

A Thesis Submitted to the University of Birmingham
for the degree of
Doctor of Clinical Psychology

Volume I: Research Component

**Literature Review: Efficacy of Third Wave Cognitive and Behavioural Interventions for
Eating Disorders**

Research Paper: Emotion Regulation and Eating Psychopathology in Women

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Dedication

I would like to thank my fiancé, family and friends for all their support and patience while I endeavoured to complete clinical training and write up my thesis.

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Thank you to my research supervisors, Newman Leung and Gill Harris, for all their time, expertise and encouragement in carrying out the research and writing up the thesis.

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Overview

This thesis is submitted in part fulfilment of the requirements of the degree of Doctor of Clinical Psychology (Clin.Psy.D) at the University of Birmingham. It comprises a research and clinical volume.

Volume I is the research component of the thesis. It contains two papers. The first is a systematic literature review of the efficacy of third wave cognitive and behavioural interventions for eating disorders. The second is an investigation into the relationship between emotion regulation and eating psychopathology in women. Both papers have been prepared for submission to the *International Journal of Eating Disorders*. Finally, a public domain article is provided (Appendix A), which outlines the aims and results of the literature review and empirical paper.

Volume II is the clinical component of the thesis. It contains four clinical practice reports. The first is a case study of a 42 year old man presenting with anger related difficulties which are formulated from cognitive and psychodynamic perspectives. The second is an evaluation of quality of life, therapeutic relationships and therapeutic milieu within a forensic inpatient setting. The third is a single case experimental design, evaluating a behavioural intervention for challenging behaviour, used with a three year old girl with Angelman Syndrome. The fourth is a case study of psychological work carried out with a 75 year old man residing on an acute inpatient assessment unit. Volume II also contains the abstract of a fifth clinical practice report. This relates to an oral presentation about an application of Lego© Group Therapy for young people with autism spectrum difficulties within a tier three Child and Adolescent Mental Health Service.

The thesis has been formatted in accordance with American Psychological Association guidelines. Throughout the thesis, all identifying information has been changed in order to preserve the anonymity of clients and participants.

CONTENTS
VOLUME 1: RESEARCH COMPONENT

I	LITERATURE REVIEW	1
	Efficacy of Third Wave Cognitive and Behavioural Interventions for Eating Disorders: A Literature Review	
	Abstract	2
1.0	Introduction	3
1.1	Eating Disorders: Overview of Nature and Aetiology	3
1.2	Eating Disorders: Overview of Treatment	5
1.3	Conceptualisation of Third Wave Cognitive and Behavioural Therapeutic Approaches	6
1.4	Aim	8
2.0	Method	9
2.1	Literature Search Strategy	9
2.2	Methodological Quality Assessment	9
2.3	Treatment Efficacy Assessment	10
3.0	Results	11
3.1	Review of the Literature: Acceptance and Commitment Therapy studies	12
3.1.1	Introduction to ACT	12
3.1.2	ACT Studies: Description and Critique	12
3.1.2.1	ACT for Anorexia Nervosa	14
3.1.2.2	ACT for Subclinical Eating Difficulties	15
3.1.2.3	Treatment Efficacy of ACT for Eating Disorders	15
3.2	Review of the Literature: Mindfulness Studies	16
3.2.1	Introduction to Mindfulness	16
3.2.2	Mindfulness Studies: Description and Critique	16
3.2.2.1	Mindfulness for Bulimia Nervosa	19
3.2.2.2	Mindfulness for Binge Eating	19
3.2.2.3	Mindfulness for Bariatric Surgery	20
3.2.2.4	Treatment Efficacy of Mindfulness approaches for	21

	Eating Disorders	
3.3	Review of the Literature: Dialectical Behaviour Therapy Studies	22
3.3.1	Introduction to DBT	22
3.3.2	DBT Studies: Description and Critique	22
3.3.2.1	DBT for Binge Eating Disorder	27
3.3.2.2	DBT for Bulimia Nervosa	28
3.3.2.3	DBT and Adolescents	29
3.3.2.4	DBT and Co-morbid Personality Disorder	30
3.3.2.5	Treatment Efficacy of DBT Approaches for Eating Disorders	32
4.0	Discussion	33
	References	36
II	EMPIRICAL PAPER	45
	Emotion Regulation and Eating Psychopathology in Women	
	Abstract	46
	Introduction	47
	Method	51
	Results	55
	Discussion	60
	References	66
III	APPENDICES	
	Appendix A Public domain briefing paper	
	Appendix B Quality assessment tool	
	Appendix C Questionnaire measures	
	Appendix D Letters confirming ethical approval	
	Appendix E Letter of invitation and Participant information sheet	
	Appendix F Journal details and instructions to authors	

TABLES AND FIGURES
VOLUME 1

I LITERATURE REVIEW

Efficacy of Third Wave Cognitive and Behavioural Interventions for Eating Disorders: A Literature Review

Table 1	Criteria for Empirically-Validated Treatments	10
Table 2	Summary Table of Acceptance and commitment Therapy Studies	13
Table 3	Summary Table of Mindfulness Studies	17
Table 4	Summary Table of Dialectical Behaviour Therapy Studies	23

II EMPIRICAL PAPER

Emotion Regulation and Eating Psychopathology in Women

Table 1	Non-Parametric Comparison of Difficulties in Emotion Regulation, Eating Psychopathology, Affect, Age and Body Mass Index	56
Table 2	Spearman's Rho Correlation Coefficients for Eating Psychopathology and Difficulties in Emotion Regulation	57
Table 3	Hierarchical Regression Analysis Predicting EDE-Q Shape and Weight Concern as Functions of Anxiety, Depression and Awareness Difficulties in the Comparison Group	58
Table 4	Hierarchical Regression Analyses Predicting Weight Concern, Restraint, Eating Concern and Shape Concern as Functions of Anxiety, Depression and Impulse Control Difficulties in the Clinical Group	59

CONTENTS
VOLUME 2: CLINICAL PRACTICE REPORTS

I	CLINICAL PRACTICE REPORT 1	1
	Psychological Models Report:	
	Cognitive and Psychodynamic Formulations of the Anger-related Difficulties Experienced by Mohammed, a 42-year-old Man Referred to Forensic Services	
II	CLINICAL PRACTICE REPORT 2	23
	Service Evaluation:	
	An Evaluation of Quality of Life, Therapeutic Relationships and Therapeutic Milieu within a forensic inpatient setting.	
III	CLINICAL PRACTICE REPORT 3	47
	Single Case Experimental Design:	
	The Case of a Three Year Old Girl with Angelman Syndrome Presenting With Challenging Behaviour: Effectiveness of a Behavioural Intervention as Part of a Proof of Concept Investigation.	
IV	CLINICAL PRACTICE REPORT 4	74
	Case Study:	
	A Case Study of Psychological Work Carried Out with Jack, a 75-year-old Man Referred to the Older Adult Psychology Service regarding difficulties in engagement reported by the multi-disciplinary team.	
V	CLINICAL PRACTICE REPORT 5	103
	Presentation:	
	Applications of Lego© Therapy within a Tier Three CAMHS Service.	

VI

APPENDICES

Appendix A CPR2 Patient Information Sheet

Appendix B CPR2 Patient Consent Form

Appendix C CPR2 General Information Sheet

Appendix D CPR2 Therapeutic Relationship Questionnaire

Review article for submission to the *International Journal of Eating Disorders*

**Efficacy of Third Wave Cognitive and Behavioural Interventions for Eating Disorders:
A Literature Review**

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Abbreviated Title:

THIRD WAVE INTERVENTIONS FOR EATING DISORDERS

Abstract

Objective: To evaluate the efficacy of third wave cognitive and behavioural psychotherapies in the treatment of eating disorders. **Method:** Psycinfo, Medline, Embase and Web of Science databases were searched for published journal articles in English language that evaluate treatments for eating disorders using third wave cognitive and behavioural psychotherapies. **Results:** Twenty-one articles were included in the review. There were four randomised controlled trials, one cohort analytic study, ten cohort studies, five case studies and one case series. The studies evaluated dialectical behaviour therapy, acceptance and commitment therapy and mindfulness approaches. **Discussion:** The review provided some promising preliminary support for these third wave cognitive and behavioural approaches in the treatment of eating related difficulties. However, further research using more stringent methodology is indicated in order to confirm the efficacy of these approaches in the treatment of eating disorders.

Keywords: Third Wave, cognitive, behavioural, eating disorder.

**Efficacy of Third Wave Cognitive and Behavioural Interventions for Eating Disorders:
A Literature Review**

1.0 Introduction

1.1 Eating Disorders: Overview of Nature and Aetiology

Pathological eating habits such as binge eating, purging and restrictive eating can lead to negative consequences to physical health such as obesity, malnutrition and early death (Herzog et al., 2000). Eating disorders have been classified by the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV, American Psychiatric Association, 1994) into two main diagnostic categories of anorexia nervosa and bulimia nervosa.

The four main DSM-IV criteria for anorexia nervosa are as follows: 1) a refusal to maintain body weight at or above 85% of expected normal body weight or failure in young people to make expected weight gain during period of growth, 2) an intense fear of gaining weight or becoming fat, even though underweight, 3) body image disturbance, self-evaluation based on weight or shape or denial of seriousness of current low body weight, 4) absence of at least three consecutive menstrual cycles in post menarcheal females. Furthermore, the DSM-IV identifies two subtypes of anorexia nervosa. The restricting type applies to individuals that meet the above criteria but have not regularly engaged in binge-eating or purging behaviour during the current episode of anorexia. The binge-eating/purging type applies to individuals who have engaged in these behaviours, and also meet the above criteria.

DSM-IV criteria for bulimia nervosa specify that binge eating and inappropriate compensatory behaviours to prevent weight gain must both occur, at least twice per week, for three months. An episode of binge eating is defined as eating an amount of food that is definitely larger than most people would eat during a similar period of time, under similar circumstances in a discrete time period. A lack of control is also experienced during the binge eating episode. Examples of inappropriate compensatory behaviours include: self-induced vomiting, misuse of laxatives or diuretics, fasting or excessive exercise. Criteria for bulimia nervosa specify that self-evaluation is unduly based on weight or shape and that the disturbances in eating related behaviour do not occur exclusively during periods of anorexia nervosa. Individuals that meet the above criteria, are further described as having purging or non-purging type bulimia nervosa, depending on whether they regularly engage in purging

behaviours (e.g., self-induced vomiting, misuse of laxatives, diuretics or enemas) or use other inappropriate compensatory behaviours instead (e.g., fasting or excessive exercise).

Because many individuals who experience significant eating psychopathology do not meet the diagnostic criteria for anorexia nervosa or bulimia nervosa, the DSM-IV also includes a category of eating disorder not otherwise specified (EDNOS). Cases that fall into this category include cases that fail to meet the full criteria of either anorexia or bulimia nervosa, mixed cases that show features of both anorexia and bulimia nervosa and atypical cases such as those that chew and spit out large amounts of food. It is estimated that 50-60% of those presenting for treatment of eating disorders in adult outpatient services, meet criteria for EDNOS rather than anorexia or bulimia nervosa (Fairburn, 2008). Binge eating disorder currently falls within the category of EDNOS, although it is increasing being viewed as distinct diagnosis and research criteria have been provided by the DSM-IV. In fact, it has been recommended by an expert working group that binge eating disorder should be formally included as a distinct diagnostic category in the DSM-V, which is anticipated to be published in 2013. In the DSM-IV, criteria for binge eating behaviours are the same as for bulimia nervosa. Additionally, marked distress regarding binge eating must be present and the binge eating episodes must be associated with at least three of the following: 1) eating much more rapidly than usual, 2) eating until feeling uncomfortably full, 3) eating large amounts when not feeling physically hungry, 4) eating alone due to embarrassment by amount eaten, 5) feeling self-disgusted, depression or guilt after overeating. Binge eating must occur at least twice per week for two months. In contrast to bulimia, binge eating disorder is not associated with frequent use of inappropriate compensatory behaviours.

The causes of eating disorders are thought to be multi-factorial. Suggested vulnerability factors have included genetic factors, pre-morbid obesity, early feeding difficulties, metabolic disturbances, adverse life events, childhood sexual abuse, family and socio-cultural factors and perfectionism (NICE, 2004). However, much of the research in this area has been retrospective in nature and conducted with inpatient populations. Therefore, there have been methodological difficulties in establishing which factors are causal and which are consequences of eating disorders. Stice (2002) conducted a meta-analytic review of risk and maintenance factors for eating pathology. Some widely excepted risk factors, such as sexual

abuse, had not received empirical support. However, there was support for other risk factors, such as: negative affect, thin-ideal internalization and body dissatisfaction. There was also emerging evidence for self esteem and social support as protective factors.

1.2 Eating Disorders: Overview of Treatment

Initial attempts to develop treatments for anorexia nervosa drew on psychodynamic and behavioural models (for reviews, see Dare & Crowther, 1995; and Schmidt, 1989 respectively). Due to concerns about the coercive nature of inpatient behavioural approaches and the lack of systematic evaluation of psychodynamic approaches, alternatives have since been developed. The most recent recommendations of the National Institute for Health and Clinical Excellence (NICE, 2004), are that Cognitive Behavioural Therapy (CBT), interpersonal therapy (IPT), family interventions, cognitive analytic therapy (CAT) and focal dynamic therapy should be considered in the treatment of anorexia nervosa. However, it is acknowledged that these interventions lack efficacy for many clients presenting for treatment. For example, Fairburn and Harrison (2003) estimated that CBT is effective for less than 50% of individuals with anorexia nervosa. Overall, NICE (2004) concluded that the body of research into the treatment of anorexia is small, of variable methodological quality and lacks follow-up data.

It has been recognised that treatments for bulimia nervosa, like anorexia nervosa, are not effective for some individuals. Wilson, Fairburn and Agras (1997) reported that 50% of individuals treated for bulimia with CBT, continued to binge eat and purge. However, a recent Cochrane review of randomised controlled trials of psychological treatments for bulimia nervosa and binge eating has supported the efficacy of CBT-BN, IPT and self-help CBT for bulimia nervosa (Hay, Bacaltchuk, Stefano & Kashyap, 2009). These approaches also showed promise in the treatment of related eating disorder syndromes such as binge eating disorder or EDNOS, although the number of studies was limited.

In the last published review of evidence based treatments for eating disorders by NICE (2004), a trend for studies to evaluate treatments for bulimia nervosa rather than other diagnostic eating disorder categories was highlighted. Adequately powered studies of specific treatments for anorexia nervosa and EDNOS were identified as a research priority. Two

million pounds was provided by the Department of Health in 2007 to fund research into the treatment of anorexia nervosa (Parliamentary Office of Science and Technology, 2007).

Consistent with the literature described above, it was also noted that psychological treatments for eating disorders lacked effectiveness for a substantial number of clients. The NICE report (2004) prioritised the development and evaluation of suitable alternative psychological treatments for non-responders of CBT. One potential avenue for development of treatments for eating disorders is the most recently developed cognitive and behavioural therapeutic approaches which come under the umbrella of “third wave” approaches. Advocates of these approaches have suggested that they may have utility in the treatment of eating disorders (including non-responders to CBT) because they have a slightly different treatment focus to CBT. For example, while CBT places emphasis on the importance of identifying and challenging irrational beliefs, third wave approaches encourage acceptance of beliefs and emotions (Juarascio, Forman & Herbert, 2010). Rather than modifying cognitions, the client’s ability to regulate emotions is the primary treatment focus of Dialectical Behaviour Therapy (Linehan, 1993a), which is another third wave approach. The current literature examining the efficacy of third wave approaches in the treatment of eating disorders is the focus of this review. The literature conceptualising the nature of third wave approaches is explored below.

1.3 Conceptualisation of Third Wave Cognitive and Behavioural Therapeutic Approaches

Empirically studied cognitive and behavioural approaches of psychotherapy have been conceptualised as comprising three developmental paradigms or “waves”. A detailed review and discussion about this conceptualisation has been provided by Hayes (2004). In brief, the first wave refers to the development of behaviour therapy in the 1950s, which emphasised the importance of the scientific study and treatment principles. The second wave commenced with the development of cognitive therapy approaches by clinicians such as Aaron Beck (cognitive therapy) and Albert Ellis (rational emotive therapy/rational emotive behaviour therapy) and included the merging of behavioural and cognitive approaches in the 1980’s to form cognitive behavioural therapy. During the last 20 years, several new cognitive and behavioural approaches or extensions of CBT have been developed and these have become

known as the third wave of cognitive and behavioural therapies. Hayes (2004) attempted to draw out the commonalities among the third wave approaches and conceptualised the third wave paradigm, as follows:

“Grounded in an empirical, principle-focused approach, the third wave of behavioural and cognitive therapy is particularly sensitive to the context and functions of psychological phenomena, not just their form, and thus tends to emphasize contextual and experiential change strategies in addition to more direct and didactic ones. These treatments tend to seek the construction of broad, flexible and effective repertoires over an eliminative approach to narrowly defined problems, and to emphasize the relevance of the issues they examine for clinicians as well as clients. The third wave reformulates and synthesizes previous generations of behavioural and cognitive therapy and carries them forward in to questions, issues, and domains previously addressed primarily by other traditions, in hope of improving both understanding and outcomes” (p. 658).

Ost (2008) also endeavoured to identify the shared values of third wave approaches and suggested that these include: mindfulness, acceptance, emphasis on the values of the client and relationships. He also pointed out that support for the conceptualisation of a third wave has not been universal. Some have argued that the nature and values of the proposed third wave approaches are not distinct from traditional CBT in many ways (Hofmann & Asmundson, 2008). Concerns have also been raised that the proponents of third wave approaches are not sufficiently committed to empirical validation of their approaches (Corrigan, 2001).

Approaches considered to be part of the third wave (Hayes, 2004; Ost, 2008) include: Dialectical behaviour therapy (DBT: Linehan, 1993a, 1993b), Acceptance and commitment therapy (ACT: Hayes, Strosahl & Wilson, 1999), Cognitive behavioural analysis system of psychotherapy (CBASP, McCullough, 2000), Functional analytic psychotherapy (FAP; Kohlenberg & Tsai, 1991), Integrated behavioural couple therapy (IBCT; Jacobson & Christensen, 1996) and mindfulness approaches such as mindfulness based cognitive therapy (MBCT; Segal, Williams & Teasdale, 2002).

1.4 Aim

The aim of this literature review was to evaluate the existing evidence for third wave cognitive and behavioural approaches in the treatment of eating disorders and to assess whether efficacy of these approaches has been established.

2.0 Method

2.1 Literature Search Strategy

Psychinfo, Medline, Embase and Web of Science were searched from 1987 to March 2010 using the search terms eating disorder, anorexia, binge, bulimia, eat* or purge together with the following: Dialectical or DBT, acceptance and commitment or ACT, cognitive behavioural analysis system of psychotherapy or cognitive behavioural analysis or CBASP, functional analytic psychotherapy or FAP, Integrated behavioural couple therapy or IBCT, mindfulness based cognitive therapy, MBCT, meditation, mindfulness based eating awareness training or MB-EAT. Inclusion criteria for the literature review were that studies had to be published in an English language journal. Only studies evaluating third wave treatments for eating disorders or eating related difficulties were included. Initial searching of the literature in this area indicated that the number of related articles was limited and diverse in nature. For this reason, a broad inclusion criteria was used, encompassing different research methodologies and both single and integrated therapeutic approaches. Studies with both clinical and non clinical samples were included in order to recognise the value of both for evaluating the impact of third wave approaches on eating behaviour. The reference lists of the articles included in the literature review were inspected in order to identify any further eligible studies.

2.2 Methodological Quality Assessment

With the exception of the case studies, the quality of each quantitative study included in the literature review was assessed using an assessment tool designed for evaluating quality of both randomised and non-randomised studies (Thomas, unpublished). In a review of available methods for evaluating the quality of non-randomised intervention studies (Deeks, et al., 2003), this measure was identified as suitable for use in systematic review. The scores on six components of the tool contribute to a global quality rating. These are: selection bias, study design, confounders, blinding, data collection methods and withdrawals and dropouts. Each component is rated strong, moderate or weak. A strong global score is achieved if there are four strong component ratings and no weak component ratings. A moderate global score is achieved if there are less than four strong component ratings and one weak rating. A weak global score occurs when there are two or more weak component ratings. The tool also includes measures of intervention integrity and quality of analysis which are not included in

the global rating. A quality assessment rating form is provided in Appendix B. Global ratings and any weak component areas identified for each study are provided in Tables 2, 3 and 4.

2.3 Treatment Efficacy Assessment

Chambless et al. (1998) provided guidelines for assessing treatment efficacy which are currently used by the American Psychological Association to identify empirically supported therapies. The efficacy of the third wave therapeutic approaches included in this literature review was considered against these guidelines, which are provided in table 1.

Table 1: Criteria for Empirically-Validated Treatments (Chambless et al., 1998)

<p>Well Established Treatments</p> <p>1. At least two good between group design experiments demonstrating efficacy in one or more of the following ways:</p> <ul style="list-style-type: none"> a) Statistically superior to pill or psychological placebo or another treatment b) Equivalent to an already established treatment in experiments with adequate sample sizes. <p>OR</p> <p>2. A large series of single case design experiments (n>9) demonstrating efficacy which have: a) used good experimental designs and, b) compared the intervention to another treatment as in 1. a)</p> <p>FURTHER CRITERIA FOR BOTH 1 AND 2:</p> <ul style="list-style-type: none"> 3. Experiments must be conducted with treatment manuals. 4. Characteristics of client samples must be clearly specified. 5. Effects must have been demonstrated by at least two investigators of investigating teams.
<p>Probably Efficacious Treatments</p> <p>1. Two experiments showing the treatment is statistically superior to a waiting list control group.</p> <p>OR</p> <p>2. One or more experiments meeting the well-established treatment criteria 1.a) or 1.b), 3, 4 but not 5</p>

OR

3. A small series of single case design experiments ($n > 2$) otherwise meeting well-established treatments.

3.0 Results

The literature search returned 452 articles. After removing duplications and checking the abstracts against the inclusion criteria, 21 papers were retained for the literature review. No functional analytic psychotherapy, cognitive behavioural analysis system of psychotherapy or integrated behavioural couple therapy studies met criteria for inclusion. Three acceptance and commitment therapy studies, seven mindfulness studies and eleven dialectical behaviour therapy studies were retained for inclusion in the literature review. These three approaches are considered in turn in the following sections. A description of each theoretical approach is provided, followed by a summary and critique of the studies identified using that approach. For each approach, the summary sections are split into subsections according to the nature of the sample and presenting difficulty (e.g., anorexia nervosa, binge eating disorder, adolescents) and a critique of the studies in each subsection is provided. The review has been structured in this way because the different studies included a diverse range of participants and types of eating related difficulties that could not readily be directly compared.

3.1 Review of the Literature: Acceptance and Commitment Therapy Studies

3.1.1 Introduction to ACT

ACT (Hayes et al., 1999) is a third wave cognitive behavioural approach that makes use of behavioural techniques such as exposure and self-monitoring. It diverges slightly from cognitive frameworks that aim to identify and challenge thinking distortions. Instead, it targets experiential avoidance (i.e. avoidance of thoughts or emotions) by fostering mindfulness and acceptance, both of which have both been associated with better outcomes in the treatment of eating disorders (Kristeller, Baer & Quillian-Wolever, 2006).

One theory about the function of anorexia nervosa has suggested that restrictive eating patterns are maintained by a problematic need for control (Fairburn, Shafran & Cooper, 1999). It has been proposed that ACT may be particularly relevant to anorexia nervosa because the approach specifically targets ineffective control strategies. For example, the therapist might illustrate to the client that restrictive eating has not been an effective control strategy, because even after losing weight, their belief about being overweight remains unchanged (Juarascio et al., 2010). ACT aims to assist the client in letting go of the fight to remain in control and to focus instead on working towards their personal values and goals.

3.1.2 ACT Studies: Description and Critique

Three ACT studies were included in the literature review: a case study and case series evaluating treatment for anorexia nervosa and a randomised controlled trial comparing ACT and CBT in a population with sub-clinical eating difficulties. The studies are described and critiqued, as follows. A summary of the ACT studies included in the literature review is provided in Table 2.

Table 2. Summary Table of Acceptance and Commitment Therapy Studies

Authors, date	Title	Design/Participant Information.	Outcome	Quality Assessment
<i>Case Report</i>				
Heffner et al., 2002	Acceptance and commitment therapy in the treatment of an adolescent female with anorexia nervosa: a case example.	A 15 year old girl with AN attended 18 individual sessions which incorporated components of ACT, CBT and family involvement.	Body weight increased from 51kg (BMI<18) to 56.7Kg at treatment termination. Pre-treatment EDI-2 scores for drive for thinness, body dissatisfaction and ineffectiveness fell within the clinical range. At post-treatment, only body dissatisfaction remained within the clinical range.	Not applicable
<i>Cohort studies/Case Series</i>				
Berman, Boutelle & Crow, 2009	A case series investigating acceptance and commitment therapy as a treatment for previously treated, unremitted patients with anorexia nervosa.	3 women (aged 24, 24 and 56 yrs) attended 17-19 sessions of ACT for sub-threshold AN (all clients had met DSM-IV criteria for AN in the past). 2 participants also attended 2 optional family therapy sessions.	Comparing pre-treatment with 1 yr follow up assessments: Weight remained the same for 2 participants and increased by 1 BMI point for the other. Improvements were seen on the SCL-90 for all clients. Improvements on the EDE-Q were modest.	Moderate. Rated weak on blinding.
<i>Randomised Controlled Trials</i>				
Juarascio, Forman & Herbert, 2010	Acceptance and commitment therapy versus cognitive therapy for the treatment of comorbid eating pathology.	Comparison of ACT (n=27) and CBT (n=28) for post graduate students using a university counselling centre. Participants had sub-clinical eating difficulties in addition to primary diagnoses which included: anxiety disorder (49%), depressive disorder (29%), or adjustment disorder (11%).	Participants in the ACT group had improved more on the EPI than the CBT group. There was no difference between the CBT and ACT groups in changes in pre- to post-group assessment scores on BDI-II, BAI, GAF or QOLI	Moderate-strong

NB: AN = anorexia nervosa, BN = bulimia nervosa, BED = binge eating disorder. Measures: Beck Anxiety Inventory-II (BAI-II: Beck et al., 1990), Beck Depression Inventory (II) (BDI-II: Beck et al., 1996), Eating Disorders Examination Questionnaire (EDE-Q: Fairburn & Beglin, 1994), Eating Disorders Inventory-2 (EDI-2: Rathner & Waldherr, 1997), Eating Pathology Index (EPI: Adapted from the SCOFF (Morgan, Reid & Lacey, 1999)), Quality of life index (QOLI; Frisch et al., 1992), Symptom checklist 90 revised (SCL-90-R: Derogatis, 1994).

3.1.2.1 ACT for Anorexia Nervosa

The case study described the therapeutic treatment of a 15 year old girl with anorexia (Heffner, Sperry, Eifert & Detweiler, 2002). ACT techniques were incorporated into a CBT treatment in order to establish acceptance of weight-related cognitions and to redirect the participant's drive for thinness towards healthier valued directions and goals. Several ACT exercises (e.g. chessboard metaphor, thought parade) were used to promote acceptance of her weight-related thoughts. At the end of treatment, the participant's weight had increased and was considered to be within the healthy weight range. Although she continued to report body dissatisfaction, the authors noted that this was consistent with the goal of ACT to promote acceptance of thoughts and feelings rather than elimination of them.

The case series included three female participants who had previously been treated for anorexia using other approaches without success (Berman, Boutelle & Crow, 2009). Treatment comprised 17-19 individual sessions of ACT and two optional sessions of family therapy (attended by, n=2). All participants completed the treatment. Treatment outcome was variable. One participant stated at one year follow-up assessment that therapy had "changed her life" (p. 430) and reported that she had managed to maintain a job, romantic relationship and gain a place at university. However, a self-report measure indicated that improvements in eating psychopathology had not lasted and there had been no increase in her weight. Another participant also failed to gain weight and improvements to self-reported eating and general psychopathology were modest. Conversely, the final participant's BMI had risen one point at follow-up assessment and general psychopathology had improved.

Critique of ACT for Anorexia Nervosa

The case study and case series reported positive outcomes for two participants in terms of weight gained and general psychopathology. However, it is important to note that the case study participant was high functioning, and in the early stages of anorexia. Also, at the time of treatment, participants in the case series did not meet diagnostic criteria for anorexia nervosa because their BMI's were not sufficiently low. Outcomes were mixed for two participants and initial improvements were not long lived. The participant who had the poorest outcome had an atypically late age of onset of anorexia (mid-thirties) and therefore her treatment results may not be typical for anorexia nervosa. It was difficult to draw conclusions about the

impact of ACT in the treatment of anorexia nervosa because the interventions also incorporated cognitive behavioural techniques and family involvement.

3.1.2.2 ACT for Subclinical Eating Difficulties

Juarascio et al., (2010) conducted a randomised controlled trial comparing ACT and standard cognitive behavioural therapy for post graduate students (n=55) who were found to have sub-clinical eating difficulties in addition to primary presenting difficulties such as anxiety and depression. Post treatment reductions in eating pathology were greater in the ACT group than the CBT group. Improvements on measures of depression, anxiety, quality of life and global functioning were equal in both groups.

Critique of ACT for subclinical eating difficulties

The randomised controlled trial comparing ACT and CBT was rated “moderate”-“strong” in the quality assessment. Although ACT was equal or superior to CBT on post treatment outcome measures, conclusions about the treatment of eating disorders cannot be drawn from this study because eating related difficulties were sub-clinical. Also, eating pathology was only worked on directly in therapy if this goal was identified by the participant. No data were provided about specific treatment goals in this study.

3.1.2.3 Treatment Efficacy of ACT for Eating Disorders

There is no evidence that the current ACT literature meets Division 12 Task Force criteria for well-established or probably efficacious treatments for clinical level eating disorders. Further research is required to assess the efficacy of ACT in the treatment of anorexia nervosa.

3.2 Review of the Literature: Mindfulness Studies

3.2.1 Introduction to Mindfulness

Mindfulness is generally regarded as a method of directing awareness in the present moment in an accepting and non-judgmental way (Baer, Smith & Allen, 2004). It originated in Eastern meditation practices but has been used increasingly in Western culture. Kabat-Zinn (1982) developed a mindfulness-based stress reduction (MBSR) programme which has been used widely within Western health care services. Since then, other approaches, such as ACT and DBT, have also incorporated mindfulness practices. Mindfulness based cognitive therapy (MBCT) is a manual based treatment approach which draws on MBSR and was developed to prevent relapse in depression (Segal et al., 2002). Like ACT, it does not seek to identify thought distortions or change thoughts. Rather, it encourages a view of thoughts as external to the self, and as transient events that are not necessarily fact. The emphasis is on awareness and acceptance of thoughts, emotions and physical sensations (e.g., hunger) rather than avoidance of these experiences. As noted previously, mindfulness and acceptance skills have been related to positive outcomes in eating disorder treatments.

3.2.2 Mindfulness Studies: Description and Critique

Seven mindfulness studies were included in the literature review: a cohort study evaluating an intervention for bulimia nervosa, a case study and three cohort studies evaluating interventions for binge eating, and a case study and cohort study evaluating interventions for eating related difficulties post-bariatric surgery. The studies are described and critiqued, as follows. A summary of the mindfulness studies included in the literature review is provided in Table 3.

Table 3. Summary Table of Mindfulness Studies

Authors, Date	Title	Design/Participant Information	Outcome	Quality Assessment
<i>Case Report</i>				
Baer et al., 2005	Mindfulness-based cognitive therapy applied to binge eating: A case study	Case study of an MBCT intervention (10 sessions), adapted for binge eating with a woman in her 50's with sub-threshold BED (i.e. 3-5 binges per month).	Abstinent of binges at post-treatment and 6mth follow up. At 6-mth follow-up, BES score had fallen from 21 (moderate) to 13 (normal). KIMS nonjudgmental acceptance improved from below average to above average. KIMS observation improved and remained within the average range. All EDE subscales improved by at least 1 sd.	Not applicable
Engstrom 2007	Eating mindfully and cultivating satisfaction: Modifying eating patterns in a bariatric surgery patient.	Case study of a mindfulness and behavioural intervention (8 sessions) used with 41 yr old woman who had recently undergone bariatric surgery and was struggling to maintain initial weight loss.	Scores from pre- and post treatment assessment indicated significant improvements on the MAAS and grazing and emotional eating scales of the EBI. 9 weeks after treatment began; the participant had lost 48lb. 30 weeks after treatment began she had lost 95lb	Not applicable
<i>Cohort studies/Case Series</i>				
Kristeller & Hallett, 1999	An exploratory study of a meditation-based intervention for binge eating disorder	21 women (aged 26-62, BMI 28-52) who met DSM-IV criteria for BED agreed to join a 6 week mindful meditation group. They had replied to an advert for treatment for women who were overweight and binge eating. A \$20 deposit was refunded to participants if they completed treatment and assessments.	Post-treatment, no participants were abstinent of binge eating and there had been no change in weight. 3 clients dropped out. There were significant reductions on the BDI, BES and in frequency of binge eating episodes (all $p < .001$). BAI scores decreased ($p < .01$). Time engaged in eating-related meditation was related to decreases on the BES ($p < .01$).	Moderate. Rated "weak" on selection bias.
Baer et al., 2006	Mindfulness and acceptance in the treatment of disordered eating	10 women, aged 23-65 yrs, started a 10 session MBCT intervention, adapted slightly for binge eating. 6 met full DSM-IV criteria for BED. 4 had sub-threshold BED. 6 participants	At post treatment assessment mean objective monthly objective binge frequency had reduced from 16 to 4. BES scores decreased for all participants except 1. KIMS nonjudgmental acceptance and observation skills had improved to "above average".	Moderate. Rated "weak" on selection bias.

		completed treatment. Participants were recruited via flyers in the community and letters to therapists.	Improvements were seen on EDE restraint, eating concern and shape concern. Weight concern had got slightly worse. 4 participants dropped out.	
Smith et al., 2006	A preliminary study of the effects of a modified mindfulness intervention on binge eating.	27 male and female participants were recruited from local media, university intranet and referrals from primary care for a 8 session MBSR programme plus five mindfulness eating exercises and a full day silent retreat.	Pre-treatment, results of the BES indicated 20 participants scored “nil-mild” (n=20), “moderate” (n=2) and “severe” (n=3) binge related pathology. Post-treatment scores indicated improvements on the BDI, BES, MAAS (all $p < 0.01$) and STAI ($p < 0.05$). Scores on the BES improved only for those in the “mild” range pre-treatment. There was a trend towards a relationship between increased MAAS and decreased BES. 2 participants dropped out.	Moderate. Rated “weak” on selection bias.
Proulx, 2008	Experiences of women with bulimia nervosa in a mindfulness-based eating disorder treatment group.	6 college-age women who met DSM-IV-TR criteria for BN with co-morbid mood disorders attended individual psychotherapy and 8 x 2-hr sessions of a mindfulness-based eating disorder treatment group.	Post group interviews identified a theme of developing a kinder, gentler and more authentic relationship with the self. The women reported greater self-awareness, acceptance and compassion. The reported lower emotional distress and better stress management abilities.	Not applicable (qualitative study)
Leahey et al., 2008	A cognitive-behavioral mindfulness group therapy intervention for the treatment of binge eating in bariatric surgery patients.	6 women and 1 man attended 10 x 75 minute sessions of a CBT plus mindfulness treatment programme. All participants were referred to the group (by bariatric surgeons) because they were struggling to adjust to new post-surgery eating guidelines/lifestyle	All participants completed the group. Post treatment reduction in binge eating ($d = 1.47$), guilt associated with eating ($d = 1.26$), DERS total ($d = 0.57$), BDI-II ($d = 1.50$), EDEQ eating concern ($d = 0.82$) & weight concern ($d = 1.20$). There was an increase in shape concern ($d = 1.20$) and restraint ($d = 0.11$).	Moderate

NB: d = Cohen’s d (1998) measure of effect size, AN = anorexia nervosa, BN = bulimia nervosa, BED = binge eating disorder. Measures: Beck Anxiety Inventory (Beck & Steer, 1987), Beck Depression Inventory (II) (BDI: Beck et al., 1961/BDI-II: Beck et al., 1996), Binge eating scale (BES: Gormally et al., 1982), Eating Behaviour Inventory (EBI: Engstrom, 2004), Eating Disorders Examination (EDE: Fairburn & Cooper, 1993), Eating Disorders Examination Questionnaire (EDEQ: Fairburn & Beglin, 1994), Difficulties in emotion regulation scale (DERS: Gratz & Roemer, 2004), Kentucky inventory of mindfulness skills (KIMS: Baer et al., 2004), Mindful Attention Awareness Scale (MAAS: Brown & Ryan, 2003), State-Trait Anxiety Inventory (STAI: Spielberger, 1983).

3.2.2.1 Mindfulness for Bulimia Nervosa

A phenomenological study explored the experiences of six college-age women with Bulimia Nervosa in an eight session mindfulness based eating disorder (M-BED) treatment group (Proulx, 2008), which involved discussion, psychoeducation, experiential meditation and home practice assignments in addition to individual psychotherapy sessions. In post treatment interview, the women reported greater self-awareness, acceptance and compassion. They reported lower emotional distress and better stress management abilities.

Critique of Mindfulness for Bulimia Nervosa

Although positive outcomes in general psychopathology were reported in the qualitative study, it was not clear whether changes had occurred in eating pathology. Because participants were also engaged in individual psychotherapy during treatment, conclusions cannot be drawn about whether positive outcomes were due to the M-BED group treatment, the individual psychotherapy or a combined effect. This study does meet task force criteria for probably efficacious treatments.

3.2.2.2 Mindfulness for Binge Eating

An MBCT intervention (Segal et al., 2002), adapted slightly for binge eating and lengthened by two weeks, was used initially in a case study (Baer, Fischer & Huss, 2005) and then as a cohort treatment by the same authors (2006). The female participant in the case study reported abstinence from binge eating at post-treatment and six month follow-up (previously three to five binges per month). Questionnaire measures indicated that there had been improvements in eating psychopathology and mindfulness skills. The group included ten women who met diagnostic criteria for binge eating disorder (n=6) or had sub-threshold symptoms (n=4). Post-treatment, improvements were seen in frequency of objective binge episodes, eating psychopathology and mindfulness skills. Questionnaire results indicated an increase in weight concern. The authors suggested that this could have been due to unrealistic expectations of how much weight would be lost as a result of changing binge eating habits.

A six-week mindful meditation group offered to 21 women with binge eating disorder comprised general mindful meditation, eating meditation and mini-meditations (Kristeller & Hallett, 1999). None of the clients had significantly lost weight or were abstinent of binge

eating at the end of treatment. However, questionnaire measures indicated reduced depression, anxiety and binge eating severity/preoccupation.

Smith, Shelley, Leahigh and Vanleit (2006) ran a mindfulness based stress reduction (MBSR) group based on a treatment guide by Kabat-Zinn (1990). The group was modified to include five mindfulness eating exercises and a full-day silent retreat. 25/27 male and female participants completed the course. Post treatment self-report measures were indicative of reduced symptoms of depression and anxiety and improved mindfulness skills. However, binge eating severity only improved in those with “mild” binge eating difficulties.

Critique of Mindfulness for Binge Eating

Of the three cohort studies and one case study, only one study recruited participants that all met DSM-IV research criteria for binge eating disorder (Kristeller & Hallett, 1999). As noted above, although improvements were seen in affect and binge eating severity in this study, no participants were abstinent of binge eating or had lost weight at the end of treatment. The other studies included participants with sub-clinical eating difficulties or a non-clinical group where the majority of the sample reported nil to mild binge eating behaviours pre-treatment (Smith et al., 2006). Reduced post-treatment binge frequency was reported in Baer et al. (2005, 2006), however, 40% of participants in the latter study dropped out before the end of treatment. In terms of quality assessment, all of the cohort studies were rated “weak” on selection bias because recruitment was generally via media advertising/flyers rather than via treatment services. In terms of demonstrating treatment efficacy for binge eating disorder, Kristeller and Hallett’s study has not been sufficient to meet task force criteria for probable efficacious treatments, especially as outcome results were mixed.

3.2.2.3 Mindfulness for Bariatric Surgery

Engstrom (2007) used a mindfulness treatment with a woman who was struggling to maintain weight loss after bariatric surgery. The eight-session treatment comprised mindfulness training (progressive muscle relaxation, breathing exercises, body scan, mindfulness meditation) and behavioural techniques. Her weight had reduced by 48lbs after treatment and by a further 47lbs 30 weeks later. Mindfulness scores had improved and grazing and emotional eating had declined.

Seven participants (six female, one male) attended a CBT and mindfulness group post-surgery (Leahey, Crowther & Irwin, 2008) which was rated “moderate” on quality assessment. All reported a recurrent sense of loss of control over eating and guilt associated with recurrent “binge” episodes, regardless of amount of food eaten. Post-treatment, frequency of eating episodes accompanied by loss of control or guilt, symptoms of depression, difficulties in emotion regulation and difficulties maintaining post surgery weight loss were reduced. On a measure of eating psychopathology, weight concern and eating concern were reduced while restraint and shape concern increased. The authors propose that this change in the profile of eating psychopathology could be due to a shift from concern about weight and health status to an investment in improved appearance and shape.

Critique of Mindfulness for Bariatric Surgery

Participants in these two studies met revised criteria for binge eating that was designed for this client group who are often physically unable to consume large quantities of food: “A recurrent sense of loss of control over eating and guilt associated with recurrent “binge” episodes, regardless of amount of food eaten” (Hsu, Betancourt & Sullivan, 1996). Outcomes were positive in terms of weight loss, binge eating and adherence to post-surgery dietary guidelines. Interventions included behavioural and cognitive techniques in addition to mindfulness, therefore the effect of the mindfulness intervention cannot be assessed. Further research demonstrating that mindfulness approaches are superior to a waiting list or alternative treatment will be necessary in order to meet task force criteria for probably efficacious treatments with this specific client group.

3.2.2.4 Treatment Efficacy of Mindfulness Approaches for Eating Disorders

The research discussed above showed some positive outcomes of mindfulness interventions, particularly with post-bariatric surgery participants. Further research looking at mindfulness interventions for eating disorders would benefit from using participants with clinical levels of eating psychopathology, and including comparison samples. The current mindfulness literature does not meet Division 12 Task Force criteria for well-established or probably efficacious treatments for clinical level eating disorders.

3.3 Review of the Literature: Dialectical Behaviour Therapy Studies

3.3.1 Introduction to DBT

Dialectical Behaviour Therapy (DBT) was initially developed for the treatment of suicidal individuals meeting the criteria for Borderline Personality Disorder (Linehan, 1993). It is a multi-disciplinary treatment approach that comprises different treatment modalities (i.e., individual psychotherapy, group skills training, multidisciplinary professional consultation and telephone coaching) to treat deficits in emotion regulation, impulse control and interpersonal relationships. DBT includes four skills-based modules in mindfulness (noticing emotions and taking a non-judgmental stance), distress tolerance (e.g. distraction, acceptance and self-soothing skills), emotion regulation and interpersonal effectiveness.

Applications of Dialectical behaviour therapy (DBT) for eating disorders are based on the premise that dysregulated eating behaviours serve as a means of alleviating emotional distress in those who have difficulty in regulating negative emotions (Safer, Robinson & Jo, 2010; Telch, Agras & Linehan, 2001). This theoretical conceptualisation is supported by evidence that binge eating and purging behaviours are reinforced by positive changes in affect (Agras & Telch, 1998; Deaver, Miltenberger, Smyth, Meidinger & Crosby, 2003; Stickney and Miltenberger, 1999). Estimated rates of comorbid borderline personality disorder with eating disorders have been as high as 44% (Gwirtsman, Roy-Byrne, Yager & Gerner, 1983). Johnson, Tobin and Dennis (1990) have speculated that one-third of those who do not respond to frontline eating disorder treatment interventions (e.g., CBT) may also meet criteria for borderline personality disorder. They suggest that a treatment targeting emotion regulation and impulsivity, such as DBT, may meet the needs of this group.

3.3.2 DBT Studies: Description and Critique

Eleven DBT studies were included in the literature review. Two randomised controlled trials, a cohort study and a follow up study evaluated interventions for binge eating. A case report and randomised controlled trial evaluated interventions for bulimia nervosa. A case study and case series evaluated interventions for eating disorders in adolescents. Two cohort studies and a cohort analytic study evaluated treatment of eating disorders in participants with comorbid personality disorder diagnoses. The studies are described and critiqued, as follows. A summary of the DBT studies included in the literature review is provided in Table 4.

Table 4. Summary Table of Dialectical Behaviour Therapy Studies

Authors, date	Title	Design/ Participant Information (n= number of participants at the start of treatment).	Outcome	Quality Assessment
<i>Case Report</i>				
Safer et al., 2001	Dialectical behaviour therapy adapted for bulimia: A case report	A 36 yr old woman with BN engaged in a 20 session DBT intervention. Sessions were 50 minutes long and comprised skills training and practice.	Abstinent from binge and purge behaviour by session 5 of treatment. Only 2 reported episodes of binge eating and 6 of purging during the six months post treatment.	Not applicable
Safer et al., 2007	Dialectical behaviour therapy modified for adolescent binge eating disorder: A case report	A 16 year old girl who met full DSM-IV criteria for BED attended 21 sessions of DBT-BED modified for adolescents plus four extended sessions (also attended by parents).	Improvements in objective binge frequency and EDE Restraint. No change on EDE shape concern and eating concern. Worsened on EDE Weight concern. Abstinent of binge eating at 3 month follow-up assessment.	Not applicable
<i>Cohort studies/Case Series</i>				
Telch, Agras & Linehan, 2000	Group Dialectical Behaviour Therapy for binge eating disorder: A preliminary, uncontrolled trial.	11 women who met DSM-IV research criteria for BED attended a group DBT-BED intervention for 20 weeks. Recruited from a newspaper advertisement.	82% of the group members reported abstinence from binge eating post treatment and 8/10 that took part in a six month follow-up reported abstinence. All participants completed treatment. Improvements on NMR, EES anger and anxiety, BDI, PANAS positive and EDE weight concern, shape concern and eating concern (all large ES), and a slight improvement on restraint (ES=small). Post treatment changes on PANAS negative and EES depression were minimal.	Moderate. Rated “weak” rating on selection bias.
Safer et al., 2001	Predictors of relapse following successful dialectical behaviour	A follow up study looking at predictors of relapse at 6 months post treatment, in participants who were abstinent from	Comparisons between those who had relapsed at 6 months (n=9) and those that were still abstinent from binge eating	Not applicable

	therapy for binge eating disorder.	binge eating after undergoing treatment in the Telch et al (2000; 2001) studies (n=32).	(n=23) were made using EDE, EES & RSES. The best predictors of relapse were early onset of binge eating and high EDE restraint scores post-treatment.	
Chen et al., 2008	Dialectical behaviour therapy for clients with binge eating disorder or bulimia nervosa and borderline personality disorder.	8 women who met DSM-IV criteria for borderline personality disorder plus research criteria for BED (n=5) or BN (n=3), were recruited for 6 months of DBT treatment which included: weekly skills group, weekly individual DBT, therapist consultation team meeting and 24-hr telephone coaching. Recruited from inpatient and health centre outreach, eating disorder specialists, mail flyers and media coverage.	ES for improvements in objective binge eating, total EDE and global adjustment (GAS, from SHI) were large at post treatment assessment. ES for reductions in suicidal behaviour and self-injury were medium. ES for all of the above were large at six month follow up assessment. One participant dropped out of the study during treatment and one at six month follow up assessment.	Moderate
Salbach-Andrae et al., 2008	Dialectical behavior therapy of anorexia and bulimia nervosa among adolescents: A case series.	12 adolescents that met DSM-IV criteria for AN (n=6) and BN (n=6) were recruited from an outpatient psychiatric service for a 25 week DBT program which included: weekly skills group, weekly individual DBT, therapist consultation team meeting and telephone coaching.	Post treatment 3/6 with AN no longer met criteria for eating disorder. 3/6 with BN continued to meet criteria for BN, 2/6 met criteria for EDNOS and 1 dropped out of treatment. Mean BMI for the AN participants increased from 15.6 to 18.1. Improvements were seen on all subscales of the EDI-2 and global severity index of the SCL-90-R (both German versions).	Moderate
Palmer et al., 2003	A dialectical behaviour therapy program for people with an eating disorder and borderline personality disorder – description and outcome.	7 women who met DSM-IV criteria for borderline personality disorder plus either research criteria for BED (n=1), BN (n=5) or EDNOS (n=1), were recruited for 18 months of DBT treatment which included: weekly skills group, weekly individual DBT, therapist consultation team meeting and 24-hr telephone coaching.	No statistical analysis due to small sample size. Anecdotally, Post treatment: reduced days of admission to hospital, reduced self-injury, 3 participants no longer met DSM-IV criteria for eating disorder.	Moderate

<i>Cohort Analytic Study (two group pre and post)</i>				
Ben-Porath, Wisniewski & Warren, 2009	Differential treatment response for eating disordered patients with and without a comorbid borderline personality diagnosis using a dialectical behaviour therapy (DBT)-informed approach.	Comparison of participants with eating disorders (n=24) with participants with comorbid eating disorders and borderline personality disorder (n=16) in intensive 30 hour per week adapted DBT programme.	No difference in EDEQ scores between groups. Improvement in global EDEQ, BDI-II and BAI-II across both. ED-BPD group had higher overall BDI-II and BAI-II scores than ED. Pre-treatment NMRS scores were poorer for the ED-BPD group but improved significantly post treatment. Difference between groups was no longer significant.	Moderate
<i>Randomised Controlled Trials</i>				
Telch, Agras & Linehan, 2001	Dialectical Behaviour Therapy for binge eating disorder	28 women who met DSM-IV research criteria for BED assigned to either 20 weeks of group DBT-BED (n=16) or waiting list control (n=16). Recruited from a newspaper advertisement.	Significant reductions in binge eating frequency and EDE scores for weight concern, shape concern and eating concern and higher rates of abstinence in the DBT group compared to the waiting list. 89% of the treatment group were abstinent post-treatment, 56% at 6 month follow up. No significant difference between groups on questionnaire measures: NMRS, BDI, EES, PANAS, RSE	Moderate-strong. Rated “weak” rating on selection bias.
Safer, Telch & Agras, 2001	Dialectical behaviour therapy for bulimia nervosa	29 Women who met DSM-IV (full/modified) criteria for BN were assigned to either 20 weeks of 50 minute manual-based DBT sessions (n=14) or waiting list comparison (n=15). Recruited from a newspaper advertisement and clinic referrals.	Significant reductions in binge/purge behaviours in the DBT group compared to the waiting list. No significant difference between groups on questionnaire measures: NMRS, BDI, EES, Multidimensional Personality Scale, PANAS, RSE	Moderate. Rated “weak” on confounders.
Safer, Robinson & Jo, 2010	Outcome from a randomized controlled trial of group therapy for	101 women and men who met DSM-IV research criteria for BED assigned to either 20 weeks of group DBT-BED	Significant improvements in binge frequency and abstinence and EDE-Eating concern, EES and BDI in the DBT-BED	Strong

	binge eating disorder: comparing dialectical behaviour therapy adapted for binge eating to an active comparison group therapy	(n=51) or active comparison group therapy (ACGT: n=50). Recruited from a newspaper advertisement, flyers and clinic referrals.	group compared to the ACGT at post treatment but no significant difference at 12 months follow-up. Significant EDE-restraint improvement in the DBT-BED group compared to the ACGT at post treatment and 12 month follow-up. No significant difference between groups in questionnaire outcome measures: NMRS, DERS, PANAS, RSE	
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NB: ES = Effect size (according to Cohen, 1998), AN = anorexia nervosa, BN = bulimia nervosa, BED = binge eating disorder
 Measures: Beck Anxiety Inventory-II (BAI-II: Beck et al., 1990) Beck Depression Inventory (II) (BDI: Beck et al., 1961/BDI-II: Beck et al., 1996), Difficulties in emotion regulation scale (DERS: Gratz & Roemer, 2004), Eating Disorders Examination (EDE: Fairburn & Cooper, 1993), Eating Disorders Examination Questionnaire (EDEQ: Fairburn & Beglin, 1994), Eating Disorders Inventory-2 (EDI-2: Rathner & Waldherr, 1997), Emotional eating scale (EES: Arnow, Kenardy & Agras, 1995), Multidimensional personality scale (Tellegen & Waller, 1994), Negative Mood regulation scale (NMRS: Catanzaro & Mearns, 1990), Positive and negative affect schedule (PANAS: Watson, Clark & Tellegen, 1988), Rosenberg self-esteem scale (RSE: Rosenberg, 1965), Symptom check list 90 revised (SCL-90-R: Franke, 2002), Social History Interview (SHI: Linehan, 1994).

3.3.2.1 DBT for Binge Eating Disorder

Three studies have assessed the efficacy of a 20-session DBT approach modified for the treatment of binge eating disorder (DBT-BED, described in detail by Wiser & Telch, 1999). The treatment comprises mindfulness, emotion regulation, distress tolerance training and development of individualised post-treatment plans.

Telch, Agras and Linehan (2000) conducted an uncontrolled trial of DBT-BED with 11 women. Post-treatment improvements were seen in binge eating frequency and abstinence. Questionnaire measures indicated improvements in emotion regulation, weight concern, shape concern and eating concern. 82% of the group reported being abstinent from binge eating post treatment.

A randomised controlled trial compared DBT-BED group treatment (n=16) with a waiting list control group (n=16) (Telch et al., 2001). Post-treatment, significant reductions were seen in binge eating frequency, weight concern, shape concern and eating concern in the DBT-BED group in comparison to the waiting list control. There was no difference in post-treatment emotion regulation scores between the two groups. 89% of the DBT-BED group were abstinent from binge eating compared to 12% control group. At 6-month follow-up, 56% were still abstinent from binge eating.

Safer et al. (2010) conducted a randomised trial comparing DBT-BED (n=50) with an active comparison group therapy group (ACGT) (n=51) for women and men. Both interventions were beneficial in helping participants to reduce and abstain from binge eating. Participants in the DBT-BED showed greater reductions in binge eating and higher rates of abstinence than the ACGT group post-treatment. However, these differences were no longer significant at 12-month follow up. There was no significant difference between groups in questionnaire outcome measures of emotion regulation, self-esteem or affect. Drop-out rate was significantly lower for the DBT-BED group (4%) than for the ACGT group (33.3%).

Safer, Lively Telch and Agras (2002) looked at predictors of relapse for participants who were abstinent from binge eating after undergoing treatment in the Telch et al. (2000, 2001) studies, described above. Comparisons between those who were no longer abstinent at 6

months (n=9) and those that were still abstinent (n=23) identified the two best predictors of relapse as: earlier age of onset of binge eating and higher scores on a measure of eating restraint at the end of the treatment phase.

Critique of DBT for Binge Eating Disorder

The studies above have produced evidence of positive outcomes of DBT-BED. Post-treatment, binge eating behaviour had reduced or ceased across the three studies. The two randomised controlled trials were rated “strong” and “moderate/strong” on the quality rating. DBT-BED was superior to a waiting list control in reducing binge eating, and was associated with a substantially lower drop-out rate than AGGT. Although DBT was designed to target emotion regulation, there is some uncertainty about the mechanism of action of this treatment for binge eating disorder because post-treatment improvements on a measure of emotion regulation were only seen in the uncontrolled trial (Telch et al., 2000). However, it has been suggested that this could be due to a lack of consensus on how to conceptualise and measure emotion regulation (Safer et al., 2010).

In terms of efficacy, the positive outcomes observed were not sufficient to meet criteria for probable efficacy for binge eating disorder. A further demonstration that DBT-BED is superior to waiting list control would be required. The studies are authored by members of the same research group; hence it will be important for future research to be conducted by different researchers in order to meet criteria for well-established treatments.

3.3.2.2 DBT for Bulimia Nervosa

Two studies have delivered DBT-BED in 20 individual sessions for the treatment of bulimia nervosa. Safer, Telch and Agras (2001a) provided a case report of a thirty-six year old woman. She reported being abstinent of binge and purge behaviours from week five of treatment onwards. Six months post-treatment, she reported having engaged in two episodes of binge eating and purging since the treatment phase.

Safer, Telch and Agras (2001b) conducted a randomised controlled trial comparing DBT-BED (n=14 women) with a waiting list control (n=15 women). Using ‘intent to treat’

analysis, they reported a significant reduction in binge and purge behaviours in the DBT-BED group in comparison to the waiting list group. Post-treatment, there were no significant differences between the two groups on questionnaire measures of emotion regulation, affect, emotional eating, personality or self esteem. Although two clients were withdrawn from treatment (due to pregnancy and psychotic symptoms), the dropout rate was extremely low (0%).

Critique of DBT for Bulimia Nervosa

Results of the case study and randomised controlled trial suggest that DBT-BED had positive outcomes for bulimia nervosa in terms of reducing binge and purge behaviours. As noted for the binge eating studies, any change in emotional regulation skills is not picked up by the outcome measure. A limitation of the randomised controlled trial, related to this, was that the two groups had significantly different pre-treatment scores on the measure of emotion regulation (and was therefore rated “weak” on confounders). Overall, however, the quality of the randomised controlled trial was rated as “moderate”. In order to meet task force criteria for probable efficacy, a further demonstration that DBT-BED is superior in treating bulimia, to a waiting list control, is required.

3.3.2.3 DBT and Adolescents

Two studies have reported the outcome of DBT interventions for eating disorders in adolescents. Safer, Lock and Couturier (2007) used a 21-session version of DBT-BED (slightly modified for age appropriateness) with a 16 year old girl with binge eating disorder. Modifications involved addition of an interpersonal effectiveness module, delivery of skills training in an individual rather than group format, and parents being invited to sessions where specific issues arose. At post-treatment, binge eating had reduced substantially and eating restraint was improved. However, no positive changes were seen in shape, weight or eating concern. At three-month follow up assessment the participant reported a two-month abstinence from binge eating. Interestingly, she indicated that she found the interpersonal effectiveness module, which is not usually included in DBT-BED, to be the most helpful to her.

Salbach-Andrae, Bohnecamp, Pfeiffer, Lehmkuhl, and Miller (2008) described a case-series of 12 adolescents with Anorexia nervosa (n=6) and Bulimia Nervosa (n=6) who were treated with a DBT protocol which had been adapted for adolescents at high risk of suicide and self-injury (Miller, Rathus & Linehan, 2007). Treatment was delivered within an outpatient psychiatric service in Germany and included weekly skills group, individual DBT, therapist consultation meetings and telephone coaching. The authors of this study extended the treatment from 16 to 25 weeks and added a “dealing with food and body image” module. Parents were involved in the treatment and attended some of the skills training sessions. Comparison between pre- and post-treatment questionnaire measures revealed reductions in eating disorder symptoms and general psychopathology. Post-treatment, all participants that met diagnostic criteria for anorexia restricting type (n=4) no longer met criteria for eating disorder. One of two participants with anorexia binge/purging type met the same criteria while the other no longer met eating disorder criteria. Three of the six with bulimia nervosa purging type continued to meet the same criteria, two met EDNOS criteria and one dropped out of treatment.

Critique of DBT for Adolescents

The two studies with adolescents reported positive outcomes of DBT. It is important to note that reductions in eating pathology were seen in participants with anorexia nervosa as well as binge eating disorder and bulimia nervosa. The quality of the case series was rated as “moderate”. Although these initial findings appear promising, to meet task force criteria for probable efficacy, a comparison of BDT with a waiting list or alternative treatment approach would be necessary.

3.3.2.4 DBT and Co-morbid Personality Disorder

Three studies have used DBT interventions with adults with eating disorders and co-morbid personality disorder. Chen, Matthews, Allen, Kuo and Linehan (2008) conducted a six-month DBT intervention with eight women who had been diagnosed with borderline personality disorder and met criteria for either bulimia nervosa or binge eating disorder. Treatment was intensive and included all components of standard DBT (Linehan, 1993a, 1993b): weekly group skills training, individual psychotherapy sessions, therapist consultation and access to 24-hr telephone coaching. Improvements were seen in frequency of binge eating and global

eating psychopathology at post treatment and six month follow-up. Drop-out rates were relatively low (n=1, during the treatment phase). Despite promising results, feedback from participants was that the duration of treatment was not sufficient. Three participants engaged in further/alternative treatment after the DBT sessions had finished. One participant made a serious suicide attempt after treatment.

Palmer, Birchall, Damani et al. (2002) delivered an 18-month intensive DBT intervention with women (n=7) meeting DSM-IV criteria for both borderline personality disorder and bulimia nervosa (n=5) or EDNOS/binge eating disorder (n=2). There were no drop-outs from the program and reductions were seen in self-injury and number of days spent in hospital (for all but one participant). At follow-up assessment, three participants no longer met diagnostic criteria for eating disorder and the remainder met EDNOS criteria.

A more recent attempt to use a DBT-informed approach to treat eating disorders and borderline personality compared a sample of participants with eating disorders (ED group) (n=24) with a sample who had been labelled with an eating disorder diagnosis and borderline personality disorder (ED-BPD group) (n=16) (Ben-Porath et al., 2009). All clients were judged to require admission to a partial-hospital program (i.e., 30 hours treatment per week) due to the severity of their presentation. Treatment involved weekly group skills training sessions (n=2), motivation and commitment group, goal setting group, “DBT in action” group, yoga group, nutrition group and behaviour chain analysis (i.e., functional analysis) group. An improvement in eating psychopathology was seen across both groups. The ED-BPD group reported higher overall levels of anxiety and depression than the ED group but improvements in anxiety and depression were seen in both groups post-treatment. At pre-treatment assessment, the ED-BPD group reported a significantly poorer ability to regulate emotions than the ED group. However, scores were significantly improved for the ED-BPD group at post treatment assessment and were no longer significantly different to the ED group.

Critique of DBT for co-morbid personality disorder

The three studies have demonstrated positive outcomes of intensive DBT interventions for eating disorders in a group of participants who had been assessed to require a high level of input from mental health services due to the severity of their presentation. There are obvious

financial implications of delivering such intensive interventions. However, Palmer et al. (2002) suggested that this approach may warrant further consideration, especially where there are risks to health and life and long term intensive involvement from mental health services is often required. Further research, using a waiting list control sample, could be a useful next step in demonstrating treatment efficacy.

3.3.2.4 Treatment Efficacy of DBT Approaches for Eating Disorders

The research discussed above has shown some positive outcomes of DBT interventions for binge eating disorder, bulimia nervosa, co-morbid eating and personality disorder diagnoses and for adolescents (including those with anorexia nervosa). Across all studies, improvements were seen in eating pathology. DBT-BED interventions for binge eating disorder and bulimia nervosa were superior to waiting list control groups in reducing eating pathology. Despite this, further research would be beneficial in demonstrating treatment efficacy. Further comparisons with waiting list controls and other established treatment interventions would be valuable. Further investigation into the methods for measuring emotion regulation would also be helpful in clarifying the mechanism of action of DBT. The DBT literature currently falls short of meeting Division 12 Task Force criteria for treatment efficacy for eating disorders.

4.0 Discussion

The aim of the literature review was to evaluate the existing evidence for third wave cognitive and behavioural approaches in the treatment of eating disorders and to assess whether efficacy of these approaches has been established. Three ACT articles, seven mindfulness articles and eleven DBT articles were retrieved from a literature search of electronic databases and reviewed.

The data revealed potential utility of these third wave treatments in several areas. ACT was successful in improving sub-clinical eating pathology. Mindfulness was successful in helping participants to adapt to post-bariatric surgery dietary and lifestyle changes. DBT was successful in improving eating pathology in adults with bulimia nervosa, binge eating disorder, personality disorder and in adolescents with bulimia nervosa, binge eating disorder and anorexia nervosa. In other areas, such as in the application of ACT for sub-clinical anorexia nervosa and mindfulness for binge eating, mixed results were seen. Overall, none of the three approaches fulfilled the American Psychological Association task force criteria for efficacy in the treatment of eating disorders.

Several common limitations were seen in the studies evaluated in the literature review. Treatment approaches often included interventions from alternative theoretical approaches in addition to the third wave therapy, which meant it was impossible to assess which treatment approach was responsible for change. Studies often recruited samples with sub-clinical eating difficulties from the community via media advertising, rather than recruiting clinical populations through the mental health services. In some cases, any post treatment improvements in eating pathology, were not reported in the outcome measures. In other cases, there has been uncertainty about the validity of outcome measures used (e.g., in the case of emotion regulation).

In order to demonstrate treatment efficacy, future research should include waiting list controls or randomised controlled trials comparing third wave approaches with other approaches. Another option is for a series of good quality single case experimental designs to be carried

out. It is important for research to be conducted by more than one research team, and for treatment manuals to be established and shared. Participants meeting clinical criteria for eating disorders should be included in the research, in order that conclusions can be drawn about the utility of third wave approaches for eating disorders. One of the studies included in this review, Safer et al. (2010), provided an example of high methodological quality and suitability for efficacy assessment. This was a randomised controlled trial which included a substantial participant sample (n=101), and compared DBT with an active comparison group therapy. A DBT-BED treatment manual was followed, the characteristics of the sample were clearly specified and the study was rated “strong” on the quality assessment. This study can be seen as an example of good practice for future research in the area.

Further research comparing the third wave approaches with existing front line treatments for eating disorders (e.g., CBT) would be useful. The suggestion of Johnson et al. (1990) that clients that fail to respond to treatments such as CBT may respond better to treatments that target emotion regulation and impulsivity, could also be explored. Preliminary support for this hypothesis comes from the three studies included in this review that demonstrated effectiveness of DBT for individuals with co-morbid personality disorder diagnoses.

It is notable that DBT, ACT and mindfulness approaches all target avoidance of emotional experience and that each of the DBT modules are designed to foster emotion regulation skills. The third wave treatment targets of emotion regulation and ineffective control strategies (in ACT) are consistent with theories about the function of disordered eating behaviours (Fairburn et al., 1999; Telch et al., 2001) and empirical data (Deaver, et al., 2003). These approaches have a different perspective about cognitive experiences than CBT. Rather than seeking to identify and modify “distorted” cognitions, the third wave approaches adopt an accepting and non-judgemental stance to these thoughts. It could be that this more compassionate view of the individual’s physical, emotional and cognitive experiences is particularly suitable to the subgroup of clients who do not respond to the current mainstream interventions.

Of the 21 studies included in the review, only three included participants that met diagnostic criteria for anorexia nervosa. For the two of these that reported specific outcome data for the

participants with this diagnosis, results were quite promising. Three out of six participants with anorexia nervosa diagnoses no longer met diagnostic criteria for eating disorder post-treatment with DBT in Salbach-Andrea et al.'s (2008) case series study. Heffner et al. (2002) reported that treatment incorporating ACT, CBT and family involvement led to remission of most symptoms of anorexia nervosa in a case study with an adolescent female. Further research evaluating the efficacy of third wave treatments for anorexia nervosa could be very valuable and is consistent with NICE (2004) guidelines that research in this area should be seen as a priority.

There were limitations to the current review. The literature search was restricted to published English language articles. There may be further important research in this area that has been conducted abroad, reported in books, or presented at conferences. A further limitation was that the quality assessment was conducted by one individual. Using two quality raters and measuring inter-rater reliability would have been beneficial.

Overall, this review has suggested the third wave approaches of ACT, mindfulness and DBT, have shown some promising preliminary outcome data, in an area of psychopathology that is regarded as notoriously difficult to treat. Nevertheless, further research of good quality is required to establish the efficacy of these approaches in the treatment of eating disorders.

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Emotion Regulation and Eating Psychopathology in Women

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EMOTION REGULATION AND EATING PSYCHOPATHOLOGY

Abstract

Objective: To examine whether women experiencing current eating psychopathology report difficulties in regulating emotions and whether specific difficulties in emotion regulation contribute to eating psychopathology. **Method:** A clinical sample of forty-eight women reporting current eating difficulties and a non-clinical comparison group (N=50) completed questionnaire measures of eating behaviour, affect and emotion regulation difficulties. **Results:** Higher levels of emotion regulation difficulties were reported by the women with eating difficulties than the healthy controls. In the comparison group, lack of emotional awareness predicted variation in shape and weight concern even after anxiety and depression were accounted for. In the clinical group, impulse control difficulties predicted variation in weight concern after anxiety and depression were accounted for. **Discussion:** The results revealed qualitative and quantitative differences in the specific nature of emotion regulation difficulties that impacted on eating psychopathology between clinical and non-clinical samples. Further research investigating the relationship between emotion regulation and eating psychopathology and the possible mediating effect of anxiety within clinical populations is indicated.

Keywords: Emotion regulation, eating psychopathology, anxiety, depression.

Emotion Regulation and Eating Psychopathology in Women

Introduction

Emotion regulation models have been proposed to contribute to our understanding of a wide range of clinical difficulties including substance misuse (Sher & Grekin, 2007), mood disorders (Campbell-Sills & Barlow, 2007), and borderline personality disorder (Linehan, 1993). Similarly, the eating behaviour literature has highlighted clear links between emotional experiences and patterns of eating behaviour. Negative affect has been identified as one of the most common precipitators of binge eating (Polivy & Herman, 1993). Using event recording, Stickney and Miltenberger (1999) found that intensity of negative emotional states (e.g., worry, anger towards others, sadness and guilt) reduced during binge eating before returning to pre-binge levels in undergraduate students. Conversely, when positive affect was recorded on an affect grid, levels increased during binge eating and then reduced to pre-binge levels (Deaver, Miltenberger, Smyth, Meidinger & Crosby, 2003). In individuals with a current eating disorder, increased eating was observed when negative affect was experimentally induced (Agras & Telch, 1998).

On the basis of this empirical literature, it is clear that emotion regulation models may have useful clinical implications for the understanding and treatment of disordered eating patterns. Mizes (1985) proposed a 'negative affect' model to explain the function of binge eating and purging in individuals with bulimia nervosa. He suggested that negative affect serves as a cue for binge eating and purging behaviours, both of which are negatively reinforced by a consequent reduction in negative affect. Arnow, Kennedy and Agras (1992) interviewed nineteen obese women about the precipitants and consequences of their binge eating behaviour. Consistent with Mizes (1985), their results suggested that binge eating was negatively reinforcing for the participants because they reported a post-binge reduction in the intensity of negative emotions. They proposed a pathway to binge-eating where negative emotional states can precipitate a binge, even without the presence of a restrictive eating pattern or hunger. An alternative 'escape model' to explain the function of binge eating has been proposed by Heatherton and Baumeister (1991). They suggest that individuals narrow their attention to their immediate environment in order to escape from high self-awareness and distress, at which point their inhibitions that usually help them to refrain from binge eating are compromised. Consistent with the escape model, significantly higher consumption

of chocolate has been reported in restrained eaters after completing a task designed to induce ego-threatening stress than after completing a neutral control task in a sample of female university students and staff (Wallis & Hetherington, 2004).

One obstacle that may have impeded the identification of specific emotion regulation difficulties contributing to specific clinical problems has been the lack of a commonly agreed conceptualisation of emotion regulation. Earlier theoretical conceptualisations focussed on ability to suppress negative emotional experiences as an indicator of effective emotional regulation (Clark & Isen, 1982). However, the empirical literature has since suggested that suppression of negative affect can actually result in a more intense or longer-lived emotional experience (Campbell-Sills, Barlow, Brown & Hofmann, 2006; Wegner, Erber & Zanakoa, 1993; Wenzlaff, Wegner & Roper, 1988;). Alternative approaches have emphasised the importance of awareness, acceptance and understanding of emotional experiences (Hayes, 2004; Thompson & Calkins, 1996)

A particularly comprehensive conceptualisation of emotion regulation has been provided by Gratz and Roemer (2004), which is comprised of the following dimensions: 1) awareness and understanding of emotions, 2) acceptance of emotions, 3) the ability to control impulsive behaviour and behave in accordance with desired goals when experiencing negative emotions, and 4) ability to use situationally appropriate emotion regulation strategies flexibly to modulate emotional responses as desired in order to meet individual goals and situational demands. They proposed that incompetence in any of these dimensions would lead to emotion dysregulation (i.e., difficulties in emotion regulation).

Consistent with Gratz and Roemers' (2004) multidimensional conceptualisation of emotion regulation, some of the more recent research in this area has attempted to identify the relationship between eating psychopathology and specific difficulties in emotion regulation. Sim and Zeman (2006, p. 493) hope that this will be advantageous at a clinical level, by turning the attention of therapists "away from unspecified emotion regulation deficits, toward specific problems in identifying and coping with particular forms of negative emotion". Whiteside et al. (2007) found that emotion regulation difficulties accounted for variance in binge eating when gender, food restriction and over-evaluation of weight and shape were

accounted for in a sample of 695 undergraduates. In particular, lack of emotional clarity and limited access to emotional regulation strategies were significant predictors of binge eating. Similarly, school girls reporting high levels of disordered eating reported poorer awareness of emotions and less constructive management of emotions than those reporting low levels of disordered eating (Sim & Zeman, 2006). Furthermore, these factors were identified as partial mediators in the relationship between body dissatisfaction and bulimic behaviours (Sim & Zeman, 2005).

In a study examining emotion regulation in 296 male college students, Lavender and Anderson (2010) found that emotion regulation difficulties accounted for unique variance in disordered eating and body dissatisfaction, when body mass index and negative affect were also accounted for. In particular, non acceptance of emotional responses and limited access to emotion regulation strategies were identified as significant predictors of disordered eating. It is notable that this study accounted for negative affect because depression and anxiety are common in people with eating disorders. In fact, most clients presenting for treatment meet criteria for mood or anxiety disorders (Fairburn, 2008).

Some recent developments in therapeutic interventions for eating disorders have specifically targeted clients' ability to regulate emotions. Enhanced Cognitive Behaviour Therapy for eating disorders includes guidance on how to identify clients who have "mood intolerance" (i.e., unusually intense moods, sensitivity to certain moods or difficulty tolerating them) and how to intervene in a way that helps clients to be accepting of emotional states and to use functional mood modulatory behaviour (Fairburn, 2008).

Applications of Dialectical behaviour therapy (DBT) for eating disorders, are based on the premise that pathological eating habits such as binge eating may serve as a means of alleviating emotional distress in those who have difficulty in regulating negative emotions (Telch, Agras & Linehan, 2001). According to Linehan, Bohus and Lynch (2007), all the skills in DBT target emotion regulation in some way. Distress tolerance skills focus on tolerating distressing emotions, emotion regulation skills focus on changing distressing emotions and mindfulness skills emphasise bearing emotional pain skilfully using techniques such as observing and describing emotional experiences. Anecdotal reports suggest that DBT

has been beneficial in treating anorexia nervosa in clients that have not benefitted significantly from front line treatments (McCabe & Marcus, 2002). Randomised controlled trials have provided evidence for the effectiveness of DBT in the treatment of Binge Eating Disorder (Safer, Robinson & Jo, 2010; Telch et al., 2001) and Bulimia Nervosa (Safer, Telch & Agras, 2001).

Two further approaches that have specifically targeted acceptance, awareness and understanding of emotions in the treatment of individuals with eating related difficulties are Acceptance and Commitment therapy (ACT: Berman, Boutelle & Crow, 2009; Heffner, Sperry, Eifert & Detweiler, 2002; Juarascio, Forman & Herbert, 2010) and Mindfulness Based Cognitive Therapy (MBCT: Baer, Fischer & Huss, 2005, 2006).

A further understanding of the relationship between eating pathology and emotional regulation would be beneficial in guiding future treatment developments and targeting skills most relevant to pathological eating styles such as food restriction, purging or bingeing. As discussed above, Sim and Zeman (2005, 2006), Whiteside et al. (2007) and Lavender and Anderson (2001) have explored the relationship between multidimensional components of emotion regulation and eating behaviour in non clinical samples. This present investigation builds on this previous research by including a sample of participants experiencing current eating psychopathology. The primary aim of this study was to assess whether this sample have more difficulties in regulating emotions than women with no current or previous history of eating disorder. It was hypothesised that a sample of women currently experiencing eating related difficulties would score more highly on a measure of difficulties in emotion regulation than a comparison group recruited from a university campus, independent of negative affect. A second aim was to assess whether a relationship exists between specific emotion regulation difficulties and eating psychopathology. It was hypothesised that difficulties in emotion regulation would account for variance in eating psychopathology when negative affect was taken into account.

Method

Participants

For between subjects comparison of the two groups described below, power analysis was considered according to Cohen (1988, p. 54). It was predicted that 50 participants would be required in each group in order to find a medium effect size of 0.5 with a power of 0.80, at an alpha level of 0.05. For regression analyses, power analysis was considered according to Field (2009, p. 223). It was estimated that 90 participants would give a power of 0.8, in order to find a medium effect size.

A clinical sample of 51 women was recruited from beat (previously known as The Eating Disorder Association) and the Birmingham and Solihull Eating Disorder Service. The clinical sample comprised women aged 16 and above, who indicated that they experienced current eating related difficulties or described themselves as being in recovery from eating disorder. Where questionnaire screening was not indicative of eating psychopathology and participants indicated that they did not have a current eating disorder ($n=2$), their data was excluded from the investigation. Where there was a large amount of missing data, participants questionnaires were also excluded ($n=1$). 96% of the clinical group indicated that they had received an eating disorder diagnosis. Participants from the clinical sample reported that they either currently experienced, or were in recovery from: anorexia (54%), bulimia (17%), eating disorder not otherwise specified (EDNOS) (8%), binge eating disorder (6%), and both anorexia and bulimia (4%).

A non clinical opportunity sample of 57 women, with no history of eating disorder, was recruited from the University of Birmingham. Participants were either general users of the campus facilities, university staff or students recruited via the research participation scheme in return for research credits. Where questionnaire (EDE-Q) screening was indicative of current eating psychopathology (as indicated by Mond, Hay, Rodgers, Owen & Beumont, 2004) ($n=6$), or where there was a large amount of missing data ($n=1$), participant questionnaires were excluded from the investigation.

Mean ages of the clinical and comparison samples were 29.56 (SD = 11.64, range = 16–59) and 25.80 (SD = 11.38, range = 18–62) respectively. Across both groups, participants were

predominantly white European (88%). The remainder identified themselves as Asian (5%), white non-European (2%), Mixed (2%), black Caribbean (2%) and other (1%).

Measures

The following measures were included in the questionnaire pack and are provided in Appendix C.

Eating Disorders Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994)

This measure is a 36-item self-report questionnaire version of the EDE interview (Fairburn and Cooper, 1993). The measure provides a global score and individual subscale scores for: restraint, eating concern, shape concern and weight concern. Items are scored from 0-6, with higher scores indicating higher frequency and severity of eating psychopathology. The measure also provides diagnostic information such as frequency of objective and subjective binge eating and purging, use of laxatives or diuretics, and exercising hard as a means of controlling shape or weight. In an assessment of the EDE-Q's validity, Mond et al. (2004) reported good concurrent validity and acceptable criterion validity.

Difficulties in emotion regulation scale (DERS; Gratz & Roemer, 2004)

The DERS is a multi-dimensional self-report measure which asks participants to rate how often 36 statements apply to them on a 5 point scale (1 = "almost never" (0-10% of the time), 5 = "almost always" (91-100% of the time)). The measure provides an overall score plus scores for six subscales that aim to capture the following domains of emotion regulation difficulties: non-acceptance of emotional responses (nonacceptance), difficulties engaging in goal directed behaviour (goals), impulse control difficulties (impulse), lack of emotional awareness (awareness), limited access to emotion regulation strategies (strategies) and lack of emotional clarity (clarity). The DERS is reported to have high internal consistency, good test-retest reliability and adequate construct and predictive validity (Gratz & Roemer, 2004).

The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983)

The HADS is a 14-item self-report measure of depression and generalised anxiety. One half of the items assess depression and the others assess anxiety. The measure is widely used in hospital, out-patient and community settings and has well established reliability and validity.

This was confirmed in a review of the literature by Bjelland, Dahl, Haug, and Neckelmann (2002), who also reported that the HADS performs as well as more comprehensive instruments in screening for anxiety and depression.

Procedure

The research protocol for the current study was reviewed and approved by the Birmingham East, North and Solihull Research Ethics Committee. Confirmation of ethical approval is provided in Appendix D.

For recruitment of clinical participants, the research was advertised on the Eating Disorder Association website and forwarded to a database of Association members who have expressed an interest in taking part in research. The advertisement invited interested parties to get in touch with the Chief Investigator by email or letter in order to request further information and a questionnaire pack. Participants were given a letter of invitation and participant information sheet (both provided in Appendix E) and a questionnaire pack. They were given the choice of completing an electronic version of the questionnaire pack, or to receive a paper version and stamped addressed envelope by post. Information sheets and questionnaire packs were also provided to clinicians at the Birmingham and Solihull Eating Disorder service and they were asked to pass them on to clients that might be interested in participating.

For recruitment of non-clinical participants the study was advertised on the online research participation scheme. Students signed up for appointments to meet the chief investigator and receive an information pack and a questionnaire pack. Information sheets and questionnaire packs were also directly distributed to an opportunity sample of staff and general users of the university campus. All non-clinical participants were asked to read the information pack before deciding whether to take part. They were also given contact details, including the helpline number, of beat.

Data Analysis

Statistical analysis was conducted using SPSS for Windows (Version 16). Kolmogorov-Smirnov analyses indicated that the data were not normally distributed; hence non-parametric tests were administered where possible. Where no non-parametric alternatives were available,

parametric tests were employed (i.e. regression and multivariate ANCOVA analyses). The results of these should be treated with caution. Mann Whitney U tests were carried out in order to assess differences in emotion regulation difficulties between the clinical and non-clinical samples. Multivariate ANCOVA analysis was used to assess whether significant differences remained after controlling for anxiety and depression. Spearman's Rho correlations were used to identify bivariate associations between the DERS subscales and EDE-Q subscales in the clinical and non-clinical samples. As described by Field (2009, p.373), Bonferroni correction was calculated by multiplying alpha (0.05) by number of comparisons ($n=10$). Consequently, an alpha level of .005 was applied in order to reduce the risk of Type 1 errors. In order to check for inflated Type 2 error, the correlational analyses were computed for a second time and an alpha level of 0.01 was applied.

Stepwise multiple regression analyses were employed to identify predictors of eating psychopathology from the DERS subscales. Finally, hierarchical regression analyses were carried out in order to explore whether any predictive power of emotion regulation difficulties remained after taking anxiety and depression into account. Regression analyses were conducted in accordance with components of the model described by Baron and Kenny (1986) in order to identify possible mediating factors for further investigation. A mediating function is defined by them as, "The generative mechanism through which the focal independent variable is able to influence the dependent variable of interest" (p. 1173).

Results

Comparison between clinical and non-clinical groups

Mann Whitney comparisons between the clinical and non clinical groups are provided in Table 1. The results indicated that the clinical sample (mdn = 27) were significantly older than the control group (mdn = 22), $U = 920.50$, $z = -1.99$, $p < 0.05$. Where height and weight data were provided, body mass index was significantly lower in the clinical group (mdn = 18) than the control group (mdn = 22), $U = 493.50$, $z = -3.50$, $p < .001$. Of the 37 clinical participants who provided height and weight information, 15 had a body mass index of 17.5 or less.

The clinical group scored more highly than the non clinical group on all EDE-Q subscales (all at $p < .001$). During the 28 days prior to completing the EDE-Q, 22% of the non clinical group reported binge eating, 0% reported self-induced vomiting and 16% exercised hard as a means of weight control (range: 1-12 times). In the clinical group, 52% reported binge eating, 33% reported self-induced vomiting (2-600 times), and 52% exercised hard as a means of weight control (2- 28 times). Of those that indicated that they currently had (or were in recovery from) anorexia nervosa, 35% had binged over the past 28 days and 15% had self-induced vomiting. For bulimia nervosa, 88% had binged and 100% had self-induced vomiting. For binge eating disorder 100% had binged and none had self-induced vomiting. For EDNOS, 50% had binged and 25% had self-induced vomiting.

Mann Whitney U indicated that the clinical group scored significantly higher than the control group on the DERS global and subscale scores (all at $p < .001$). Effect size was medium for the goals subscale and large for the remainder according to guidelines for measuring effect size suggested by Cohen, 1998. Ratings for anxiety and depression were significantly higher in the clinical group than the non clinical group ($(U = 152, z = -7.471, p < .001)$ and $(U = 260, z = -6.718, p < .001)$ respectively). Multivariate ANCOVA analysis indicated that the observed differences on the DERS remained significant after anxiety and depression were controlled for (Wilks' Lamda = 0.787, $F(6,89) = 3.21, p < 0.01$).

Table 1. Non-Parametric Comparison of Difficulties in Emotion Regulation, Eating Psychopathology, Affect, Age and Body Mass Index.

Subscale/Demographic information	Non-clinical	Clinical	Mann Whitney U		Effect size (<i>r</i>)
	Median (Mean) N=50	Median (Mean) N=48	U	Z	
DERS non acceptance	10.5 (11.34)	21.5 (20.71)	254.50**	-6.73	-.68
DERS goals	14 (14.23)	19 (18.44)	641.50**	-3.98	-.40
DERS impulse	9 (10.0)	18.5 (18.88)	259.00**	-6.70	-.68
DERS awareness	13 (16.60)	20 (19.75)	464.50**	-5.24	-.53
DERS strategies	13 (14.82)	29 (27.21)	208.00**	-7.06	-.71
DERS clarity	8.5 (8.86)	17 (16.48)	222.00**	-6.97	-.70
DERS Global	70 (72.85)	125(121.46)	180.00**	-7.25	-.73
EDE-Q restraint	0.6 (0.95)	4.2 (3.63)	208.50**	-7.06	-.71
EDE-Q weight concern	1.2 (1.31)	4.4 (4.18)	170.00**	-7.33	-.74
EDE-Q shape concern	1.5 (1.60)	5.0 (4.75)	108.00**	-7.77	-.78
EDE-Q eating concern	0.2 (0.34)	3.8 (3.47)	75.50**	-8.04	-.81
HADS anxiety	5 (5.22)	14 (13.64)	152.00**	-7.47	-.75
HADS depression	1 (1.98)	9 (8.88)	260.00**	-6.72	-.68
Age	22 (25.80)	27 (29.56)	920.50*	-1.99	-.20
BMI	N=48 22 (22.63)	N=37 18 (20.36)	493.50**	-3.50	-.38

NB: DERS = Difficulties in emotion regulation scale, * $p < 0.05$, ** $p < 0.001$ (one tailed)

Identifying predictors of eating psychopathology in the comparison group

Table 2 reports Spearman's Rho correlations between eating psychopathology and difficulties in emotion regulation. Bivariate associations were identified between the DERS awareness subscale and the EDE-Q shape and weight concern subscales within the comparison group at $p < 0.005$. No additional associations were identified at $p < 0.01$. Linear regression identified awareness as a significant predictor for both shape concern and weight subscales (at an alpha level of < 0.001).

Table 2. Spearman's Rho Correlation Coefficients for Eating Psychopathology and Difficulties in Emotion Regulation.

DERS Subscale	EDEQ Subscale			
	Restraint	Eating Concern	Shape Concern	Weight Concern
<i>Non clinical Sample</i>				
Non acceptance	.428	.046	.338	.270
Goals	-.013	.260	.094	.066
Impulse	.135	.052	.044	.119
Awareness	.277	.209	.466*	.430*
Strategies	.074	.138	.118	.140
Clarity	-.023	.155	.193	.199
<i>Clinical Sample</i>				
Non acceptance	.375*	.376	.315	.358
Goals	.153	.292	.253	.270
Impulse	.465*	.498*	.531*	.498*
Awareness	.204	.136	.264	.335
Strategies	.324	.301	.448*	.439*
Clarity	.260	.306	.332	.243

Clinical N = 48, non-clinical N = 50

NB: DERS = Difficulties in emotion regulation scale. EDE-Q = Eating Disorders Examination Questionnaire

* $p < .005$ (One tailed, Bonferroni Correction applied)

Hierarchical Regression analyses accounting for anxiety and depression in the comparison group

Hierarchical regression analysis was conducted to assess whether awareness continued to significantly predict variance in eating psychopathology after anxiety and depression were added to the regression model. Using hierarchical regression analyses EDE-Q shape concern and weight concern were regressed on HADS anxiety and depression at step one. Awareness was added at step two.

Hierarchical regression analyses of awareness on EDE-Q shape and weight concern are presented in Table 3. At step 1, anxiety and depression accounted for 21.7% of the variation in shape concern scores. After awareness was added at step 2, this figure increased significantly to 31.7%. A significant Beta value at step 2 ($p < 0.05$) indicated that awareness was making a significant contribution to the shape concern model. At step 1, anxiety and depression did not significantly predict variation in weight concern scores. After awareness was added at step 2, the model accounted for 19.2% of the variation in weight concern scores. A significant Beta value at step 2 ($p < 0.05$) indicated that awareness was making a significant contribution to global weight concern after accounting for anxiety and depression.

Table 3. Hierarchical Regression Analysis Predicting EDE-Q Shape and Weight Concern as Functions of Anxiety, Depression and Awareness Difficulties in the Comparison Group.

DV	Shape Concern		Weight Concern			
	B	SE B	B	B	SE B	B
Step 1						
Constant	0.56	0.33		0.76	0.34	
Anxiety	0.21	0.06	.49**	0.12	0.06	.29
Depression	-0.03	0.06	-.07	-0.03	0.07	-.07
Step 2						
Constant	-0.41	0.48		-0.23	0.50	
Anxiety	0.17	0.06	.40**	0.08	0.06	.19
Depression	-0.03	0.06	-.06	-0.02	0.06	-.05
Awareness	0.09	0.03	.33*	0.09	0.03	.36*

Note: N = 50, *p<0.05, **p<0.01

On Shape Concern $R^2 = .22$ for step 1, $\Delta R^2 = .10$ for step 2 (p<0.05)

On Weight Concern $R^2 = .07$ for step 1, $\Delta R^2 = .19$ for step 2 (p<0.05)

Identifying predictors of eating psychopathology in the clinical group

As illustrated in Table 2, positive Spearman's Rho correlations were found between: impulse control difficulties and all of the eating psychopathology subscales, limited access to emotion regulation strategies and shape and weight concern, and non-acceptance of emotional responses and eating restraint in the clinical group (all at p<.005). No additional associations were identified at p<0.01. Where bivariate associations had been identified, the DERS subscales were regressed on the EDEQ subscales using a stepwise method in order to exclude redundant predictors. Non-acceptance and impulse were regressed on restraint. Impulse was regressed on eating concern. Impulse and strategies were regressed on both shape concern and weight concern. The impulse control difficulties subscale of the DERS was identified as a significant predictor of all eating psychopathology subscales (at an alpha level of <0.001). All other predictors entered into the stepwise regression analyses were excluded.

Hierarchical Regression analyses accounting for anxiety and depression in the clinical group

Hierarchical regression analysis was conducted to assess whether the impulse subscale was still a significant predictor of variance in eating psychopathology after anxiety and depression were added to the regression model. In a series of hierarchical regression analyses: The EDE-

Q subscale scores were regressed on HADS anxiety and depression at step one. Impulse was added at step two.

Hierarchical regression analyses of impulse on weight concern, restraint, eating concern and shape concern are presented in Table 4. With regard to weight concern, anxiety and depression accounted for 30.4% of the variation in weight concern scores at step 1. After impulse was added at step 2, this increased significantly to 37.7%. A significant Beta value at step 2 ($p < 0.05$) indicated that impulse was making a significant contribution to the weight concern model. After accounting for depression and anxiety, impulse was not a significant predictor of variance in restraint, eating concern or shape concern. However, anxiety continued to significantly predict variance in each of these EDE-Q subscales at $p < 0.05$.

Table 4. Hierarchical Regression Analyses Predicting Weight Concern, Restraint, Eating Concern and Shape Concern as Functions of Anxiety, Depression and Impulse Control Difficulties in the Clinical Group.

DV	Weight Concern			Restraint		
	B	SE B	B	B	SE B	B
Step 1						
Constant	1.95	0.62		0.65	0.62	
Anxiety	0.10	0.05	.26	0.17	0.05	.47**
Depression	0.11	0.05	.37*	0.07	0.05	.21
Step 2						
Constant	1.28	0.66		0.19	0.68	
Anxiety	0.05	0.05	.14	0.15	0.05	.40*
Depression	0.08	0.05	.25	0.04	0.05	.13
Impulse	0.08	0.04	.33*	0.06	0.04	.22
DV	Eating Concern			Shape Concern		
	B	SE B	B	B	SE B	B
Step 1						
Constant	0.80	0.56		2.28	0.55	
Anxiety	0.14	0.05	.41**	0.13	0.05	.40**
Depression	0.08	0.04	.30*	0.08	0.04	.28
Step 2						
Constant	0.46	0.62		1.86	0.60	
Anxiety	0.12	0.05	.35*	0.10	0.05	.32*
Depression	0.07	0.04	.24	0.06	0.04	.21
Impulse	0.04	0.03	.18	0.05	0.03	.23

Note: N = 48, * $p < 0.05$, ** $p < 0.01$

On weight concern $R^2 = .30$ for step 1, $\Delta R^2 = .07$ for step 2 ($p < 0.05$)

On restraint $R^2 = .38$ for step 1, $\Delta R^2 = .03$ for step 2 ($p = ns$)

On eating concern $R^2 = .39$ for step 1, $\Delta R^2 = .02$ for step 2 ($p = ns$)

On shape concern $R^2 = .36$ for step 1, $\Delta R^2 = .03$ for step 2 ($p = ns$)

Discussion

The primary aim of the current investigation was to test the hypothesis that the clinical sample of women with current eating psychopathology would have higher levels of emotion regulation difficulties than the comparison group. The hypothesis was supported by the scores on the DERS, which indicated that they had more difficulties on each of the six domains of: non-acceptance of emotional responses, difficulties engaging in goal-directed behaviour, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies and lack of emotional clarity. The differences between the two groups remained significant across all domains after depression and anxiety were taken into account.

Elevations on these domains suggest that individuals experiencing eating psychopathology at a clinical level may have difficulty understanding and accepting emotions and lack effective strategies for modulating emotions. Consistent with ‘negative affect’ models (Arnouk et al., 1998; Mizes, 1985), it is plausible that individuals’ who experience emotions as overwhelming and out of control (impulse domain), who feel guilty, ashamed or angry for feeling upset (nonacceptance), and who lack alternative strategies to regulate their emotions would be likely to repeatedly engage in unhelpful eating behaviours (e.g., binge eating) that effectively alleviate distress (and are negatively reinforcing). In the present study, recent unhelpful eating related behaviours of binge eating and/or self-induced vomiting were reported by a substantial number of the clinical participants, irrespective of their eating disorder diagnosis.

The second aim of the current investigation was test the hypothesis that specific difficulties in emotion regulation would account for variance in eating psychopathology. In support of the above hypothesis, lack of emotional awareness was found to significantly predict variance in shape and weight concern in the comparison group, even after anxiety and depression had been taken into account. The results were consistent with findings that lack of emotional awareness predicted disordered eating in a non-clinical sample of early adolescent girls (Sim & Zeman, 2006). According to the questions on this domain, (e.g., “I care about what I am feeling” - reverse scored), individuals scoring more highly on awareness did not attach great importance to their emotional experiences. It can be speculated that a lack of emotional

awareness could lead to inconsistent use of existing emotion regulation strategies and a tendency to rely on some (sub clinical) unhelpful eating habits (e.g., occasional binge eating) in order to modulate emotions.

However, the results of the present study were not consistent with previous findings that lack of emotional clarity and limited access to emotional regulation strategies were significant predictors of binge eating in undergraduates (Whiteside et al., 2007), or that non acceptance of emotional responses and limited access to emotion regulation strategies were significant predictors of disordered eating in male college students (Lavender & Anderson, 2010). With regard to the latter, it is possible that men could have a different profile of emotion regulation skills to women. Another reason for the discrepancy between studies could be that, in the current study, participants in the comparison group were excluded if questionnaire screening was indicative of current eating psychopathology. Whiteside et al. and Lavender and Anderson chose not to do this. It could be argued that the current results were more comparable with Sim and Zeman (2005, 2006). They postulated that due to the typical emergence of bulimia nervosa in late adolescence, a college sample would have reported higher levels of eating psychopathology than their eleven to fifteen year old sample.

In the clinical group, impulse control difficulties predicted variance in weight concern, even after anxiety and depression had been taken into account. Impulse control difficulties also significantly predicted variance in restraint, eating concern and shape concern in the clinical group. However, after accounting for anxiety and depression, impulse control no longer contributed significantly to the regression model. Conversely, anxiety continued to predict variance in restraint, eating concern and shape concern. It is possible that anxiety has a mediator function within the relationship between impulse control difficulties and these three domains of eating psychopathology. This could be investigated using Baron and Kenny's (1986) framework for testing mediation. Further research looking at the potential mediating role of anxiety would be beneficial due to its possible implications for clinical practice. If anxiety was confirmed to have a mediating role, then targeting anxiety symptoms in treatment would be just as important as targeting difficulties in impulse control.

Items on the impulse control difficulties subscale included, “When I am upset, I lose control over my behaviours” and “I experience my emotions as overwhelming and out of control”. This fits well with cognitive behavioural theory that anorexia nervosa is maintained by a problematic need for control (Fairburn, Shafran, & Cooper, 1999). Elevations on impulse control and the other domains of emotional dysregulation complement Linehan’s (1993) theory that some individuals are vulnerable to experiencing particularly high levels of emotional distress that are long-lived and difficult to regulate. It is plausible that women experiencing this emotional vulnerability may resort to psychopathological eating related behaviours in order to alleviate (consistent with Arnow et al., 1992; and Mizes, 1985) or escape distress (Heatherton & Beumeister, 1991). Unfortunately, escaping from or suppressing emotional experiences may have a paradoxical effect, and actually increase levels of emotional distress (Campbell-Sills et al., 2006; Wegner et al., 1993). If this occurs, it is likely that a view of emotions as overwhelming and out of control may be reinforced.

As commented on in previous research (Lavender & Anderson, 2010; Whiteside et al., 2007), it is important to note that without measuring physiological emotional responses, it is difficult to draw conclusions about whether individuals experience particularly intense emotional responses that are difficult to modulate, whether they interpret emotions as particularly intense or whether their attempts to use emotion regulation strategies lack effectiveness. Experimental assessment of physiological responses to emotional states, for example by measuring galvanic skin response or cortisol levels, would be useful in contributing to our understanding of this area. Irrespective of this, the evidence of global deficits in emotion regulation and a subjective experience of emotions as overwhelming or out of control provided by the current investigation supports a rationale for delivering treatment approaches that focus on awareness, understanding, acceptance of emotions (e.g., ACT: Juarascio et al., 2010 & MBCT: Baer et al., 2005, 2006) and development of strategies to effectively regulate them (e.g., DBT: Safer et al., 2010).

The distinction between the predictors of eating psychopathology for the clinical and non-clinical groups was noteworthy. Some elements of pathological eating behaviours, such as binge eating, loss of control while eating and use of laxatives or diuretics were present in both the clinical and non-clinical groups. However, the present research indicated that the

relationship between difficulties in emotion regulation and the psychopathology experienced was not the same for the clinical and non-clinical samples. Not only did the clinical group experience elevated difficulties in emotion regulation across all domains assessed, a predictive relationship between difficulties in impulse control and eating psychopathology was exclusive to this group. The relationship between lack of emotional awareness and eating psychopathology, seen in the comparison group, was not present in the clinical group. This finding suggests that caution should be taken in drawing conclusions about eating disorder treatment goals from research that has investigated the relationship between difficulties in emotion regulation and eating psychopathology in non clinical groups.

The current investigation had several limitations. The clinical sample was slightly older (mean=29.56, SD = 11.64) than the comparison group. As levels of eating psychopathology have been reported to reduce with age (Mond et al., 2004), it is possible that the differences between groups on the constructs measured would have been even greater if a younger clinical group had taken part. However, it is important to recognise that relatively high levels of eating psychopathology were present within this clinical sample. During the 28 days prior to completing the questionnaire pack, more than half of the clinical sample had reported binge eating and exercising hard as a means of weight control. One third had reported self-induced vomiting. Of the 37 clinical participants who provided height and weight information, 15 had a body mass index at a level where they were likely to be experiencing marked adverse physical and psychosocial effects of being underweight (17.5 or below; Fairburn, 2008).

A further possible threat to validity of the current research is that a large majority of the clinical participants were recruited from the beat rather than a specialist eating disorder treatment service. It is possible that the beat participants were a more motivated and highly functioning sample with greater insight into their difficulties than those presenting for specialist eating disorder treatment. As 95.8% indicated that they had previously engaged in psychological therapy, it may be that therapeutic work has already improved their understanding of emotional experiences and their ability to effectively modulate emotions. If so, then it would be plausible for those starting treatment to have more severe difficulties in emotion regulation than the existing sample.

A relatively large proportion of the clinical sample reported that they currently had, or were in recovery from, anorexia nervosa (54%). The profile of diagnoses within the clinical group was not typical of those presenting for treatment in adult outpatient services, where it is common to see 50-60% EDNOS, 30% bulimia, and only 10-15% anorexia (Fairburn, 2008). A further diagnostic issue was that eating psychopathology was measured using participant self report and results of a screening questionnaire rather than by comprehensive clinical assessment. Recruiting participants through eating disorder treatment providers would have provided an opportunity for comparison of emotion regulation difficulties in individuals with current, clinically informed diagnostic labels.

For ease of administration, the present study used the questionnaire version of the Eating Disorders Examination (EDE-Q) rather than the interview format. Comparisons of these two methods of administration have found a greater severity of disordered eating has been indicated in the questionnaire version (Fairburn & Beglin, 1994; Mond et al., 2004). Conversely, Carter, Aime & Mills (2001) recorded higher frequencies of objective binge eating and vomiting in the interview version than the questionnaire. Participants were also found to underestimate their weight in self report. A combination of both interview and questionnaire methods may be the preferred option for future research together with a lack of reliance on self-reported body weight.

Because much of the data was not normally distributed, non-parametric tests were used where possible. However, where no non-parametric alternatives were available, parametric tests were employed. For this reason, the results of the parametric tests (i.e., regression and multivariate ANCOVA analyses) should be treated with caution. However, it is worth noting that impulse control, the only significant predictor of eating psychopathology in the clinical group, was normally distributed. A further point of note regarding data analysis is that the sample size was relatively small for conducting regression analyses. Replicating the current research using a larger sample of participants would be beneficial in increasing the power.

Despite the limitations of the current research, this investigation has provided a useful initial comparison of emotion regulation difficulties in women with significant eating psychopathology and a non-clinical sample. Not only did the results indicate that the clinical

group experienced significantly more difficulties in regulating emotions than the comparison group, but distinct emotion regulation domains were also identified as predictors of eating psychopathology for each group. Experiencing emotions as overwhelming and out of control and having difficulty in controlling behaviours when upset predicted variance in eating psychopathology in the clinical sample. It will be important for future research to replicate this study using a larger sample of clients presenting to eating disorder treatment services. It would be useful to explore whether the impulse domain was particularly relevant to women with anorexia nervosa who were over-represented in this clinical sample. The methodology used in the current study could also be usefully applied to male sufferers of eating disorders in order to inform treatment developments. Experimental assessment of physiological responses to emotional states could also extend our understanding of whether individuals' with eating disorders experience particularly severe and enduring levels of emotional distress.

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PUBLIC DOMAIN BRIEFING PAPER

Third Wave Cognitive and Behavioural Interventions for Eating Disorders

And

Emotion Regulation and Eating Psychopathology in Women

This briefing paper details the research carried out by Paula Webster as part of the requirements for the degree of Doctor of Clinical Psychology at the University of Birmingham. The research comprises a literature review of third wave cognitive and behavioural interventions for eating disorders and a questionnaire study investigating the relationship between emotion regulation and eating psychopathology in women. The research was supervised by Dr Newman Leung, Consultant Clinical Psychologist and Dr Gill Harris, Consultant Clinical Psychologist and Senior Lecturer.

The aim of the literature review was to evaluate the efficacy of third wave cognitive and behavioural psychotherapies in the treatment of eating disorders. Psychotherapies that have been referred to as ‘third wave’ are the most recent generation of cognitive and behavioural therapies which have been developed over the past twenty years. Examples include dialectical behaviour therapy, acceptance and commitment therapy and mindfulness approaches. As a result of searching electronic databases twenty-one articles were included in the review. These were evaluated against criteria for methodological quality and treatment efficacy.

The review provided some promising preliminary support for these third wave cognitive and behavioural approaches in the treatment of eating related difficulties. However, there were several limitations to the research. Many of the participants included in the studies had eating difficulties that did not meet diagnostic criteria for eating disorders. Some of the studies included more than one treatment approach so that it was not possible to determine which aspect of treatment was beneficial for participants. It was concluded that further research using more stringent methodology is required in order to confirm the efficacy of third wave approaches in the treatment of eating disorders.

The aim of the questionnaire study was to investigate whether women with eating related difficulties reported more difficulties in emotion regulation than those with no history of eating problems. A second aim was to assess whether specific difficulties in emotion regulation contributed to eating related difficulties.

Forty-eight women reporting current eating difficulties and a comparison group of fifty women with no history of eating disorder completed questionnaires about eating behaviour, anxiety, depression and difficulties in emotion regulation. The specific domains of emotion regulation difficulties measured were: non acceptance of emotions, difficulties in engaging in goal-directed behaviours, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies and lack of emotional clarity. The participants with eating difficulties scored more highly on each of these domains than the comparison group suggesting that women experiencing eating psychopathology may have difficulty understanding and accepting emotions and may lack effective strategies for modulating emotions.

With regard to the relationship between specific emotion regulation difficulties and eating difficulties, the results differed for the women with eating difficulties and the comparison group. In the comparison group, lack of emotional awareness predicted variation in shape and weight concern even after anxiety and depression were accounted for. In the clinical group, impulse control difficulties predicted variation in weight concern after anxiety and depression were accounted for. Impulse control also predicted shape concern, eating concern and eating restraint but not after anxiety was accounted for. This finding suggests that anxiety may be influencing the relationship between impulse control and eating difficulties. Having a further understanding of this relationship would be beneficial in terms of treatment development. If anxiety is mediating the relationship between emotion regulation difficulties and pathological eating behaviour then targeting anxiety in the treatment of eating disorders may be beneficial.

The impulse control difficulties subscale included items such as “I experience my emotions as overwhelming and out of control”. It was noted that the predictive relationship between feeling overwhelmed by emotional experiences and eating psychopathology complements

existing psychological theory that some people may experience particularly intense levels of emotions that are difficult to regulate. For these individuals, resorting to pathological eating patterns may function as a means of regulating emotions.

Because distinct emotion regulation domains were identified as predictors of eating psychopathology for the clinical and comparison groups, it was concluded that it will be important for future research in this area to use clinical samples (e.g. clients presenting to eating disorder treatment services). Further research, investigating whether anxiety mediates the relationship between impulse control and eating psychopathology, was also recommended. It is hoped that further research in this area will be valuable for informing future developments in the treatment of eating disorders.