inequalities and ACT (Hayes et al., 2012) I had a desire to be involved in a project where the findings might contribute to further research work, that has the potential to improve both health outcomes for people, and their quality of life.

## **5.5 Challenges of conducting research**

### *COVID-19 pandemic*

This presented the greatest challenge during this study, an unforeseen event that unfolded in March 2020 with the sudden implementation of social distancing measures. As a result, research activities involving in-person contact were halted. During this period, I shifted my focus towards in-depth research by conducting a comprehensive literature review, and contributed to the

development of two research papers, not related to this thesis, for publication through my work. However, when it became evident that living with the COVID-19 rules were going to be in place for some time, and with discussion with my research supervisors, it was agreed to that adaptation to the project was needed. After extending the literature review to include guided self-help, and online interventions, revision work to my research proposal followed a re-submission to the University's ethics committee for approval, to allow for online recruitment and remote interviews. The initial project design was going to be comparing face to face group intervention and with a self-help intervention, where materials were going to be distributed via email. However, through the re-design meant that the project's materials had to be re-written, from being suitable for an in-person group, changed to being suitable for an online format. The intervention was formed via an iterative method, that incorporated valuable input from a small number of people, (including critical friends and research project supervisors). They read through and tested the prototype iACT- based intervention before it was launched. Although these stages in the development of an internet-based intervention were essential, they took a considerable amount of time, which was not planned for. Due to this and being new to developing an internet-based intervention, at times I felt anxious. In this development phase, I learned how to use Qualtrics software, and to use it in an ambitious way. Qualtrics was designed to be a platform for surveys, and I employed it to deliver a multi-stage intervention, with embedded videos etc, and randomisation features, (although the latter my supervisors helped with). Also, I was concerned about how some of the ACT (Hayes et al., 2012) experiential exercises were going to translate online, hence the pretesting with some critical friends. Fortunately, there are Youtube videos available on the chosen ACT (Hayes et al., 2012) exercises, and my research supervisors were supportive during a difficult and challenging time.

Developing intervention material was an opportunity to immerse myself into the ACT activities, and to practice these, which helped me to understand aim of a particular activity. Although I used existing works to guide this process, there was some tweaking of the materials to make them specific to food cravings. This experience increased my confidence to practice ACT outside of the project, such as within my clinical practice. In addition, my clinical practice employed as a trainee counselling psychologist within an NHS community adult eating disorder service, enhanced my knowledge and practice - which I was able to intertwine within this study's intervention.

### *Ethics*

Moving the research intervention and data collection to being online raised professional and ethical issues of working in this way. Conducting interviews remotely (videocall and telephone) I needed to consider the practical aspects of this change, for example, for both parties' internet connection, willingness and ability to use online platforms, confidentiality, and ensuring that the participants feel safe and secure to talk.

During the pandemic, the BPS (2020) published resources and training materials to prepare psychologists for digital practice. Lee (2010) emphasized the importance of addressing ethical considerations associated with online psychological interventions during the informed consent process. These considerations encompass appropriate concerns or problems for online therapy, potential misunderstandings, the maintenance of professional boundaries, service interruptions, and confidentiality.

### *Data collection, recruitment and retention*

The online recruitment process, which was new to me, proved difficult and took more time than I had anticipated. The project generated interest, however retaining participants until the end of the intervention period was another challenge. I was taken aback by the higher-than-expected dropout rate, which raised concerns as it posed the risk to the statistical plan for this study. As a target of 50 to 60 participants would have been ideal as this would have significantly increased this project's power. However, after nine months of actively recruiting and following discussion with my supervisors where the retention rate was reviewed. It was estimated at the current attrition rate, the recruitment phase would take at least another nine months, so it was agreed that target of 30 participants was adequate, as this was in line with other pilot studies (Frayn et al., 2019). When I scoped the literature on online interventions, I felt slightly reassured that online interventions generally experience high attrition rates. For participants assigned to the GSH method, there was an opportunity to make contact, and I found that establishing a strong rapport from the outset contributed significantly to maintaining engagement.

Another challenge was supporting some of the participants with using the Qualtrics XM Platform© (2005). At the beginning I received several questions from participants who experienced difficulties with using the platform. There were two participants who were interested in the intervention, however, were not able to take part due to technology reasons, so I sent them the modules by email. I did this to ensure that they were not excluded from the study. Although they completed the intervention, their data was excluded from the data set due to missing data.

### *Feedback interviews and contact appointments for GSH group*

When I was conducting the feedback interviews and the contact appointments, I found myself struggling with the change in role, from therapist to researcher. Initially, I approach the interviews and contact appointments from a position of neutrality, and curiosity, as I wanted to maintain a boundary between the different roles, and to remain in the confines of the interview schedule and ethically, only to gain reasonable and appropriate data for the study. However, I did notice that in practice, there were times when I felt a pulled to my theoretical counselling orientation which is humanistic/pluralistic (Cooper & McLeod, 2011), informed by person-centred (Rogers, 1961) principles.

In the literature, researchers (for example, Green & Thorogood, 2009) have concluded that Roger's (1961) core conditions of empathy, unconditional positive regard and congruency towards the participant, can create a sense of security and trust between the researcher and participant, which can contribute greatly when conducting qualitative research. Drawing from my occupational experiences as a trainee, I am aware that people who have difficulties with weight regulation experience feelings of shame, so as a researcher, I felt that it was important to build a rapport and trust with the participants, so they felt safe enough and not judged, to talk about personal experiences as it is a sensitive topic. As participants might feel vulnerable as they talk about their relationship with food and weight as this can provoke feelings of shame, guilt, and stigma (Berman, 2018). To build rapport, when arranging the interview, I informed the participants the topics covered in the interview, before starting the interview I would ask about their day, how they were feeling about partaking in the interview; and asked if they had any questions/concerns. Afterwards I checked how they were feeling and debriefed them. On

reflection, drawing on my counselling psychology principles enhanced my skills and practice as a researcher. Conducting the feedback interviews remotely (e.g., telephone and videocall) personally I was concerned about missing the nuances or misunderstanding the changes in body language. In addition, also the impact of the interruption in the internet connection causing a delay in communication. Other factors were how to work safely, for example in term of risk management, and confidentiality. Although there is a repository of empirical studies demonstrating the efficacy of e-therapies, which can be self-guided or with some, albeit limited support from a therapist, and there is research into how much the presence or absence is needed in specific treatments (Murry & Rucklidge, 2017) as a researcher I found this helpful and reassuring.

There were no raised concerns from the interviews, and if there had been, I knew that there was support available from my supervisors if I felt that I needed to discuss any concerns and/or if anything from the interviews caused me distress. Looking after one's own well-being is a fundamental part of counselling psychology practice as it reduces fatigue and stress (DCoP, 2020).

Despite my reservations of conducting the interviews remotely, I did enjoy the experience of meeting this study's participants and I felt the interviews gave them a voice to express the views in their own words, and their experiences of using the prototype intervention. They provided invaluable insights and considerations for any future internet-based ACT interventions studies. On a professional level, this experience enhanced my confidence to conduct interviews remotely.

### *Quantitative data analysis*

After the completion of data collection, I commenced the data analysis process. This phase proved to be challenging, as I grappled with the complexities of data analysis software, particularly because statistical analysis is not my strongest suit. I was uncertain if the planned data analysis, following the amendments and considering my small sample size, would be suitable. However, I am immensely grateful for the guidance and support provided by Dr. Wendy Nicholls and Dr. Joanne Lloyd, who facilitated the analysis process.

### *Qualitative component: reflexivity*

Berger (2013) described reflexivity as a critical component in qualitative research methodologies, it is a strategy asking researchers to critically engage with their own biases, assumptions, and position throughout the research process, and evidently to knowledge production.

During this research process I had a dual role; one, as a researcher, grounded in empirical scientific rigor, and the other, is valuing the principles of ACT. This exploration reveals my navigation of reflexivity during the participant interviews, the interpretation of accounts and interview process. From my studies in qualitative research methods, and research experiences I was aware of my position of needing to be aware of social desirability bias (Berger, 2013) and reflexivity was a method to detect and limit its effect.

Within the context of this project, and as the researcher who conducted the interviews, and analysed the data, I needed to consider how my interactions with the participants might have

been influenced by my prior assumptions, background, experience (non-clinical and clinical). Raising an important question about the assumptions drawn from the interview data, concerning either knowingly or unknowingly my own position could have impacted on the participant's willingness to express their experience, or shape what was said.

As a person who values ACT and to ensure that I maintained a position of neutrality (as much as possible) during the interview process. As the interviews were audio-recorded this allowed me to take notes on my own reflections on the process, such as how I responded to a participant's answer, my thoughts and feelings, to reveal any patterns and biases. For example, my own reactions to a negative experience of ACT. This reflective process was an iterative one, and it helped me see how my own biases might affect how I understood their account and experiences. For example, how I asked the interview questions, like subconsciously change in voice intonation, may have encouraged the participants to talk about ACT in a positive light. This was a learning process as I noticed this and practiced asking open-ended questions in a neutral and standardized way. I did reflect on how my presence may have influence the participants' responses which has the potential to lead to social desirability bias (Berger, 2013)

During the interviews, I had to be careful not to let my own beliefs get in the way, drawing from ACT principles of acceptance and mindfulness, helped me to be curious about the participants' narratives and experiences. Throughout the data collection process and the duration of the project I maintained a reflexive journal to document personal reflections. From reviewing my journaling, an observation I have noticed was how my opinions and views have changed when it comes to certain aspects of the 'diet culture' and its impact (both positive and negative). This

change has been shaped from reading for this research project and intertwined with my clinical work, within NHS eating disorders community team. This work enhanced my understanding of disordered eating; the impact of this on individual's physical health, mental health and quality of life, and the importance of acceptance. In addition, another observation noted was through learning about ACT and practicing the activities, specifically through identification of my values, I have learnt about myself, my own biases, and assumptions.

### *Personal circumstances*

During the Doctoral course I took a period of leave from my studies due to a change in my financial position. Although this period of absence provided an opportunity to enhance my research skills it also prolonged my research project. I found it hard to return to my studies and to the project because it required a change in mindset and picking up the thread of where I left off was a challenge, as I had to refresh my thinking. During this time, I was unsure if I was going to return to my studies, however as a trainee counselling psychologist, it is important to practice what we teach (Bennett & Oliver, 2019), so I engaged in a values clarification exercise, and this rebooted my motivation and enthusiasm for both the course and my research.

Another challenge was that I returned from my leave of absence at the start of the pandemic (January 2020), and then a couple of months later the course delivery method changed from being in -person to being remotely delivered, where everyone was doing the best during an exceptionally stressful challenging time. Utilizing the "being present" process helped ground me and bring my attention to the here and now, where I connected and appreciated that moment.

Learning and practicing ACT (Hayes et al., 1999) both clinically and personally has had a positive influence on my life, as now I consider my own values when making choices.

During my leave of absence, I had the opportunity to work within a Research & Innovation Team within an NHS Trust. This experience played a pivotal role in developing my project management skills, as I assumed responsibility for the day-to-day management of three externally funded innovation projects. I collaborated closely with clinical staff to recruit participants for these projects, which provided me with valuable insights into research and innovation within the Trust, as well as the contributions of psychology to these domains. I also gained an understanding of NHS research governance and processes, and I had the privilege of co-authoring two peer-reviewed papers that have been published.

### **5.6 Development as a researcher practitioner**

Despite those challenges I have really enjoyed this research project. I appreciate the opportunity to undertake a unique piece of research, whilst learning new skills and, as an early career researcher, I have further tuned my existing research skills. These skills include enhancing my project management and problem-solving skills. Having an adaptive and flexible approach has facilitated overcoming the obstacles encountered during this project. With my supervisors, a personalized research development plan was devised to address and fill gaps in my research knowledge and skills that were needed for this project, such as conducting a literature review, and critically appraising peer-reviewed publications. Other skills include working with a population where weight might be a present concern and potential feelings of shame and stigma. These skills included producing materials in a non-judgmental and empathic manner and

emphasizing that the study was on testing a new prototype skills-based intervention. Producing an intervention online was a first for me, and as part of the development process, having a small number of people a mixture of from the target population and experts in ACT (a work colleague, who was a professional therapist, and research supervisor, WN) to test the prototype before publication was essential and something I have taken away as a researcher. I reviewed the literature on how to develop online interventions, such as design features, and the different development methods and models. Learning about online intervention development is a new addition to my research skill set.

This was the first time I have conducted research via the internet, and at times, I felt out of my comfort zone, especially regarding how to recruit participants online - navigating through the different advertising rules of social media platforms and considering the risks such as confidentiality. To produce an intervention for an online audience, I had to adapt my communication style to meet and engage the target population.

This study has enhanced my knowledge of the practical application of both qualitative and quantitative methods, and the advantages and disadvantages each method has. I have a better understanding of mixed methods design, and its application to feasibility studies. I have also learned how to use software packages such as Qualtrics and enhanced my knowledge of NVivo (QSR International, 2020) for data management and analysis. Previously I had used Excel for thematic analysis.

### *Project's participants*

Overall, this project's exploratory findings were heartening, because they indicated that an iACT based intervention could be a viable approach, capable of producing changes within a relatively short timeframe. This reaffirmed my belief in the efficacy of ACT (Hayes et al., 2012) as an intervention and its potential to resonate with individuals, offering real benefits. Participants appreciated the diversity of strategies provided, allowing them to select those most effective for their unique situations, intensity, and frequency of food cravings.

However, introducing the ACT (Hayes et al., 2012) process of acceptance or willingness to a client can be a hard sell because understandably, people want to get rid of unpleasant internal experiences such as anxiety and a goal might be to eliminate craving, so asking them to make room for it can feel at odds for a person. As a trainee I reflected on this and in clinical supervision discussed introducing this process through the lens of curiosity and explaining what acceptance is and is not. When the intervention was being designed this experience shaped the format of the content and has enhanced my clinical practice.

### *Integrating into practice*

Summarily, I found that ACT (Hayes et al., 2012) offered greater flexibility and creativity compared to other therapeutic modalities I have been trained in, as it can be tailored to meet the specific needs of clients. The outcomes of this small-scale project have instilled in me the confidence to incorporate ACT (Hayes et al., 2012) as a brief intervention within my current clinical practice, involving clients, caregivers, and healthcare professionals. Within my current team, we are in the early stages of piloting workshops for individuals on the waiting list for

psychological interventions for binge eating disorder. These workshops are designed to be psychoeducational, offering ACT-based strategies to manage symptoms, particularly food cravings.

Upon reflection, there are notable differences between the prototype internet-based ACT intervention for managing food cravings and traditional face-to-face in-person Acceptance and Commitment Therapy session. While the online format increases accessibility, convenience, and scalability, certain features inherent to face-to-face therapy are absent in this approach.

In traditional in-person an ACT intervention, the initial session often serves as an important assessment phase, where the therapist can assess the client's suitability for ACT, tailor the approach to the client's specific needs, and establish a therapeutic relationship. This personalized assessment is more difficult to replicate in an internet-based setting, where participants engage with the material without that individualized, real-time interaction. In contrast, the online format is more standardized, offering a fixed structure of the intervention, which may not allow for the same degree of individual tailoring.

Moreover, the human connection, body language, and real-time feedback present in face-to-face appointments can be important for building trust and rapport, especially when dealing with sensitive topics like food cravings. While internet-based interventions provide flexibility, it may be challenging to create the same level of immediate, nuanced interaction that face-to-face sessions allow. That said, the trade-off between accessibility and personalization is acknowledged, and the aim of this online prototype is to provide a widely accessible and scalable solution that complements, rather than replaces, in-person therapy.

It would be interesting to explore in future iterations how technology (such as video calls or interactive assessments) might bridge some of these gaps to offer more personalized support within an online platform.

Through my research supervisor, Dr Wendy Nicholls, an NHS Weight Management Service has expressed an interest in this project's prototype intervention.

### **5.7 Future plans**

As I approach the conclusion of my Doctoral training and continue through the NHS preceptorship scheme, I am enthusiastic about contributing to my current clinical team's service development, and research/evaluation projects. I am an active member of the Trust's Psychology Research Group, where I contribute to the advancement of research, evaluation, and audit projects by reviewing proposals and providing feedback.

Currently I am an integral part of an internal project team dedicated to evaluating the efficiency of a GSH intervention for binge eating disorder. This intervention is recommended by NICE guidelines 'Eating Disorders: recognition and treatment (ng69)' (2017). The evaluation was triggered due to change in delivery format, from being in-person, to being delivered through remote methods such as telephone and/or videocalls. The change was in response to the COVID-19 and there is little evidence in the literature regarding effectiveness of this intervention being delivered remotely. The aim of the evaluation was to investigate the effectiveness of GSH approach, and that quality of care has not been affected by this change.

It is a personal ambition of mine, to advocate Patient and Public Involvement (PPI, National Institute for Health Research, INVOLVE, 2016) in the research process because patients/service users are at the heart of healthcare, as any change in service fundamentally impacts them. PPI means to me, involving people in all aspects of the research process as partners rather than as participants. PPI expertise can provide insights, contributions and experience means that we can do the right research which will improve aspects of healthcare.

This critical appraisal has reflected my experiences and challenges that were encountered during this project's cycle, from design to implementation. Personally, I have learnt a lot about myself, and I am so pleased and appreciate the opportunity to carry out this study. Professionally, I have gained skills and knowledge which I hope to continue to utilise through by undertaking research opportunities via my employment. Although the Doctoral course has been challenging at times, I appreciated and relished the opportunity. The clinical placements provided a window to experience of working in unique services; as well as to enhance implementing psychological theory in a clinical setting, and finally to have been involved in healthcare-based research projects. While acknowledging that this research project may not be flawless, I firmly believe that it has served as an invaluable learning opportunity for me. Next, I plan to produce a research article for submission to in a peer- journal (Manuscript paper for submission, please see Confidential Appendix). I am passionate about research and value its contribution to the profession, to healthcare, to staff wellbeing, communities and society.

## Chapter 6: References

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## Chapter 7. Appendices

### Appendix 7.0: BMI Classifications

**Table 7.0:** BMI classifications for adults

<b>Classifications</b>	<b>*BMI kg/m<sup>2</sup> range</b>
Underweight	Under 18.5
Healthy weight	18.5 to 24.9
Overweight	25 to 29.9
Obesity class 1	30 to 34.9
Obesity class 2	35 to 39.9
Obesity class 3	40 or more

Note: These ranges do vary according to age, and ethnicity. People with a South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean family background are prone to central adiposity and cardiometabolic risk occurs at a lower BMI.

Source: (NICE, 2023, p.9)

## Appendix 7.1: Permission from author

**From:** Joseph Ciarrochi  
**Sent:** 09 September 2019 21:04  
**To:** Pollard, Lorraine  
**Subject:** Re: Permissions query

Hi Lorraine, I am totally happy for you to use the exercises for research. Do keep me updated with how your trial goes

Best  
Joseph

**Professor Joseph Ciarrochi**  
**Institute for Positive Psychology & Education**  
**Australian Catholic University**



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## Appendix 7.2: Consent questions

(via Qualtrics however paper version will be available on request)

### Qualtrics version:

**Study Title:** A pilot study Acceptance and commitment therapy skills-based internet intervention for food cravings: comparing guided self-help and self-help.

**Name of Researcher:** Lorraine Pollard

I confirm that I have read and understand the information sheet and have had the opportunity to ask or email questions. Yes/No

I understand that my participation is voluntary and that I am free to withdraw my data up to the point of data analysis, without giving any reason. Yes/No  
(By November 2022)

I understand that my data will be stored securely and confidentially and that I will not be identifiable in any report or publication.

Yes/No

I understand that the researcher may wish to publish this study and any results found, for which I give my permission.

Yes/No

I agree for my feedback interview to be audio recorded for the data to be used for this study. Yes/No

I agree to take part in the above study. Yes/No

### Note:

*Qualtrics was beset so all answers will need to be answered before they can move to the next section.*

## Appendix 7.3: Project information for participants



### Participant Information Sheet

#### **Study Title: Comparing Acceptance & Commitment skills-based online course: guided self-help Vs self-help for Food Cravings.**

You are being invited to take part in a research study. Please take time to read the following information carefully. Please ask if there is anything that is not clear or if you would like more information. Take time to decide if you wish to take part. Thank you for reading this.

About me: My name is Lorraine Pollard; I am a trainee Counselling Psychologist studying at the University of Wolverhampton and completing this research project is part of my training.

#### **What is the purpose of the study?**

The purpose of this study is to investigate how well a coaching technique called Acceptance and Commitment Therapy (ACT) works to help people deal with food cravings. ACT uses exercises to help people accept and cope with difficult feelings and thoughts, and we believe that using this approach to deal with food cravings could help people with their weight management goals. Please note, that this study it is not a diet plan or exercise programme, and the researcher is unable to offer advice on exercise or diet, so if you have concerns about your weight, we recommend you discuss this with a GP. The researcher will not be providing any advice or comments on anyone's weight, or body shape for example, being underweight or overweight.

#### **Who can take part in the study?**

We are looking for participants aged 18 years and over, who have previously tried a weight loss strategy and have internet access. The study is not suitable for anyone who has ever been or under medical/professional supervision for eating or weight related issues, or who is in contact with counselling or mental health services. It is also unsuitable for pregnant ladies, and for anyone currently following a weight management programme (e.g., Sliming World, Weight Watchers) as it may conflict with work being undertaken in these programmes.

#### **What will happen if I decide to take part?**

This study involves around 90 minutes a week, for 3 weeks, taking part in acceptance and commitment training. Because we are comparing 2 different ways of doing the training, you will be randomly allocated to either one of the following options:

1. Guided self-help option will be through a link to 1 online module per week for 3 weeks. The researcher will login weekly to review, check progress and answer any questions you might have.

2. Self-help independent option will be through a weekly link to each module, and it can be worked through at your pace over the week. The researcher will contact you at the end of the 3 weeks to review, debrief and answer any questions you might have.

There will be no difference in the content of the workbook, only the delivery method is different.

You will also be asked to complete some brief questionnaires before you begin, after each module of the workbook, at the end of training and then 4 weeks later, to help us to see whether the training has been helpful. You will also be invited to participate in an optional 10 to 20-minute interview at the end of the course.

### **Do I have to take part?**

Taking part in the research is entirely voluntary. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw your data without giving any reason, up to 2 weeks after completing this training course. All you need to do is contact the researcher, Lorraine Pollard on the below email address, with your participant code and state that you would like to withdraw from the study.

Each participant will be assigned a code to maintain confidentiality and anonymity. Only the researcher and, if requested, the project's supervisors will be able to access this. It will be kept on password protected spreadsheet stored on the University's secure drive, which is password protected and has a firewall. This will be only accessible to the researcher as it has a unique password. The spreadsheet will be kept separate from any other electronically stored information on the researcher's file. The participants' email address will be collected and stored separately from the data collected from questionnaires and the feedback interview.

If you start the workbook and then stop, unless otherwise stated, the researcher will presume consent to use the already collected data.

### **What will happen if I consider myself as disabled?**

If you have a disability, please let the researcher know how best to adjust the materials.

### **What are the potential benefits and risks of taking part?**

The potential benefits of the study are that you will learn skills to manage food cravings which could help you to maintain a weight that you are comfortable with.

There are no risks to you in taking part outside of those you would experience in everyday life. You will be asked about your feelings about eating, and about your mood, including symptoms of low mood. Some of the exercises will ask you to reflect on these things. If you feel uncomfortable with this, you may wish to decide not to take part. If you find anything upsetting at any point in the study, please do contact the researcher. You will be given the option to take a break or to leave the study completely and will not be asked to give a reason. If you feel like you need to speak with someone or are experiencing any feelings of distress, you may wish to contact

your GP (or A&E or NHS 111 for urgent issues). University of Wolverhampton students can access The University's Mental Health and Wellbeing Team (ssw@wlv.ac.uk; (01902) 321074)

### **Will my taking part in the study be kept confidential?**

All the information about your participation in this study will be used for research purposes only and will be kept confidential. Only the researchers/supervisors and examiners (if requested) working on the project will have access to the information. They will be unable to identify any individual participants, as the data will be anonymised by using codes on the questionnaires.

The post study interviews will be audio recorded using a Dictaphone, with your consent. Recordings will be transferred within 24 hours to a password protected computer with a secure drive, and firewall, and anonymised through the removal of any identifying information. Recordings will be deleted as soon as they have been transcribed.

You will not be identifiable in any publication or report as the data will be grouped together and all identifying information will be removed. All data and contact details will be collected by the researcher, saved on a password protected computer and once the study is completed contact data will be destroyed, but anonymised data will be kept for 5 years as in line with the University Data Storage Policy. The findings from the study may be published in a journal article or conference paper, but you will not be individually identified.

### **What will happen at the end of the research study?**

I will analyse the data and write up my research report, there is a possibility that it might be published. If you wish I can provide you with a summary of my findings and a copy of the published results. So please let me know if you would like to obtain a copy/or have any questions or concerns about any aspect of the research.

### **What if I have a problem or concern?**

If you have a concern about any aspect of this study, please do not hesitate to ask me or my research supervisors, contact details are below, we will do our best to answer your questions.

### **What if I have a complaint about this study?**

If you have a complaint about this study please contact Professor Silke Machold, Dean of Research, who is independent of this study, on the following contact details: email address: s.machold@wlv.ac.uk, telephone number: 01902 32 3970 or write to The Research Hub, MD150, Ambika Paul Building, Faculty of Social Sciences, University of Wolverhampton, Wulfruna Street, Wolverhampton, WV1 1LY.

### **Who has reviewed the study?**

The Faculty of Education, Health and Wellbeing Ethics Panel (Health Professions, Psychology, Social Work & Social Care), University of Wolverhampton reviewed and approved the study.

### **What do I do next?**

If you wish to take part in this study, please complete the consent form, this will be online. A link to this will be emailed to you. Once this is completed, there will be a small number of questions asking for some basic background information about you, such as your age, gender,

ethnicity, height, and weight. We will ask you for your email address to send links to the workbook, your participant code, which group you have been assigned to and questionnaires. For those assigned to the guided self-help option the researcher will ask for your preferred contact method and will be in contact with you to arrange the first follow up session via be telephone or online.

**Contact for further information.**

My contact details: Lorraine Pollard, Wolverhampton University. Email: [e-mail address redacted]

Supervisors: Dr Wendy Nicholls: [e-mail address redacted]; Dr Joanne Lloyd: [e-mail address redacted]

## **Appendix 7.4: Recruitment advertisement**

Calling for volunteers!

Have you been trying to lose weight or eat healthily, but get tripped up by food cravings?

Would you like to learn new skills that could help you manage those cravings and may help with long term weight control or healthy eating?

If so, would you consider participating in a research study.

My name is Lorraine Pollard, I am a trainee counselling psychologist studying at the University of Wolverhampton. As part of my training, I am carrying out research into ways to help people manage their food cravings.

### **What is the aim of the research project?**

To investigate if an online course can help people to manage their food cravings to support with weight management goals. The course is aimed to develop new skills to manage and react to feelings and cravings around food.

There is no diet or exercise plan involved. You'll find no recipes and no information on nutrition, and we won't be discussing things like how many calories are in biscuits versus muffins. The researcher will not be providing any advice or comments on anyone weight, or body shape for example, being underweight or overweight.

### **What does it involve?**

I am looking for volunteers to take part in a FREE 3-week long online course, involving completing some questionnaires and 3 modules. Each module takes 30 to 45 mins to complete. These will be issued weekly, and course will start after you have signed up or on a date the best suits you. Some of you will be assigned randomly to a group where support from researcher will be available, whilst others will be working through the course independently.

### **Who can take part?**

If you think you might be interested, aged 18 years and over, and have previously tried a weight loss strategy e.g., attending diet programme or/and exercise classes then please contact the researcher via the details below.

Unfortunately, this study, is not suitable for people who pregnant, have a medical or psychological condition that affects their eating; and those who are already following a supported diet programme like Weight Watchers, Slimming World etc.

**Contact details:** If you would like to find out more, please contact me on [e-mail address redacted] and I will send you the full details of what is involved, and who can take part. Alternatively click on the Qualtrics link or scan the QSR code below.

Please feel free to forward this information to others who might be interested.

## Appendix 7.5: The Dutch Eating Behaviour Questionnaire

### DEBQ-EE

Please read each question and then decide whether each item is true in relation to you using the following rating scale: **never, rarely, sometimes, often or very often**. Circle the number that corresponds to your rating. Please respond to all items, making sure that you circle the number for the rating that is true about you. If you make a mistake or need to change an answer, put a cross through the circled answer and then circle the correct answer.

	<i>Never</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Very Often</i>	<i>Often</i>
1. Do you have a desire to eat when you are irritated?	1	2	3	4	5
2. Do you have a desire to eat when you are depressed or discouraged?	1	2	3	4	5
3. Do you have a desire to eat when you are cross?	1	2	3	4	5
4. Do you have a desire to eat when you are approaching something unpleasant to happen?	1	2	3	4	5
5. Do you have a desire to eat when you are anxious, worried or tense?	1	2	3	4	5
6. Do you have a desire to eat when things are going against you or when things have gone wrong?	1	2	3	4	5
7. Do you have a desire to eat when you are frightened?	1	2	3	4	5
8. Do you have a desire to eat when you are disappointed?	1	2	3	4	5
9. Do you have a desire to eat when you are emotionally upset?	1	2	3	4	5
10. Do you have a desire to eat when you have					

nothing to do? 1 2 3 4 5

11. Do you have a desire to eat when you are feeling

lonely? 1 2 3 4 5

12. Do you have a desire to eat when somebody lets

you down? 1 2 3 4 5

13. Do you have a desire to eat when you are

bored or restless? 1 2 3 4 5

Reference:

van Strien, T., Fritjers, J.E.R., Bergers, G.P.A., & Defares, P.B. (1986). The Dutch eating behavior questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *International Journal of Eating Disorders*, 5, 295-315.  
[https://doi.org/10.1002/1098-108X\(198602\)5:2%3C295::AID-EAT2260050209%3E3.0.CO;2-T](https://doi.org/10.1002/1098-108X(198602)5:2%3C295::AID-EAT2260050209%3E3.0.CO;2-T)

## Appendix 7.6: Acceptance and Action Questionnaire for Weight-related

### Difficulties questionnaire (AAQW)

#### AAQ-Wa

Below you will find a list of statements. **Please rate the truth of each statement as it applies to you.** Use the following scale to make your choice.

1	2	3	4	5	6	7
Never True	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true

- 1 2 3 4 5 6 7      1. It's OK to feel fat
- 1 2 3 4 5 6 7      2. When I have negative feelings, I use food to make myself feel better
- 1 2 3 4 5 6 7      3. I try to suppress thoughts and feelings that I don't like about my body or weight by just not thinking them
- 1 2 3 4 5 6 7      4. I am not in control of what I eat
- 1 2 3 4 5 6 7      5. I try hard to avoid feeling bad about my weight or how I look
- 1 2 3 4 5 6 7      6. I am in control of how much I physical activity I do
- 1 2 3 4 5 6 7      7. When I evaluate my weight or my appearance negatively, I am able to recognize that this is just a reaction, not an objective fact.
- 1 2 3 4 5 6 7      8. In order to eat well and do physical activity, I need to feel like it
- 1 2 3 4 5 6 7      9. I need to feel better about how I look in order to live the life I want to
- 1 2 3 4 5 6 7      10. Other people make it hard for me to accept myself

AAQ-Wb (cont.)

Imagine that the following thoughts occurred to you right now. **How valid or believable would each be?** For each question, please circle a number from 1 through 7.

Scale							
1	2	3	4	5	6	7	
Not at all believable						Completely believable	
1 2 3 4 5 6 7							1. If I'm overweight, I can't live the life I want to
1 2 3 4 5 6 7							2. If I feel unattractive, there is no point in trying to be intimate
1 2 3 4 5 6 7							3. If I gain weight, that means I have failed
1 2 3 4 5 6 7							4. I'm in control of my eating behavior
1 2 3 4 5 6 7							5. I don't have what it takes to be healthy for life
1 2 3 4 5 6 7							6. My eating urges control me
1 2 3 4 5 6 7							7. I need to get rid of my eating urges to eat better
1 2 3 4 5 6 7							8. I am a stable person
1 2 3 4 5 6 7							9. If I eat something bad, the whole day is a waste
1 2 3 4 5 6 7							10. I should be ashamed of my body
1 2 3 4 5 6 7							11. I need to avoid social situations where people might judge me

1 2 3 4 5 6 7      12. I will always be overweight

Reference:

Lillis, J., & Hayes, S.C., (2008). Measuring avoidance and inflexibility in weight related problems. *International Journal of Behavioral Consultation and Therapy*, 4(4), 348-354. <https://doi.org/10.1037/h0100865>.

## Appendix 7.7: Food Craving Inventory- UK

Below is a list of food that people sometimes crave. For each item of food, first tick the column that describes how often you have craved the food - from Never to Always. Then secondly, tick the column to tell us how often you have given in to the craving, again from never to always, and finally tell us how hard it was to resist your craving.

		Craving					Giving In					Difficulty				
		1. Over the past month, how often have you experienced a craving for the food?					2. Of these times in the past month during which you craved a particular food, how often did you "give in" to the craving and eat the food?					3. How difficult was it to resist temptation?				
		Never	Rarely	Sometimes	Often	Always/almost every day	Never	Rarely	Sometimes	Often	Always/almost every time	Easy	A bit difficult	Difficult	Very difficult	So difficult that I gave in
1	Bacon															
2	Baked potato															
3	Biscuits															
4	Bread															
5	Burger															
6	Cake															
7	Chocolate															
8	Curry															
9	Fast Food															
10	French Fries or chips															
11	Fried Chicken															
12	Gravy															
13	Hot dog															
14	Ice cream															
15	Ice lolly															
16	Mashed potato															

		Craving					Giving In					Difficulty				
		1. Over the past month, how often have you experienced a craving for the food?					2. Of these times in the past month during which you craved a particular food, how often did you "give in" to the craving and eat the food?					3. How difficult was it to resist temptation?				
		Never	Rarely	Sometimes	Often	Always/almost every day	Never	Rarely	Sometimes	Often	Always/almost every time	Easy	A bit difficult	Difficult	Very difficult	So difficult that I gave in
17	Pasta															
18	Pasties or Savoury Pies															
19	Pizza															
20	Popcorn															
21	Rice															
22	Sausage															
23	Steak															
24	Sweets															

Reference:

Nicholls, W. & Hulbert-Williams, L. (2013) British English translation of the Food Craving Inventory (FCI-UK). *Appetite*: 67. Available at <https://doi.org/10.1016/j.appet.2013.03>.

## Appendix 7.8: Participants debrief sheet.



### Participant Debrief Sheet

#### **Study Title: Comparing Acceptance & Commitment skills-based guided self-help intervention and self-help for food cravings.**

Firstly, I the researcher would like to say, “Thank you for your time and participation in this study”. This debrief sheet is to explain about the project and its’ aims. The purpose of this study which was to investigate how well a coaching technique called Acceptance and Commitment Therapy (ACT) works to help people manage food cravings. There is research evidence that shows the ACT can be helpful for mental health, physical health, and wellbeing. The researcher wanted to investigate this approach to see if this could be applied to food cravings as these are considered one of the biggest obstacles people face in diet control, as people struggle with the management of them. The cravings have been described as intrusive and often people feel distressed when they abstain from eating certain foods. The ACT approach is skill based aimed to help people accept and cope with difficult feelings and thoughts, and the researcher believes that using this approach to deal with food cravings could help people with their weight management goals.

Due to the pandemic, COVID-19 and guidance on social distancing, we have witnessed a step change in how we work, resulting in remote working and in non-contactable way. For example, commercial weight and diet companies, like Weight Watchers have moved to offering an online service to its members. In keeping with this change this study was offered online. This study offered a brief online course aimed to compare two different ways of delivering the course, purely self-help and guided self-help, as the researcher wanted to investigate which one is more effective in supporting people to manage their food cravings.

The data collected from the questionnaires and from the interviews will be analysed by the researcher (Lorraine Pollard), and the findings will hopefully go on to inform what we know about helping people to manage their weight; to go on to inform further interventions on weight management and the development of early intervention programmes for health promotion.

There is a possibility that it might be published. If you wish I can provide you with a summary of my findings and a copy of the published results. So please let me know if you would like to obtain a copy/or have any questions or concerns about any aspect of the research.

#### **Support:**

The study was not about diet nor about losing weight so if you have concerns about your weight, we recommend you discuss this with a GP.

If you feel like you need to speak with someone or are experiencing any feelings of distress, you may wish to contact your GP (or A&E or NHS 111 for urgent issues). University of Wolverhampton students can access The University's Mental Health and Wellbeing Team (ssw@wlv.ac.uk; (01902) 321074)

If you have any further questions or concerns, please feel free to contact me or my research project supervisors on the contact details below:

**Contact for further information:**

My contact details: Lorraine Pollard, Wolverhampton University. Email:[e-mail address redacted]  
Supervisors: Dr Wendy Nicholls [e-mail address redacted]; and Dr Joanne Lloyd [e-mail address redacted]

**What if I have a complaint about this study?**

If you have a complaint about this study please contact Professor Silke Machold, Dean of Research who is independent of this study, on the following contact details: email address: [e-mail address redacted], telephone number: [number redacted] or write to The Research Hub, MD150, Ambika Paul Building, Faculty of Social Sciences, University of Wolverhampton, Wulfruna Street, Wolverhampton, WV1 1LY.

For concerns/complaints in relation to data protection, please contact the University of Wolverhampton's Data Protection Officer, contact details email via dataprotection@wlv.ac.uk or telephone number: 001902 32 1000 or write to Data Protection, Offices of the Vice Chancellor, University of Wolverhampton, Wulfruna Street, Wolverhampton, WV1 1LY.

## **Appendix 7.9: Guide self-help contact script**

### **Guided self-help prompt sheet**

Participant number:

Number of contacts: 1, 2 or 3

Date and time of contact:

Contact method:

Duration of contact 5 to 10mins at day 7 after the module has been sent to the participant.

#### **Prompts:**

1. Have you completed the module?  
If not, are you planning to? If not, how comes?
2. Have you practised any of the exercises?  
If so, which ones? And would/are you using them? If not, what are the barriers to practising them?
3. Do you think the module has met your needs and expectations, if so, how?
4. Has the module been helpful? If so, what has been helpful? And if not, what's not been helpful

## Appendix 7.10: SPSS Tests for assumptions

Table 7.1. The outcome of the Shapiro-Wilk for all outcome variables and conditions

<b>Tests of Normality</b>							
	Group	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Baseline_AAQW_Sum	GSH	.081	15	.200*	.990	15	.999
	SH	.112	15	.200*	.966	15	.792
Post_AAQW_M3	GSH	.090	15	.200*	.985	15	.993
	SH	.140	15	.200*	.941	15	.395
Baseline_DEBQ_Sum	GSH	.199	15	.113	.923	15	.211
	SH	.101	15	.200*	.959	15	.672
Post_DEBQ	GSH	.223	15	.042	.932	15	.293
	SH	.129	15	.200*	.977	15	.947
Craving baseline	GSH	.192	15	.143	.907	15	.121
	SH	.140	15	.200*	.965	15	.786
FCI_cravings_post	GSH	.130	15	.200*	.951	15	.536
	SH	.143	15	.200*	.944	15	.437
Giving in baseline	GSH	.089	15	.200*	.978	15	.957
	SH	.104	15	.200*	.973	15	.899
FCI_Givingin_post	GSH	.111	15	.200*	.968	15	.826
	SH	.094	15	.200*	.986	15	.995
Diff_baseline	GSH	.123	15	.200*	.987	15	.997
	SH	.149	15	.200*	.939	15	.369
FCI_Difficulty_post	GSH	.149	15	.200*	.932	15	.288
	SH	.138	15	.200*	.963	15	.738

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 7.2. The Mauchly's test for sphericity for AAQW and DEBQ

**Mauchly's Test of Sphericity<sup>a</sup>**

Within Subjects Effect	Measure	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon <sup>b</sup>		
						Greenhouse-Geisser	Huynh-Feldt	Lower-bound
time	baseline	1.000	.000	0	.	1.000	1.000	1.000
	post	1.000	.000	0	.	1.000	1.000	1.000

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + Group  
Within Subjects Design: time

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Table 7.3. The Mauchly's test for sphericity for food cravings

**Mauchly's Test of Sphericity<sup>a</sup>**

Measure: MEASURE\_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon <sup>b</sup>		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	1.000	.000	0	.	1.000	1.000	1.000

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + Group  
Within Subjects Design: Time

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Table 7.4 Box's test of equality for AAWQ and DEBQ-EE

**Box's Test of Equality of Covariance Matrices<sup>a</sup>**

Box's M	18.004
F	1.519
df1	10
df2	3748.207
Sig.	.126

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Group  
Within Subjects Design: time

Table 7.5 Box's test for equality for food cravings

**Box's Test of Equality of Covariance Matrices<sup>a</sup>**

Box's M	2.999
F	.922
df1	3
df2	141120.000
Sig.	.429

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Group  
 Within Subjects Design: Time

Table 7.6. Levene's test for homogeneity of variances for AAQW and DEBQ

**Levene's Test of Equality of Error Variances<sup>a</sup>**

		Levene Statistic	df1	df2	Sig.
Baseline_AAQW_Sum	Based on Mean	1.361	1	28	.253
	Based on Median	1.214	1	28	.280
	Based on Median and with adjusted df	1.214	1	23.986	.281
	Based on trimmed mean	1.333	1	28	.258
Baseline_DEBQ_Sum	Based on Mean	.041	1	28	.840
	Based on Median	.126	1	28	.725
	Based on Median and with adjusted df	.126	1	27.480	.725
	Based on trimmed mean	.031	1	28	.862
Post_AAQW_M3	Based on Mean	.010	1	28	.920
	Based on Median	.015	1	28	.904
	Based on Median and with adjusted df	.015	1	27.913	.904
	Based on trimmed mean	.012	1	28	.913
Post_DEBQ	Based on Mean	.031	1	28	.863
	Based on Median	.056	1	28	.815
	Based on Median and with adjusted df	.056	1	27.676	.815
	Based on trimmed mean	.037	1	28	.848

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Group  
 Within Subjects Design: time

Table 7.7 Levene's test for homogeneity of variances for Food Cravings

**Levene's Test of Equality of Error Variances<sup>a</sup>**

		Levene Statistic	df1	df2	Sig.
Craving baseline	Based on Mean	.329	1	28	.571
	Based on Median	.266	1	28	.610
	Based on Median and with adjusted df	.266	1	25.938	.610
	Based on trimmed mean	.353	1	28	.557
FCI_cravings_post	Based on Mean	.348	1	28	.560
	Based on Median	.264	1	28	.611
	Based on Median and with adjusted df	.264	1	26.159	.612
	Based on trimmed mean	.334	1	28	.568

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

- a. Design: Intercept + Group  
Within Subjects Design: Time

## **Appendix 7.11: Follow up interview schedule.**

*Note: Consent for the interview to be audio recorded gained at the start of the interview*

1. What prompted you to participate in this study?
2. What was your experience of the online course?
3. Have you used previously used any eating/weight management strategies in the past? If so, how do compare with this study?
4. What would you say was the most helpful of the course?
5. What would you say was the least helpful of the course?
6. Have you noticed any changes towards managing food cravings?
7. Have you noticed any other changes e.g., weight changes; in physical activity; change in eating habits, or types of foods?
8. Would you recommend Acceptance and Commitment Therapy to a friend/family member?
9. If this study was re-run, what changes do you think would be needed?
10. Do you have any comments or anything you would like to add?