

Metacognitions, Emotion and Disordered Eating in Women

Volume 1: Empirical paper, literature review and public domain paper

By

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Meinen Eltern, die es mir ermöglicht haben zu studieren.

(To my parents, who enabled me to study.)

And to Paul, who always made me keep my perspective.

Overview

This thesis is submitted in two volumes to the School of Psychology at the University of Birmingham for the degree of Doctor of Clinical Psychology (Clin.Psy.D.).

Volume 1: Research component

The research component consists of an empirical paper, a literature review and a public domain paper, which summarises the first two papers. It also contains an appendices section, which contains information regarding the empirical paper. The empirical paper is a quantitative study conducted by the author, concerned with metacognitions, emotion and disordered eating in women. The literature review paper is looking at existing randomised controlled psychological treatment trials, for young people living with an eating disorder. Both papers have been prepared for submission to the European Eating Disorder Review.

Volume 2: Clinical component

The clinical component consists of four clinical practice reports and one abstract of a clinical practice report, which was orally presented. All were submitted by the author during her training on the Doctorate of Clinical Psychology course at the University of Birmingham. The clinical practice reports (CPRs) are reflecting four clinical pieces of work and one service evaluation, and have been conducted on four different placements.

All names and identifiable information in this thesis have been changed to ensure confidentiality.

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Metacognitions, Emotion and Disordered Eating in Women

Abstract

Objective: This study investigates the relationships between metacognitions, emotions and disordered eating in women with or without an eating disorder, as well as differences between these groups. **Method:** 326 participants were included in the study and completed the following questionnaires: Hospital Anxiety and Depression Scale (HADS), Meta-Cognitions Questionnaire 30 (MCQ-30) and the Eating Disorder Examination Self-Report Questionnaire (EDE-Q). **Results:** Women with an eating disorder expressed more metacognitive concerns than women without a significant disordered eating pathology. Regression analysis showed that the majority of eating disorder symptoms were predicted by anxiety and depression for both groups, but the need to control thoughts was the only metacognition which stood out as an independent predictor of disordered eating. **Discussion:** Implications of these findings as well as the limitations of this study are discussed.

Keywords: Metacognition, Emotion, Eating Disorder, MCQ-30, EDE-Q

Metacognitions, Emotion and Disordered Eating in Women

Recent research indicates that cognitive models and treatment approaches for a variety of disorders, such as general anxiety disorder, obsessive compulsive disorder, post-traumatic stress disorder and depression, benefit from the inclusion of the concept of metacognitions (e.g. Papageorgiou & Wells, 2000; Solem, Haland, Vogel, Hansen & Wells, 2009; Wells, 2000; Wells & King, 2006; Wells et al., 2008). Metacognitions can be described as referring to the ‘psychological structures, beliefs, events and processes that are involved in the control, modification and interpretation of thinking itself’ (Spada & Wells, 2005, p.150). Wells (2000) distinguishes three varieties of metacognitions: *metacognitive knowledge* describes the beliefs and theories that people have about their thoughts; *metacognitive experiences* refer to the meaning of internal events, metacognitive feelings and judgment of thoughts; and *metacognitive control strategies* are strategies aimed at controlling cognitions. Metacognitive beliefs about worry and intrusions have shown to be closely associated with emotional disturbance (Cartwright-Hatton & Wells, 1997; Davey, Tallis & Capuzzo, 1996; Spada, Mohiyeddini & Wells, 2008). Cartwright-Hatton and Wells (1997) categorise these beliefs into five domains: positive beliefs about worry; thoughts concerning uncontrollability and danger of worry; cognitive confidence; the need to control thoughts; and cognitive self-consciousness.

There has been some suggestion that cognitive models of eating disorders may also benefit from the inclusion of metacognition, especially as outcome of treating eating disorders, particularly in anorexia nervosa, with cognitive behavioural therapy (CBT) lags behind that of other disorders (Cooper, Todd & Wells, 2009). Despite some studies showing that individual CBT might be moderately effective in treating patients with anorexia nervosa (Channon, de Silva, Hemsley & Perkins, 1989; Pike, Walsh, Vitousek,

Wilson & Bauer, 2003), most research has failed to distinguish CBT outcomes from other focal therapies; failed to show that the majority can reach 'good outcome' criteria (Pike et al., 2003); or even to show that it is more effective than routine clinical management (McIntosh et al., 2005). While the evidence base for CBT in the treatment of bulimia nervosa is much more substantial, with more than thirty randomised control trials showing its efficacy (for reviews see Gowers & Bryant-Waugh, 2004; Hay, Bacaltchuk & Stefano, 2004), it appears that fewer than half of those who complete CBT for bulimia nervosa reach some level of recovery (Thompson-Brenner, Glass & Western, 2003).

Studies exploring metacognitions in eating disorder research are only just emerging (Cooper, Grocutt, Deepak & Bailey, 2007), but preliminary evidence is encouraging. Research indicates higher levels of metacognitive concern in women with anorexia nervosa or a history of anorexia nervosa than in controls (Cooper et al., 2007; McDermott & Rushford, 2011; Woolrich, Cooper & Turner, 2008). In both Cooper et al's (2007) and McDermott and Rushford's (2011) studies, women with anorexia nervosa showed higher levels of thoughts concerning uncontrollability and danger of worry, cognitive confidence, the need to control thoughts and cognitive self-consciousness than control groups of women. It has also been suggested that metacognitions are associated with the Eating Attitudes Test, a measure of eating disorder symptoms (Konstantellou & Reynolds, 2010; Todd, 2006). In Konstantellou and Reynolds' study, individuals with problematic eating attitudes scored significantly higher with regards to having positive beliefs about worry, the need to control thoughts and thoughts concerning uncontrollability and danger of worry, than individuals with normal eating attitudes.

There has also been some suggestion in eating disorder research that emotions may play a bigger role than has been acknowledged (Cooper et al., 2009). Indeed, numerous

studies show that eating pathology is associated with negative affect (for review see Stice, 2002). For example, depression is a predictor of body dissatisfaction in anorexia nervosa (Wiederman & Pryor, 2000), and negative affect is linked to disordered eating behaviour for women with an eating disorder (Corte & Farchaus Stein, 2005). In fact, research shows that avoidance of affect is associated with unhealthy eating attitudes for women with an eating disorder (Corstorphine, Mountford, Tomlinson, Waller & Meyer, 2007). Wildes, Ringahm and Marcus (2010) suggest that the avoidance of aversive emotional states is actually one function of anorexic symptoms. Similarly, the affect regulation model (Hawkins & Clement, 1984; McCarthy, 1990) states that binge eating regulates negative emotions. Therefore, they could be described as a metacognitive control strategy.

To the author's knowledge, no research to date has explored the inter-association between metacognitive concerns, negative emotional states and disordered eating. The current study tested the following hypotheses: (a) women with a current eating disorder have higher levels of metacognitions than women without significant current or past disordered eating pathology; (b) measures of metacognitions and emotion are positively related to measures of disordered eating, as well as to each other; and (c) individuals with different eating disorders have different levels of metacognitive concern.

Method

Procedure

Participants were recruited via Beat (a national eating disorder charity) on their website (www.b-eat.co.uk) and via email, at the University of Birmingham via the research participation scheme (RPS) and email, and through clinical staff at a specialist eating disorder service. Potential participants were asked whether they would like to take part in a

research study, which is ‘exploring the links between thinking, emotions and disordered eating’. Individuals who showed an interest, were given or sent a participant information sheet and a questionnaire pack (paper version or electronic version), or were accessing the information and questionnaires via the online survey facility of the RPS. They were informed that their responses were anonymous and would be treated with strictest confidentiality. Participants who were recruited by clinicians were reassured that their decision about participation was entirely voluntary and would have no impact on their treatment. RPS participants received research credit in return for their contribution. The research was approved by the National Research Ethics Committee (Black Country) and the Research and Development Unit of the Birmingham and Solihull Mental Health Foundation Trust.

For the planned regression analysis it was calculated that a sample size per group of 49 was needed, using the following parameters: Alpha level: 0.05, number of predictors: 7, anticipated effect size (f^2): 0.35 and desired statistical power level: 0.8.

Measures

To measure metacognitive concern the Metacognitions Questionnaire 30 (MCQ30; Wells and Cartwright-Hatton, 2004; Spada, Mohiyeddini & Wells, 2008) was used. It is a shortened version of the Metacognitions Questionnaire (Cartwright-Hatton & Wells, 1997), which has been designed in order to ‘assess individual differences in metacognitive beliefs, judgments and monitoring tendencies’ (Wells & Cartwright-Hatton, 2004). The questionnaire consists of thirty items, which are divided into five subscales or factors. These subscales are: positive beliefs about worry (e.g. ‘worrying helps me to solve problems’), thoughts concerning uncontrollability and danger of worry (e.g. ‘my worrying

could make me go mad'), cognitive confidence (e.g. 'I do not trust my memory'), the need to control thoughts (e.g. 'It is bad to think certain thoughts') and cognitive self-consciousness (e.g. 'I constantly examine my thoughts'). Items are expressed as statements and participants are being asked to 'not agree', 'agree slightly', 'agree moderately' or 'agree very much'. These are scored from one to four, producing a final score of between 30 and 120. Higher scores on each of the subscales indicate a heightened presence of each type of maladaptive metcognitive style. Psychometric properties for the MCQ30 are good (Spada & Wells, 2005). MCQ-30 factors correlate with emotional distress (Spada, Mohiyeddini & Wells, 2008) and the measure shows good internal consistency ($\alpha=.72-.92$), good test-retest reliability ($r=.75$), good convergent validity (Wells & Cartwright Hatton, 2004) and satisfactory reliability (Spada, Mohiyeddini & Wells, 2008).

To measure disordered eating pathology the Eating Disorder Examination Self-Report Questionnaire Version (EDEQ; Fairburn & Beglin, 1994) was selected. It has been chosen over other self-report questionnaires assessing eating disorders as it provides a specific time frame (28 days). This is useful in assessing the severity of symptoms at present. The EDEQ provides two sets of data, frequency data and subscale data (Fairburn, Cooper & O'Conner, 2008). Frequency is measured for weight controlling behaviours, while the subscale data reflects the severity of the psychopathology of restraint, eating concern, shape concern and weight concern (Fairburn, Cooper & O'Conner, 2008). Participants are asked to respond to 36 items on a seven point Likert scale or with 'Yes' or 'No'. A clinical cut off score of ≥ 4 for adult women on the subscales and the global scale of the EDEQ has been reported by Mond, Hay, Rodgers & Owen (2006). Carter, Stewart, and Fairburn (2001) report that there have been several studies on the psychometric properties of the EDEQ, which when taken together show good evidence of the reliability

and validity of the EDEQ. For example Cronbach's alpha coefficients for the four subscales ranged from 0.78 to 0.93, reliability coefficients ranged from 0.81 to 0.94 across the subscales and 0.57 to 0.70 for items measuring the frequency of key eating disorder behaviours (Luce & Crowther, 1999). Additionally, the EDEQ is a widely used clinical measure and has been evaluated with community samples (Mond, Hay, Rodgers, Owen & Beumon, 2004; Mond et al., 2008).

To measure anxiety and depression the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was chosen. It consists of 14 items, of which half are concerned with levels of anxiety and the other half levels of depression. Items are scored from 0 to 3 (in the direction of psychological morbidity). Therefore, each subscale (depression and anxiety) score ranges from 0 to 21. A score of 8 has been identified as a possible indicator of a clinical disorder, whilst a score of 11 has been identified as a possible indicator of psychiatric 'caseness' (Zigmond & Snaith, 1983). Not only has the HADS good validity and reliability (Zigmond & Snaith, 1983), but it is widely used clinically.

Inclusion and exclusion criteria

Women between 16 and 65 years of age were asked to take part in the study. Participants were split into a control group and an eating disorder group. To be included in the eating disorder group participants had to self-indicate that they currently had an eating disorder, while to be included in the control group participants had to state that they had no current or past eating psychopathology. In addition, participants with a Body Mass Index (BMI) below 14 or with a current psychotic disorder were excluded, as it is thought that these factors may impact on cognitive functioning.

Analysis

Data was analysed using the statistical software SPSS 17.0. Shapiro-Wilk and Kolmogorov-Smirnov analyses indicated that data for most variables was not normally distributed and therefore non-parametric tests were used where appropriate.

Mann-Whitney U test analyses were conducted to compare the eating disorder and the control group with regards to age, BMI and measures of metacognition, disordered eating and emotion. For the eating disorder group Kruskal-Wallis analysis and post-hoc Mann-Whitney U test were conducted to compare metacognitive domains between eating disorder diagnoses. Effect sizes of Mann-Whitney's U test were calculated by dividing Z by the square root of N . The absolute value of r was used to evaluate effect size, with 0.1 indicating a small, 0.3 a medium and 0.5 a large effect size.

Spearman's Rho one-tailed correlations tested whether there were significant and positive associations between measures of metacognition, disordered eating and emotion for each of the groups. Where positive associations with disordered eating subscales were found, regression analyses were conducted in order to analyse relationships between emotion, metacognitive domains and disordered eating. Where residuals for regression analysis showed a significant deviation from normality, this has been noted. However, the regression analysis in these cases was conducted anyway, as there have been many precedents for using this type of analysis with non-parametric data. The results of these analyses have to be interpreted with caution though.

Results

Participant characteristics

454 women completed the questionnaires. Not included in the control group were 4.3% (n=19) participants because they had been diagnosed with an eating disorder in the past, 11.5% (n=52) because they currently experienced difficulties related to eating and 12% (n=54) people because their EDEQ scores were above criteria for eating psychopathology in community samples (Mond, Hay, Rodgers, Owen & Beumon, 2004; Mond et al., 2008). From the eating disorder group two individuals (0.4%) were excluded because their BMI was too low (BMI < 14) and one person (0.2%) because they indicated that they currently had a psychotic disorder.

326 women were included in the study, of whom 85.3% described their ethnicity as White, 9.2% as Asian or British Asian, 3.7% as mixed, 0.6% as Black or Black British and 0.9% as other. All participants were proficient in English.

The eating disorder group (ED) consisted of 52 female participants. 44% (n=23) indicated that they had Anorexia Nervosa, 19% (n=10) EDNOS, 15% (n=8) Bulimia Nervosa, 2% (n=1) Binge Eating Disorder, 2% (n=1) other and 15% (n=8) a combination of different types (6% (n=3) anorexia nervosa/EDNOS, 2% (n=1) anorexia nervosa/binge eating disorder, 4% (n=2) anorexia nervosa/bulimia nervosa, 2% (n=1) bulimia nervosa/binge eating disorder, 2% (n=1) anorexia, bulimia and EDNOS). 60% indicated that they currently suffered from at least one comorbid mental health problem (depression, anxiety or OCD). Thirty-five participants were recruited through the eating disorder charity, eight participants through the specialised eating disorder service and nine through the University research scheme.

The control group (C) consisted of 274 female participants. 2% indicated that they currently suffered from at least one mental health problem (depression, anxiety or OCD). 33 participants were recruited through University email and 241 through the research participant scheme at the University of Birmingham.

Table 1 describes the characteristics of the sample with regards to the percentage of individuals in either group who are above clinical cut off points on the HADS and EDEQ scales.

Table 1
Characteristics of sample with regards to clinical cut off points

	Eating Disorder Group	Control Group
HADS anxiety $\geq 8 < 11^a$	12%	17%
HADS anxiety $\geq 11^b$	79%	14%
HADS depression $\geq 8 < 11^a$	21%	2.2%
HADS depression $\geq 11^b$	42%	1.9%
EDEQ restraint $\geq 4^c$	71.2%	1.9%
EDEQ eating concern $\geq 4^c$	71.2%	0%
EDEQ shape concern $\geq 4^c$	88.5%	5.1%
EDEQ weight concern $\geq 4^c$	78.8%	1.5%
EDEQ global score $\geq 4^c$	84.6%	0%

^a = possible indicator of a clinical disorder ^b = psychiatric 'caseness' ^c = above clinical cut off

Descriptive statistics and comparison between groups

The age for the eating disorder group ranged from 17 to 60 years ($M = 26.43$, $SD = 10.36$, $Mdn = 20.5$, $n = 44$) and for the control group from 18 to 64 years ($M = 21.17$, $SD =$

6.04, $Mdn = 19$, $n = 270$), with the eating disorder group being significantly older than the control group ($U = 3563.500$, $Z = -4.359$, $p < .001$, $r = .25$).

The BMI for the eating disorder group ranged from 14.6 to 36.6 ($M = 18.88$, $SD = 3.77$, $Mdn = 18.2$, $n = 46$) and for the control group from 15.6 to 53.6 ($M = 21.46$, $SD = 3.43$, $Mdn = 21.1$, $n = 271$), with the eating disorder group having a significantly lower BMI than the control group ($U = 3106.000$, $Z = -5.441$, $p < .001$, $r = .31$).

Table 2 shows the descriptive statistics for all metacognition, disordered eating and emotion variables for the control ($n = 274$) and the eating disorder group ($n = 52$), as well as the results for the Mann-Whitney U test. Consistent with predictions, the eating disorder group had significantly higher levels of metacognitive concern, eating disorder psychopathology, as well as anxiety and depression levels than the control group.

Comparison of metacognitions between different ED diagnoses

A Kruskal-Wallis test was conducted to evaluate differences in metacognitive concerns between the three eating disorder groups anorexia nervosa ($n=23$), bulimia nervosa ($n=11$) and eating disorder not otherwise specified (which included binge eating disorder) ($n=8$). Participants who indicated more than one eating disorder diagnosis were not included in this analysis. The analysis showed no significant differences between group medians for positive beliefs about worry ($\chi^2 (2, N = 42) = .705$, $p = .703$), thoughts concerning the uncontrollability and danger of worry ($\chi^2 (2, N = 42) = 4.942$, $p = .085$), beliefs about cognitive confidence ($\chi^2 (2, N = 42) = 2.151$, $p = .341$), beliefs about the need to control thoughts ($\chi^2 (2, N = 42) = 2.529$, $p = .282$) or cognitive self-consciousness ($\chi^2 (2, N = 42) = 2.516$, $p = .284$)

Table 2

Metacognitions, Disordered Eating and Emotion: Descriptive Statistics and Mann-Whitney U Test between the Eating Disorder (n=52) and Control Group (n=274)

	Range	<i>M</i> (<i>SD</i>)	<i>Mdn</i>	<i>U</i>	<i>Z</i>	Sig.	Effect size (<i>r</i>)
Positive beliefs about worry	6-23 ^a	12.38 (4.46) ^a	12 ^a	5447.500	-2.703	.007	.15
	6-22 ^b	10.64 (3.74) ^b	10 ^b				
Uncontrollability and danger of worry	6-24 ^{a,b}	17.27 (4.27) ^a	16.5 ^a	2215.500	-7.900	.001	.44
		11.02 (4.34) ^b	10 ^b				
Cognitive confidence	6-24 ^{a,b}	11.98 (5.51) ^a	11 ^a	5466.000	-2.681	.007	.15
		9.58 (3.58) ^b	9 ^b				
The need to control thoughts	6-24 ^a	14.63 (4.85) ^a	14 ^a	2846.000	-6.903	.001	.38
	6-21 ^b	9.67 (3.05) ^b	9 ^b				
Cognitive self-consciousness	9-24 ^a	15.98 (4.04) ^a	16 ^a	4750.000	-3.833	.001	.21
	6-24 ^b	13.51 (4.05) ^b	13 ^b				
Anxiety	4-21 ^a	14.25 (4.19) ^a	15 ^a	1194.500	-9.540	.001	.53
	0-19 ^b	6.02 (3.76) ^b	6 ^b				
Depression	0-19 ^a	9.33 (4.48) ^a	10 ^a	1249.500	-9.545	.001	.53
	0-13 ^b	2.16 (2.35) ^b	2 ^b				
Restraint	1-6 ^a	4.27 (1.46) ^a	4.6 ^a	442.500	-10.822	.001	.60
	0-4 ^b	0.75 (0.91) ^b	0.4 ^b				
Eating Concern	0-6 ^a	3.86 (1.15) ^a	4 ^a	215.000	-11.313	.001	.63
	0-2 ^b	0.36 (0.43) ^b	0.2 ^b				
Shape Concern	2-6 ^a	5.04 (0.99) ^a	5.25 ^a	341.000	-10.891	.001	.60
	0-5 ^b	1.69 (1.10) ^b	1.63 ^b				
Weight Concern	0-6 ^a	4.50 (1.32) ^a	4.8 ^a	564.000	-10.549	.001	.58
	0-5 ^b	1.22 (0.99) ^b	1 ^b				

^a=eating disorder group. ^b=control group

Table 3

Metacognitions, Emotion and Disordered Eating: Spearman's Correlations for the Eating Disorder (ED) and the Control (C) Group

		PBW ^a	UDW ^b	CC ^c	NCT ^d	CSC ^e	Anxiety	Depression
Restraint	ED	.148 (.147)	.101 (.237)	.140 (.161)	.127 (.185)	.108 (.224)	.313* (.012)	.148 (.147)
	C	.070 (.126)	.063 (.150)	.041 (.250)	.022 (.361)	.106* (.040)	.081 (.090)	.028 (.322)
Eating Concern	ED	.171 (.113)	.229 (.051)	.262* (.030)	.304* (.014)	.095 (.251)	.167 (.119)	.244* (.041)
	C	.239** (.000)	.272** (.000)	.216** (.000)	.308** (.000)	.170** (.002)	.301** (.000)	.217** (.000)
Shape Concern	ED	.200 (.078)	.242* (.042)	.219 (.059)	.273* (.025)	.125 (.188)	.221 (0.58)	.279* (.022)
	C	.225** (.000)	.330** (.000)	.208** (.000)	.251** (.000)	.188** (.001)	.339** (.000)	.178* (.002)
Weight Concern	ED	.191 (.087)	.185 (.095)	.239* (.044)	.286* (.020)	.151 (.143)	.178 (.103)	.071 (.307)
	C	.176** (.002)	.235** (.000)	.104* (.042)	.215** (.000)	.082 (.088)	.245** (.000)	.174** (.002)
Anxiety	ED	.301* (.015)	.510** (.001)	.250* (.037)	.432** (.001)	.210 (.068)	--	--
	C	.413** (.000)	.640** (.000)	.285** (.000)	.448** (.000)	.464** (.000)	--	--
Depression	ED	.162 (.125)	.441** (.001)	.250* (.037)	.437** (.001)	.004 (.489)	--	--
	C	.230** (.000)	.490** (.000)	.159** (.004)	.345** (.000)	.230** (.000)	--	--

^a = positive beliefs about worry. ^b = uncontrollability and danger of worry. ^c = cognitive confidence. ^d = the need to control thoughts. ^e = cognitive self-consciousness. *p < .05. **p < .01.

Associations between metacognitions, emotion and disordered eating

Table 2 shows Spearman's Rho one-tailed correlations for all variables for each group. Not all variables were significantly correlated as predicted.

Relationships between metacognitions, emotion and disordered eating

Linear stepwise regression showed that for the eating disorder group anxiety significantly predicted restraint ($\beta = .316, p < .022$) and explained 10% in its variance ($R^2 = .100, F(1,50) = 5.556, p < .022$). Residuals were not normally distributed for this analysis. To evaluate whether the relationship between eating concern and metacognitions was mediated by depression for the eating disorder group, a hierarchical regression analysis was conducted, controlling for depression. It showed that eating concern was not independently predicted by metacognitions, but solely by depression ($\beta = .343, p < .013$), which explained 12% in its variance ($R^2 = .118, F(1,50) = 6.673, p < .013$). Residuals were not normally distributed for this analysis. This analysis was next conducted with shape concern.

Results showed that for the eating disorder group depression significantly predicted shape concern ($\beta = .371, p < .007$) and accounted for 14% in its variance ($R^2 = .138, F(1,50) = 8.005, p < .007$). However, none of the two metacognitions entered predicted shape concern independently of depression. Residuals were not normally distributed for this analysis. Linear stepwise regression analysis showed that for the eating disorder group the need to control thoughts significantly and solely predicted weight concern ($\beta = .342, p < .013$) and explained 12% of its variance ($R^2 = .117, F(1,50) = 6.624, p < .013$). Residuals were not normally distributed for this analysis.

Linear stepwise regression analyses showed that for the control group restraint was not significantly predicted by cognitive self-consciousness ($\beta = .071, p = \text{n.s.}, R^2 = .005$,

$F(1,272)=1.388, p<.001$). To evaluate whether the relationship between eating concern and metacognitions for the control group was mediated by anxiety and depression, a hierarchical regression analysis was conducted, controlling for emotion. The results of the regression analysis found that of the five metacognitive factors entered in the regression analyses only the need to control thoughts was found to account for a significant 4% variance in eating concern in addition to the 8% variance accounted for by anxiety and depression ($R^2=.118, F(3,270)=11.99, p<.001$). The need to control thoughts significantly predicted eating concern ($\beta=.223, p<.001$). Residuals were not normally distributed for this analysis.

The same analysis was conducted with shape concern. Of the five metacognitive factors entered in the hierarchical regression analyses only the need to control thoughts was found to account for a significant 2% variance in shape concern in addition to the 13% variance accounted for by anxiety and depression ($R^2=.144, F(3,270)=15.13, p<.001$) for the control group. The need to control thoughts significantly predicted shape concern ($\beta=.146, p<.025$).

To evaluate whether the relationship between weight concern and metacognitions was mediated by anxiety and depression, a hierarchical regression analysis was conducted, controlling for emotion. Of the four metacognitive factors entered in the regression analyses only the need to control thoughts was found to account for a significant 2.2% variance in weight concern in addition to the 7.1% variance accounted for by anxiety and depression ($R^2=.093, F(3,270)=9.28, p<.001$). The need to control thoughts significantly predicted weight concern ($\beta=.173, p<.010$). Residuals were not normally distributed for this analysis.

Discussion

Comparisons between groups

The present study shows that women reporting a current eating disorder have higher levels of metacognitive concerns than women without significant eating problems. These findings are consistent with evidence obtained from the existing literature (e.g., Cooper et al., 2007; Konstantellou & Reynolds, 2010). However, this is the first study that shows significant differences on all metacognitive domains suggested by Cartwright-Hatton and Wells (1997), which are: positive beliefs about worry, thoughts concerning uncontrollability and danger of worry, cognitive confidence, the need to control thoughts and cognitive self-consciousness. Higher levels of metacognitive concern are indicative of a more maladaptive coping style, and Wells (2000) suggests that this contributes to the maintenance of psychological distress and therefore emotional disorders. Metacognitive concern in women with a current eating disorder may therefore contribute to the maintenance of their psychopathology. This is also the first study which included individuals who indicated that they had bulimia nervosa or eating disorder not otherwise specified. Comparison between these groups showed no difference with regards to metacognitive concerns, supporting Fairburn's suggestion of a transdiagnostic model for eating disorders due to their common psychopathology (Fairburn, Cooper & Shafran, 2003). However, as the sample size of each eating disorder group was small, this result can at best be tentative.

The eating disorder and control group, as would have been expected, differed with regards to BMI, as well as EDEQ and HADS variables, supporting further the differentiation of the groups into an eating disorder and a control group. It could however

be suggested that a lower BMI *per se* increases metacognitive concern by impacting on cognition rather than eating disorder psychopathology. In addition, the eating disorder and control group differed with regards to age and one could argue that the difference in metacognitive concern is due to age rather than pathology.

Associations between disordered eating, metacognition and emotion

The main study aim was to investigate the possible associations between metacognitions, emotion and disordered eating for women with an eating disorder and women without a significant current or past disordered eating pathology.

For women with a current eating disorder only some positive correlations between variables were found. Linear regression showed that restraint was only significantly predicted by anxiety, and eating concern and shape concern by depression. For women without current or past disordered eating pathology, eating concern, shape concern and weight concern were predicted by anxiety and depression. These results seem to lend support to the hypothesis that the avoidance of aversive emotional states is actually one function of eating disorder symptoms (Hawkins & Clement, 1984; McCarthy, 1990; Wildes, Ringahm & Marcus, 2010). Restraint, eating concern, shape concern and weight concern could therefore in themselves be described as metacognitive control strategies, even when they aren't independently predicted by metacognitive concern.

Weight concern was solely predicted by the need to control thoughts for the eating disorder group. The need to control thoughts was also associated with eating and shape concern, being the only metacognition associated with three eating disorder variables for the eating disorder group. For women without eating disorder pathology, only the need to control thoughts predicted eating concern, shape concern and weight concern in addition to

anxiety and depression. The need to control thoughts therefore appears to be the most prominent metacognitive variable with regards to disordered eating. It is possible that individuals with an eating disorder believe that controlling one's thoughts is a predecessor or integral part of controlling one's eating, weight and shape. It could also be that the need to control thoughts and the need to control eating, shape and weight stem from the same personality structure or psychopathology. They may, for example, function to regulate emotions. They could also be integral to perfectionistic personality traits, which often occur in eating disorders. Much has been written about the relationship between control and eating disorders and McNamara, Chur-Hansen and Hay (2008, p.122) state that 'existing literature discusses the role of individual self-control in terms of a risk factor, a personality trait and in maintaining eating disordered behaviour'. This study highlights the fact that the core theme of control in eating disorders permeates the metacognitive level.

Restraint was not associated with any metacognitions for the eating disorder group, and even though it was associated with cognitive self-consciousness for the control group, this failed to predict restraint in the regression analysis. Restraint was also the only variable not associated with anxiety and depression for women without eating disorder symptoms. This suggests that restraint, as measured by the EDE-Q, differs in some key aspects from eating-, shape- and weight concern. It is likely that restraint, more than the other variables, measures behavioural rather than cognitive aspects; and that metacognitions are associated with different levels of cognitions rather than directly with behaviour.

Limitations & Future Recommendations

The study has some important limitations. The eating disorder group is relatively small (N=52); and diagnosis of an eating disorder, as well as all other information, is self

reported. This is an issue not only with regards to individuals reporting to have a diagnosis of an eating disorder when they don't, but may also lead to under-reporting within the sample. Some individuals might have an eating disorder but no diagnosis, and therefore not indicate that they have one, while some may have a diagnosis but not agree with it and therefore not report. In addition, a percentage of participants who report currently experiencing anorexia nervosa, indicate healthy BMIs, therefore not fulfilling the weight criteria for a DSM-IV diagnosis of anorexia nervosa. It is therefore certain that this study is reporting on a group of people that is at least partly sub-clinical. In addition, due to the small sample size, little differentiation could be made between different types of eating disorder. Treating this heterogeneous group as one may lead to skewness in the data. However, Fairburn's transdiagnostic eating disorder model suggests that not only are there commonalities in the psychopathology of the eating disorders, but that individuals migrate from one diagnostic category to the other (Fairburn, Cooper & Shafran, 2003). In statistical terms, the small sample size did not allow for a powerful regression analysis, and the results of the majority of regression analyses have to be interpreted with caution as residuals were not normally distributed. Additionally, due to the correlational study design, no causal relationships could be established. Further limitations of the study were that the sample was an opportunistic convenience sample, men and women over sixty-five were not recruited for the study, and most ethnicity groups were too small to allow looking at possible effects on eating disorder symptoms or metacognitions.

Future studies in this area should explore the role of the need to control thoughts in the maintenance of disordered eating, while accounting for emotion. It would be desirable to see research with a bigger eating disorder group, - allowing for a differentiation between eating disorder diagnoses and a more powerful regression analysis - which also included

men and women over 65. A structural equation modeling study could explore complex relationships between the various predictors of disordered eating better than a regression study.

New theoretical models of eating disorders would benefit from considering the role of negative emotion and metacognitions. This may also be useful clinically, especially focusing on the need to control thoughts and using disordered eating as a metacognitive control strategy.

Conclusions

This research lends further support to the usefulness of including metacognitive concerns in eating disorder models and treatments. In particular, beliefs about the need to control thoughts appear to play an important role with regards to disordered eating. This research also highlights the importance of aversive emotional states on eating disorder pathology as well as on disordered eating variables in the normal population and its role as mediator of metacognitive concern on disordered eating pathology.

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Psychological interventions for young people with an eating disorder

Abstract

Objective: To review all randomised controlled trials for psychological interventions for young people, between eleven and twenty-one years of age, who are living with an eating disorder. **Method:** Relevant articles from peer reviewed journals were identified via an electronic search of Ovid MEDLINE, EMBASE and PsycInfo. Reference lists of all selected papers were also inspected for relevant studies. **Results:** Twelve randomised controlled trials conducted for psychological treatments for young people between eleven and twenty-one years of age, who are living with an eating disorder, were identified and reviewed. Family therapy approaches have been trialled the most for this population, but cognitive behavioural therapies and adolescent-focused therapy have also been studied. Research quality criteria ratings are reported for each study. **Conclusion:** Family therapy appears to produce a good outcome for some young people; however this varies quite substantially across studies (30% - 90%). There is also evidence that cognitive/dialectical behavioural therapies are effective for this population, producing between 20% and 63% of remission, while adolescent-focused therapy has shown to produce between 18% and 47% of remission. Whilst some conclusions can be drawn, these are based on few studies and there is a need for further research trials.

Keywords: Eating disorder, children and adolescents, psychological interventions, randomised controlled trials

Psychological interventions for young people with an eating disorder

Eating disorders affect four out of a thousand young people in the UK who are between eleven and fifteen years old (The Office for National Statistics survey, 2000). In the US, a study estimated the lifetime prevalence for adolescents of anorexia nervosa (AN), bulimia nervosa (BN), and binge-eating disorder as 0.3%, 0.9%, and 1.6%, respectively (Swanson, Crow, Le Grange, Swendsen & Merikangas, 2011). In 2006, in UK public hospitals 'more girls aged below 18 years were treated (...) for eating disorders than at any other time over the past decade' (Liberal Democrats, 2011).

In fact, the majority of eating disorders arise in adolescence, but sometimes their onset is as early as late childhood (Gowers & Green, 2009). These often atypically presenting early onset eating disorders, as well as the childhood feeding disorders, make clear diagnostic categories difficult. Furthermore, the different types of eating disorders, namely, anorexia nervosa (AN), bulimia nervosa (BN) and their associate eating disorder not otherwise specified (EDNOS) which currently includes binge eating disorder, not only share much of their psychopathology, but often individuals will move between diagnoses over the course of their illness (Gowers & Green, 2009). There are various other issues that make diagnosing eating disorders in children and adolescents difficult, which also effect research. In fact, that is why the Diagnostic and Statistical Manual for Mental Disorders, (Fifth edition) [DSM-V], which is expected to be published in 2013, is likely to include some changes in the diagnostic criteria for eating disorders. However, research so far has been based on often inadequate diagnostic categories.

At present the key diagnostic features of AN, which is believed to arise from as early as age eight (Bryant-Waugh, 2000), consist of a distorted body image, a refusal to

maintain weight at or above what is normal, an intense fear of gaining weight and, in postmenarcheal females, amenorrhea (DSM-IV, American Psychiatric Association, 1994). One of the difficulties when applying these diagnostic criteria for AN to children and adolescents is that in this age group there can be a lack of concern about weight and shape, where dietary restriction is mainly linked to control of food intake *per se* (Gowers & Green, 2009). Under the present criteria this should exclude a diagnosis of AN. In addition, children and young people may have difficulties in describing their cognitions and behaviours adequately or truthfully (Gowers & Bryant-Waugh, 2004). Another issue when thinking about this age group is that body mass index (BMI) norms do not necessarily apply, as growth may be stunted (Gowers & Bryant-Waugh, 2004). Furthermore, the amenorrhea criterion poses problems in diagnosing pre-pubertal girls and the variability of the start of puberty makes it difficult to judge whether a girl would have started their menarche was it not for their low weight (Gowers & Green, 2009).

BN is believed to be very rare under the age of twelve and rare before the age of 16 (Bryant-Waugh, 2000; Gowers & Bryant-Waugh, 2004). For BN the key diagnostic features are a distorted body image, binge eating, significant dieting, and/or purging or laxative use (DSM-IV, American Psychiatric Association, 1994).

EDNOS (DSM-IV, American Psychiatric Association, 1994) or atypical anorexia or bulimia nervosa (ICD 10, World Health Organisation, 1992) accommodates those presentations that do not meet the full criteria for AN or BN. A larger proportion of adolescents will be diagnosed with EDNOS than AN or BN, but it is under-represented in research (Leon, Fulkerson, Perry, Keel, & Klump, 1999). This diagnosis currently includes binge eating disorder.

There is a high risk and cost associated with these disorders, which research suggests last on average between eight years for AN, and five years for BN (BEAT, 2010). While eating disorders which start in adolescence are reported to have a better outcome, very early (especially pre-pubertal) onset eating disorders appear to have poor outcome (Gowers & Green, 2009). In AN, mortality is said to be as high as 15% in some studies (Gowers & Green, 2009) and in the UK, AN is the most prevalent disorder within child and adolescent mental health inpatient services (O’Herlihy et al., 2003). Research has also shown that the earlier treatment is started the more likely is recovery (BEAT, 2010). Despite all this, there has been little systematic psychological treatment research for eating disorders in adolescence and childhood. When the review of the evidence for the effectiveness of treatments for child and adolescent eating disorders by the National Institute for Health and Clinical Excellence (for a summary see Gowers & Bryant-Waugh, 2004) was published, it was unable to make a single grade A recommendation for AN and showed that there were no randomised controlled trials for BN in children and adolescents. However, since then, new research has been published. While some of this has been reviewed, this review incorporates the latest research and concentrates exclusively on randomised controlled trials with children and adolescents, with no extrapolating from purely adult literature. It includes a separate section on bulimia nervosa and EDNOS, and research quality criteria for all studies are listed.

This is a review rather than a systematic meta-analysis because there are a range of methodological difficulties of conducting a meta-analysis for psychological therapies in eating disorders as Gowers and Green (2009) outline: (1) heterogeneity within therapies of the same name; (2) the wide range of outcome measures used; (3) differences in timing of follow up; (4) entry criteria and (5) other therapies given concurrently. In addition, when

considering research with children and adolescents, one also has to consider the lack of specially adapted and validated psychometric assessments for this age group.

1.1 Psychological Interventions

A variety of psychological treatments are used clinically with children and adolescents with eating disorders. While many are written about in some form, only the descriptions of treatments which have been used in randomised controlled treatment studies are included here. These therapies are based on a few main approaches: therapies which have their roots in family therapy; cognitive behavioural therapies, which may or may not have a family component; individual supportive or psychodynamically-orientated approaches; and psycho-education or combined setting-specific approaches (e.g. inpatient). Unless otherwise stated, the described approaches have been developed for anorexia nervosa.

1.1.1 Treatments rooted in Family Therapy

Family therapy tends to work with relationships in order to change the family system to obtain better health. Generally, families will be encouraged to directly take part in therapy sessions. Family therapy for eating disorders has been influenced by Minuchin's concept of the psychosomatic family (Eisler, 2005; Minuchin et al., 1978). Eisler (2005) argues that the family therapy for anorexia nervosa has been strongly influenced by theoretical accounts of family processes which imply that eating disorders are best understood as arising out of such processes, but that the empirical evidence from research on family functioning does not support the theoretical explanatory models. The majority of family therapies used in RCTs for eating disorders places emphasis on the caretakers (parents) in taking on the instrumental role of opposing the anorexia.

The treatments which have their roots in family therapy include: ‘Maudsley’ family therapy (MFT), family-based treatment (FBT), conjoint family therapy (CFT), separated family therapy (SFT), family therapy for BN (FT-BN), family-based treatment for BN (FBT-BN), behavioral family systems therapy (BFST) and behavioural family therapy (BFT).

MFT (as described by Russell, Szmulker, Dare & Eisler, 1987; Geist, Heineman, Stephens, Davis & Katzman, 2000), CFT (as described by LeGrange, Eisler, Dare & Russell, 1992; Eisler et al., 2000) and FBT (Lock, Agras, Bryson & Kraemer, 2005; Lock et al., 2010) are based on family therapy as developed by Dare and colleagues at the Maudsley Hospital in London. This approach aims to encourage parents to adopt a united stance and see themselves as the resource to support their child in overcoming their eating disorder. The entire family has to attend all sessions, allowing direct observation and direct intervention in the family’s interactions and behavioural pattern around the eating disorder behaviour. Therapy is centred on tasks rather than on exploring underlying etiological issues and it actively stays away from assigning blame. Patients progress through three treatment phases. The first treatment phase concentrates on weight restoration and normalisation of eating behaviours, of which parents are encouraged to take control, and interfere with. The second phase, which starts once there is some steady weight gain, is focused on achieving weight gain without too many complications, as well as discussing a return to a more normal family life. In phase three, which starts when the young person’s weight is stable, responsibility is handed back to the young person, and the emphasis of the therapy changes to more traditional family issues.

Separated family therapy (SFT) (as described by LeGrange et al., 1992; Eisler et al., 2000) is similar to CFT, in that united parental stance is advised to deal with eating disorder

symptomatology and the family is supported in the belief that they are not the root of the problem but have the resources to help their child. However, while the parents are seen together, the patient is seen by themselves. Therefore, there is no direct observation or possibility for intervention for the entire family. The therapist supports the patient, while the parents are changing their attitude and behaviour towards the eating disorder. The sessions with the patient are aimed at symptoms.

Two versions for BN have been adapted from family therapy for AN as described above. FT-BN (as described in Schmidt et al., 2007) is detailed in a manual (Eisler et al., unpublished). FBT-BN (as described by Le Grange, Crosby, Rathouz & Leventhal, 2007) was manualised by Le Grange et al. (2007) and theorises that BN disrupts the usual progress through adolescence. In the first phase of each of these treatments, instead of encouraging weight gain, as in the treatment of AN, family members are encouraged to help the adolescent to reduce and reach abstinence from bulimic behaviours. The second treatment phase then aims at parents handing back control over eating issues to their adolescent; and the effects on adolescent developmental processes are addressed in the third treatment phase.

Behavioral family systems therapy (BFST) is a conjoint family therapy approach (as described by Robin, Siegel, Koepke, Moye & Tice, 1994; Robin et al., 1999), which is also based on, and similar to, the approaches described above. In the first treatment phase parents are encouraged to take charge of their child's eating behavior and weight gain, by applying a behavioural orientated weight gain program. In the second phase, once weight gain has been established and the parents are effectively taking charge of their child's eating, work around cognitive distortions and family structure start. And as before, the third

phase starts when the young person has reached their target weight and the parents are encouraged to return control over eating to the young person.

Behavioural Family Therapy (BFT; as described in Ball & Mitchell, 2004) is based on behavioural interventions described by Robin and Foster (1989) in their description of BFST.

1.1.2 Cognitive Behavioural Therapies

Cognitive behavioural therapies for eating disorders aim to target its core psychopathology - the over-evaluation of shape and weight and their control, as well as its behavioural and cognitive consequences (Fairburn, 2008).

The treatments belonging to the cognitive behavioural therapies are: the individual cognitive behavioural therapy (CBT) program, CBT guided self-care for BN, dialectical behavior therapy for AN/BN (DBT-AN/BN) and CBT for AN/BN.

The individual CBT program for anorexia nervosa (as described by Ball & Mitchell, 2004) is based on a CBT treatment manual by Garner and Bemis (1982). It was modified to incorporate maladaptive core beliefs regarding feelings of failure and inadequacy (Young, 1994).

CBT guided self-care for BN is a manualised individual approach for bulimia nervosa (as described by Schmidt et al., 2007), which had previously been tested with adults with BN. In this approach the therapist guides patients through a workbook to fit the young persons' needs and tries to motivate them. Treatment focuses on motivation to change, cognitive-behavioural psychoeducation, case formulation and problem solving. In

addition to the individual sessions the young person can opt for two session with a close other.

Dialectical behavior therapy for AN/BN (DBT-AN/BN; as described in Salbach-Andrea et al., 2009) was developed by Salbach et al. (2007) and informed by an adaptation of dialectical behavior therapy for suicidal adolescents by Miller, Rathus and Linehan (2007). It consists of individual sessions, skills group training sessions, inclusion of parents to some of the individual and some of the skills training sessions, and DBT-specific telephone contacts. The therapy aims in hierarchical order are: the reduction of suicidal and self-harming behaviour (which may or may not include eating disorder specific behaviours); reduction of behaviours which endanger the therapy; reduction of behaviours which reduce quality of life (e.g. vomiting); and increase of social skills (including an eating disorder specific skill).

CBT for AN/BN is a manualised approach (as described in Salbach et al., 2009), which has been adapted from therapy for adults with AN and BN by Jacobi, Paul and Thiel (2004). It consists of individual sessions, group therapy sessions, and inclusion of parents to some of the individual and some of the group therapy sessions. The therapy consists of eight parts: psychoeducation and individual formulation, normalising eating behaviour and weight, treatment of body image problems, improvement of self-esteem, social competencies training, supporting autonomy, exploring familial interaction patterns, as well as maintenance and relapse prevention.

1.1.3 Individual supportive and psychodynamic treatments

Individual supportive therapy (IST) is an individual approach (as described in Russell et al., 1987), which was developed as a control treatment. As such it is no formal

psychotherapy, but supportive, educational and symptom-focused, including features of cognitive, interpretative and strategic therapies. The eating disorder was understood as having a developmental and interpersonal function and relating to other personality aspects. The focus of half of the session would always be on the young persons' weight, the rest on interpersonal aspects.

Adolescent-focused individual therapy (AFT; as described by Lock et al., 2010) is a psychodynamically-informed individual psychotherapy, which was originally termed ego-oriented individual therapy (EOIT; as described by Robin et al., 1994; Robin et al., 1999). It focuses on the young persons' ego-strength, coping skills, individuation from the family, identity confusion, assertiveness and other interpersonal issues and how these relate to matters of eating, weight expectations and body image. Through interpretation, support, reflection and transference, the therapeutic couple work towards self-acceptance. Self-acceptance and a stronger ego are believed to permit resumption of normal eating habits and weight gain. The adolescent is actively encouraged to gain weight and stop dieting behaviours. The therapy supports the adolescent to distinguish emotional and physical needs and to take responsibility for their eating disorder, rather than handing responsibility to others. While the therapy includes meetings with the parents alone, they are asked to refrain from direct involvement with their child's eating.

Supportive psychotherapy (SPT) for BN, which Le Grange et al. (2007) adapted for adolescents, has derived from work of Fairburn, Kirk, O'Connor and Cooper (1986), and Walsh et al. (1997). SPT was designed as a non-specific control individual treatment that doesn't overlap with CBT, interpersonal therapy or analytic therapy and has no recognized active therapeutic ingredients. It is non-directive and explores underlying issues. SPT consists of three phases. In phase one, the young person's history is taken and underlying

issues for the eating disorder identified. In the second phase, these issues are explored and the expression of feelings encouraged. The therapy works towards independence and the termination of treatment. The last phase consists of a review and plans on how to cope in the future.

1.1.4 Other interventions

The main aim of family group psycho-education (FGP; as described in Geist et al., 2000) is to achieve attitudinal and behavioural change in patients and their parents. This is attempted by informing about eating disorders and facilitating group discussion about the implementation of change. At the end of each session, group members split into a parent and an adolescent group for discussion.

Inpatient treatment, as described by Gowers et al. (2007), is a multi-disciplinary approach provided within generic children's and adolescents psychiatric inpatient units. Its aims are to normalise eating, restore healthy weight and facilitate psychological (cognitive) change. It includes individual supportive or cognitive therapies and family therapy, as well as a weight restoration programme.

Specialist outpatient treatment, as described by Gowers et al. (2007), was manualised and consisted of an initial motivational interview, individual CBT (including parental feedback), parental counselling with the patient, dietary therapy and multi modal feedback monitoring.

CAMHS treatment, as described by Gowers et al. (2007), was treatment as usual, provided by children and adolescent mental health services in the UK, and mostly comprised of an MDT, family-based approach with possible dietary and individual supportive therapy as well as medical liaison.

2. Method

2.1 Criteria for considering studies for this review

2.1.1 Types of studies

All randomised controlled treatment studies evaluating psychological treatment for eating disorder in children and adolescents were considered for inclusion in this review. Studies which included young people and adults were only considered if the sub-sample of young people was analysed separately. The control condition had either to be a waiting control group or another psychosocial intervention(s). Only articles from peer reviewed journals were considered.

2.1.2 Participant characteristics and settings

Considered for this review were young people (1) of either gender; (2) between the ages 8-21 (children are classified as between 8-12 years of age; young adolescents 13-16; older adolescents 17-21) (3) with a diagnosis of anorexia nervosa or bulimia nervosa, or partial pictures of these/eating disorder not otherwise specified.

2.2 Search method for the identification of studies

2.2.1 Electronic searches

Relevant studies were identified by searching the following electronic databases: (1) Ovid MEDLINE (1948 – 2 week of January 2011); (2) EMBASE classic and EMBASE (1947 – 2011 week 2); (3) PsycInfo (1967 to 3 week of January 2011).

The key search terms were as follows: (1) Intervention = psycho* or cognitive or behavio* or therap* or self* or educat* or counsel* AND (2) Condition = anorexia or

bulimia or 'binge eating' or 'eating disorder*' AND (3) Participants = child* or adolesc* or teenage* or pubert*.

2.2.2 Reference lists

The reference lists of all papers selected were inspected for further relevant studies.

2.3 Evaluating criteria used in this review

2.3.1 Research quality criteria

The quality assessment tool for quantitative studies (EPHPP, 2009) has been used, which evaluates studies with regards to their selection bias, study design, confounders, blinding, data collection methods, withdrawals and drop-outs. These are rated strong, moderate or weak. Articles with no weak rating and a majority of strong ratings were awarded an overall strong rating. Studies with no weak rating and an equal amount of strong and moderate ratings were given a double rating of strong/moderate. Studies with one weak rating or no weak rating but a majority of moderate ratings were given an overall moderate rating, while studies with more than one weak rating were given an overall weak rating. The quality assessment tool for quantitative studies was chosen because it has a strong methodology rating (Thomas, Ciliska, Dobbins & Miccucci, 2004).

2.3.2 Outcome criteria

Overall outcome of the reviewed studies is reported, in order to enhance comparability.

For AN, the majority of included studies (Ball et al., 2004; Eisler et al., 2000; Gowers et al., 2007; Le Grange et al., 1992; Robin et al., 1994; Russell et al., 1987) report

overall outcome with the Morgan and Russell (1975) general outcome classification. These are as follows: (1) ‘good’ for individuals whose weight is within 15% of average body weight, who are menstruating and who have no bulimic symptoms; (2) ‘intermediate’ for individuals whose weight is within 15% of average body weight and who have either no bulimic symptoms or they are less than once a week; (3) ‘poor’ for individuals whose weight is below 85% of average body weight, or who are bingeing/vomiting once a week or more.

There is a second set of data which the Morgan Russell scales measures, called the average outcome score. This score measures general progress on five dimensions (‘Nutritional’ status; ‘Menstrual’ scale; ‘Mental State’ scale; ‘Psychosexual’ scale; ‘Socio-economic’ scale). However, the average outcome score is only reported where reported and relevant.

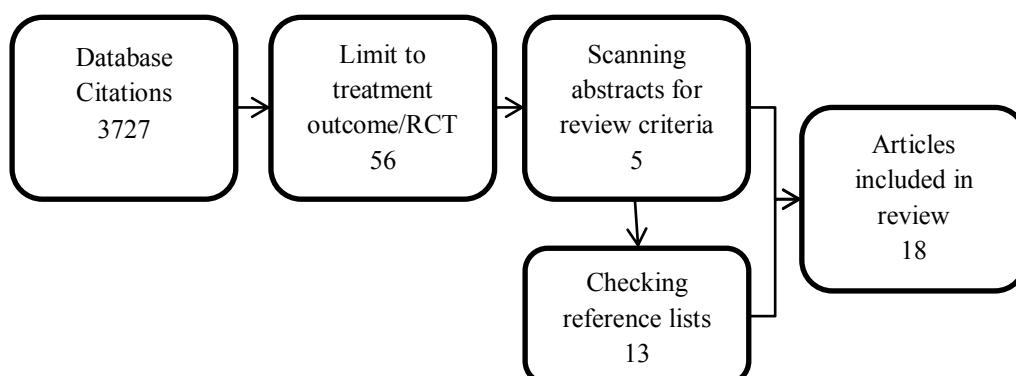
3. Results

3.1 Results of the search

18 relevant articles were identified, from an original pool of 3727 studies generated by the search. Figure 1 shows a flowchart of the literature review process.

Figure 1

Flowchart of literature review process



3.2 Included studies

12 original studies were included in this review, of which five had relevant separate additional articles (e.g. follow-up; preliminary data). Studies are reported by eating disorder classification and in chronological order. Table 1 provides an overview of the sample characteristics of the reviewed studies.

Table 1
Overview of sample characteristics: children and adolescents eating disorder RCTs

	Sample Size (N)	Age range (M)	Illness Duration (M)	Gender (Female %)
Russell et al., 1987; Eisler et al., 1997	21 ^a	M=15.3	14.4 months	Not reported for subgroup
le Grange et al., 1992	18	12-17yrs (M=15.5)	13.7 months	88.9%
Robin et al., 1999	37	11yrs - 20yrs (M=14.2)	<12months	100%
Eisler et al 2000; Eisler et al., 2007	40	11.5-17.8yrs (M=15.5)	12.9 months	97.5%
Geist et al., 2000	25	12yrs – 17.3yrs (M=14.3 / M=14.9) ^c	Not reported	100%
Ball et al., 2004	25	13yrs - 23yrs (M=18.1) ^b	18 months	100%
Lock et al., 2005; Lock et al., 2006;	86	12yrs – 18yrs (M=15.2)	12 months / 11.3 months ^c	89%
Gowers et al., 2007	167	12yrs – 18yrs (M=14.11)	13 months	92%
Lock et al., 2010	121	12yrs – 18yrs (M=14.4)	11.3 months	91%
Salbach-Andrae et al., 2009	50	12.4yrs - 21yrs (M=16.9)	24.8 months	100%
Schmidt et al., 2007	85	13yrs – 20yrs (M=17.9 / M=17.4) ^c	30 months / 29 months ^c	98%
Le Grange et al., 2007	80	12yrs – 19yrs (M=16.1)	21.2 months	97.5%

^a subgroup 1 ^b only younger participants of interest to this review ^c for each treatment group respectively.

3.2.1 Participants and settings

Participant numbers ranged from 18 – 167 and their ages ranged from eleven to twenty-one years. No RCTs with children age eight to ten were identified. Eight studies included male participants. One study included a combination of participants with anorexia nervosa and bulimia nervosa; one included a combination, but only the anorexia nervosa subgroup was considered due to age; eight included participants with anorexia nervosa, of which one included related EDNOS; and two studies included participants with bulimia nervosa, of which included participants with related EDNOS. Trials were all conducted in a developed country. Five trials were conducted in the USA or Canada, five in the United Kingdom, one in Australia, and one in Germany.

3.2.2 Interventions

Ten trials used two treatment groups. One trial used three treatment groups. One trial used two treatment and one waiting control group. Eight trials reported follow-up.

3.3 Anorexia Nervosa

Ten randomised controlled studies have been published for this population. The majority of these trials have focused on family therapy-based treatments, but there are also some newer studies focusing on cognitive behavioural based treatments. Other forms of psychotherapy have mainly been used as control groups in these studies. An overview of research quality ratings and overall outcome is given in Table 2.

3.3.1 ‘Maudsley’ Family Therapy (MFT) versus Individual Supportive Therapy (IST)

Russell et al. (1987) compared the efficacy of MFT and IST. For this review, only the adolescent sub-sample of this study has been considered (N=36). The study found that for participants with short illness duration (<3years), MFT was superior to IST. However, for those with longer illness duration, there was poor outcome regardless of treatment modality. At one year follow up 60% of adolescents in MFT achieved good outcome in comparison to 9% in the IST group. There was a much higher drop out from the IST group. Participants in this group also needed longer hospitalisation, more outpatient sessions and more anti-depressant medication. While this could be due to IST being inferior to FT, it is also possible that the participants were more severely ill to begin with. The results of this study also showed that high expressed emotion in mothers was linked to dropping out of MFT, but not IST (Dare, Eisler, Russell & Szmukler, 1990).

Major limitations of this study are that the treatments were not manualised and the assessors were not blinded with regards to treatment modality. Lock et al. (2010) suggests that this study is best understood as a relapse prevention trial, as participant’s weight had been restored in a specialist inpatient service before being randomised to one of the treatments and it is therefore unclear how effective treatments would have been for weight gain had patients been seen purely as outpatients. In addition, the fact that all participants were ex-inpatients is unlikely to be typical of everyone who has AN; in fact many refuse inpatient treatment, as pointed out by Crisp et al. (1991).

In the five year follow up of this study, Eisler et al. (1997) confirmed the initial results, showing that 90% of the group of adolescents with short illness duration who had

received MFT had a good outcome, compared to only 36% in the IST group. Of the adolescents with long illness duration, 53% had a poor outcome at the five year follow up regardless of treatment modality. Higher family expressed emotion no longer correlated with outcome at the follow up assessments. There were problems with the completeness and quality of the follow ups. When interpreting the follow up results, one also has to keep in mind the possible effects of unplanned intervening treatments and the natural outcome of AN.

3.3.2 Conjoint family therapy (CFT) versus separated family therapy (SFT)

In their pilot study, Le Grange et al. (1992) compared CFT with SFT, in order to explore which aspects of family therapy may lead to treatment success - direct intervention in the family system or less family therapy specific aspects of the therapy. Both treatment groups showed significant improvements with regard to weight gain and various psychological variables. Weight was in fact in the normal range by end of treatment. In the short term, there were few differences between treatments, apart from critical comments being higher for relatives in CFT than SFT. This study is limited by its small number of participants (N=18) and the fact that assessors were not blinded to treatment modality. As all patients had short illness duration, generalisation is difficult. In addition, the follow up assessment took already place after six months. The study also failed to answer its own question of which aspects of family therapy lead to improvement.

Following on from this pilot study, the RCT by Eisler et al. (2000) compared the later versions of CFT and SFT. The entire sample (N=40) showed significant improvements on all measures apart from the Morgan-Russell psychosexual scale. There were no significant differences between treatment groups with regards to weight, disordered eating

symptoms or patient reported eating attitudes, unless considering expressed emotion in the families. In families with high maternal criticism, participants in the CFT group were doing less well. The differences between CFT and SFT were small with regards to changing eating disorder symptoms, but they were in favour of SFT. This study also showed that of the sixteen patients who had no previous treatment, thirteen had a good or intermediate outcome, while half of those who had been treated before had a poor outcome. As above, the main limitations of this study are that treatments were not manualised, the sample size modest, and only participants with short illness duration were included.

At the five year follow-up (Eisler, Simic, Russell & Dare, 2007), 75% of participants had no eating disorder symptoms. There were no differences regarding long term overall outcome between the two treatment groups, with both having improved much further. However, there was still evidence of participants from families with high maternal criticism and who had had CFT doing less well. While the follow up rate was very good (N=38), 24% of those participants followed up were not interviewed in person, but either on the telephone or through a third party.

3.3.3 Behavioral family systems therapy (BFST) versus ego-oriented individual therapy (EOIT)

This RCT (Robin et al., 1994; Robin et al., 1999) compared BFST to EOIT, attempting to answer questions left open from the RCTs by Russell et al. (1987) and Le Grange et al. (1992). Two thirds of all young people in this study reached their target weight by the end of treatment. Both groups improved with regards to their BMI, but the BFST group improved more when comparing the mean. However, no significant differences were found when comparing the target weight or the BMI percentile criteria.

Both treatments were related to advances on measurements of eating attitudes, interoceptive awareness, depression, internalizing behavior problems, and eating-related family conflict. All treatment gains were improved or maintained at one-year follow up (Table 2). Treatments did not necessarily produce the greater outcomes on dimensions that were reflected in their theory. The strength of this study was that it used a battery of standardised validated psychometrics measures and that the treatments were manualised. However, again, the short illness duration (onset in the last 12 months) of participants does not allow for wide enough generalisation. In addition, 58% of the BFST group, but only 28% of the EOIT group were hospitalised during their treatment as their weight fell below a threshold of 75% and received a refeeding program alongside the study. Therefore, results in either group could be due to level of hospitalization. BFST might be more likely to lead to hospitalization, or participants in each group might have differed on particular variables pre-treatment. Just 73% of participants took part in the follow up, with the majority of those who were not followed up refusing to be followed up. It is possible that these constitute the less successfully treated patients. Another limitation of the study was its small sample size (N=37).

3.3.4 Family Therapy (FT) versus Family Group Psychoeducation (FGP)

Geist et al. (2000) compared a conjoint FT and FGP for adolescents with AN (n=22) and related EDNOS (n=3), who were admitted as inpatients and then treated on an outpatient basis. There were significant improvements for both groups in terms of weight restoration, but there was no significant difference between the groups. Patients in both groups were identifying more family pathology by the end of treatment. No significant group differences were found on any of the routine measures. The study also found that FGP is much more cost-effective as up to seven families can attend a group facilitated by

two therapists. Participants were severely ill, and therefore results might not translate to individuals with less severe presentations. A major limitation of the study was that 76% of weight gain was already achieved during the inpatient stay and that additional psychosocial and standard medical treatments were provided. There was a high readmission rate, with half of the young people being re-admitted during or immediately after the study period. The study also had a small sample size and was inadequately powered, with at least double the sample size needed again. It includes patients with a higher percentage of ideal body weight (90%) than suggested in the DSM-IV (85%) (n=3). Another limitation of this study is that it lacks a follow up.

3.3.5 Short- versus long-term MFT

In their RCT, Lock et al. (2005) set out to establish whether short-term MFT would be as effective as longer term MFT. Of all participants (N=86), 96% were above weight threshold for AN, and 67% had BMIs higher than twenty at the end of treatment. In addition, global scores on the eating disorder examination (EDE) were not far off published community mean scores. No statistical difference between the two groups was found with regards to BMI or on the EDE, or any of the secondary outcome measures. When looking at possible outcome moderators, the study found that longer treatment was favourable for young people from non-intact families and those with higher levels of obsessive thinking about food and weight. This study used manualised treatments and was adequately powered. However, nearly 10% of participants did not complete the final assessment. In addition, the average illness duration for participants was less than one year, which makes it difficult to generalise outcomes.

Participants in this study were followed up 2-6 years after the end of treatment (Lock, Coutourier & Agras, 2006). At the point of follow up, BMIs of participants in both groups were mostly in the normal range. No statistical differences between the short and the long term group were found, and the overall good outcome scores had been maintained. At follow up, no moderators differentiating between the short and longer form of treatment could be found. However, a major limitation of this follow up is that some of the assessment data was collected either through a third party (parent) or via the telephone. It is therefore difficult to estimate the accuracy of the information given. In addition, only half of the 83% who were followed up completed the EDE. Also, the use of different time points for follow up assessments disallowed clear trends to be identified.

3.3.6 Family-based treatment (FBT) versus adolescent-focused individual therapy (AFT)

Lock et al. (2010) compared family-based treatment with adolescent-focused individual therapy. By the end of treatment there were no differences between the two therapies with regards to full remission. However, partial remission was significantly greater in the FBT group. This difference had disappeared at the 6 and 12 month follow-up. However, FBT was significantly superior to AFT with regards to full remission at this point. This might have been the case because of the much greater relapse levels for AFT and more participants of FBT reaching the threshold for full remission.

In this RCT as in many others, the short illness duration of participants makes generalisation difficult. Participants also did not include those who are severely underweight. A longer follow up than 12 months would have been preferable.

3.3.7 Individual CBT program versus behavioural family therapy (BFT)

In their study Ball and Mitchell (2004) compared a manualised program of CBT with BFT as the comparison group for adolescents and young adults. 60% of all participants were in full remission by the end of treatment. However, the study could not establish any differences in outcome between treatment groups. In addition, even though there were significant improvements on measures of eating attitudes and behaviours, self-esteem, depression, and state anxiety for both the CBT and the BFT group, only perfectionism and state anxiety scores were in the 'normal range' post treatment. No differences were found between treatment groups for the younger adolescents (<17years), which are of interest for this review, or for the older patients. CBT was found to be as effective for the younger adolescents as the older group. Outcomes were maintained at six month follow up. This study includes patients with a higher percentage of ideal body weight (90%) than suggested in the DSM-IV (85%). The little detail in the description of treatments makes it hard to establish their differences or key aspects. The other limitations were that the follow up assessment was only six months post-treatment and that the sample size was very small (N=25; including young adults).

3.3.8 Inpatient - versus specialised outpatient - versus CAMHS treatment

Gowers et al. (2007) compared inpatient psychiatric treatment, specialised outpatient treatment and CAMHS treatment as usual. Less than one out of five participants had fully recovered within one year (N=167). All groups made substantial improvements with regards to weight and psychopathology at one year, but there were no significant differences between groups. There was further improvement at the two year follow up, with an overall good outcome for 33%. However, 27% still fulfilled the diagnostic criteria for

AN. Full adherence to allocated treatment was poor, worst for inpatient treatment and best for specialist outpatient treatment. Of particular interest to this review is the finding that the outcome of individual CBT was poorer, than outcomes reported for family-based treatments in other studies (Gowers et al., 2007). It is otherwise difficult to evaluate the specific contributions or outcomes of the psychological treatments embedded in each of the modes of service delivery, as all modes of service delivery were heterogeneous, and only the outpatient treatment provided one mode of psychological treatment (CBT) only.

3.3.9 DBT-AN/BN versus CBT-AN/BN

Salbach-Andrae et al. (2009) compared DBT-AN/BN with CBT and a waiting control group (WCG). There were no significant differences between the two treatment groups, which included participants with anorexia- and bulimia nervosa. After receiving the DBT-AN/BN treatment, 63% did not fulfil the DSM-IV criteria for an eating disorder anymore; this was true for 58% of participants after receiving the CBT treatment. Some participants moved from a diagnosis of AN or BN to a diagnosis of EDNOS post-treatment. All members of the waiting control group (WCG) still fulfilled the diagnostic criteria for an eating disorder. In comparison to the WCG group, participants who completed DBT-AN/BN or the CBT treatment ate significantly more frequently, avoided significantly less food rich in calories, had a significantly higher BMI (participants with AN) and were significantly less psychologically stressed. While patterns of bingeing and purging didn't significantly differ, this might be due to the small sample size, as effect sizes were high. However, there were also no significant differences to the WCG group with regards to body image, autonomy development, perfectionism and emotion regulation, and it is unlikely that these results would have changed with a bigger sample size. Unfortunately, there was no differential analysis between participants with AN and BN, which makes it impossible to

evaluate the treatments for specific eating disorders. It is unclear from this study whether the incorporation of the family is essential for the outcome as both treatments incorporated the family to some degree. The major limitation of this study is that it does not have a follow-up and the modest sample size (N=50). In addition, 10% of participants dropped out of treatment. The WCG was, for ethical reasons, only three months long, in comparison to 25 weeks of treatment. Therefore, it could be speculated, that participants in the WCG would have naturally improved over time if given longer.

3.4 Bulimia Nervosa and EDNOS

For this population, three RCTs have been published, two comparing family therapy approaches with more individual based therapies and one comparing DBT, CBT and a waiting control group. An overview of research quality ratings and overall outcome is given in Table 1.

3.4.1 Family therapy for BN versus CBT guided self-care for BN

Schmidt et al. (2007) could not confirm their hypothesis that FT would be superior to CBT guided self-care for adolescents with BN and related EDNOS. Results showed that at six months, a significantly higher proportion of patients in the CBT guided self-care group had stopped bingeing than in the family therapy group, but there were no differences with regards to vomiting. At twelve months follow-up, there were no differences in vomiting or bingeing between the treatment groups. Between the end of treatment and twelve months follow up, substantial improvement occurred in both groups. 42% in the FT, and 36% in the CBT group were binge and purge abstinent, while 28% and 40% respectively still showed clinical levels of bingeing and purging.

Table 2
Research quality rating and overall outcome for children and adolescents eating disorder RCTs

	Research quality rating ^a	Overall Outcome (good, intermediate & poor refer to Morgan Russell criteria ^b)
Russell et al., 1987; Eisler et al., 1997	Moderate	Short duration subgroup. 1yr/5yr FU ^c : MFT: 60%/90% good & 30% intermediate/10% poor; IST: 9%/36% good & 9%/18% intermediate;
le Grange et al., 1992	Weak	No differences between CFT and SFT 67% good/intermediate;
Robin et al., 1994; Robin et al., 1999	Strong	50 th percentile of BMI: EOT ^d /1yr: BFST: 53%/67%; EOIT: 41%/47%; Menstruation: EOT/1yr: BFST: 94%/93%; EOIT: 64%/80%
Eisler et al 2000; Eisler et al., 2007	Strong	EOT/5yr: CFT: 26%/72% good & 21%/6% intermediate; SFT: 48%/80% good & 28%/10% intermediate;
Geist et al., 2000	Weak	Significant overall weight restoration; no differences between FT & FGP.
Ball et al., 2004	Moderate	No differences between CBT and BFT 60% good & 12% intermediate;
Lock et al., 2005; Lock et al., 2006;	Strong	No difference between short and long MFT. 96% above weight threshold for AN & 67% BMIs \geq 20. FU: 89% within 90% of ideal body weight; Nearly 90% menstruation.
Gowers et al., 2007	Strong	1yr/2yr: CAMHS 18%/36% good, 56%/36% intermediate; OP 15%/24% good, 40%/51% intermediate; IP 21%/33% good, 32%/30% intermediate;
Lock et al., 2010	Strong	EOT/6mnth/12mnth: Full remission: FBT 42%/40%/49%; AFT 23%/18%/23%;
Salbach-Andrae et al., 2009	Strong	No significant differences DBT and CBT. DBT-AN/BN: 63% & CBT: 58% did not fulfill criteria for an eating disorder. WCG: all still fulfilled criteria for an eating disorder.
Schmidt et al., 2007	Moderate/ Strong	Abstinence from bingeing & purging: 6mnths/12mnths: FT 12.5/42%; CBT 19.4/36%;
Le Grange et al., 2007	Strong	Remission EOT/FU: FBT-BN 39%/29%; SPT 18%/10%; Partial Remission EOT/FU: FBT-BN 41%/49%; SPT 21%/38%;

^aResearch quality criteria are described under 2.3.1. ^b Morgan Russell criteria are described under 2.3.2. ^cfollow-up. ^dend of treatment.

The one-quarter of participants which decided to involve a close other instead of their family, were older, less likely to live at home or have a good relationship with their parents, more chronically ill and had a higher levels of comorbidity. This study also found that the costs for CBT guided self-care were significantly lower than for family therapy. A limitation of this study is that only 60-79% of participants completed treatment and 28% of eligible adolescents chose not to participate in this study as they didn't want family involvement.

3.4.2 Family based treatment for BN (FBT-BN) vs. supportive psychotherapy (SPT)

In the RCT by Le Grange et al. (2007), which compared FBT-BN and SPT for adolescents with BN and related EDNOS, participants in the FBT group were significantly more likely than those from the SPT group to be binge and purge abstinent at the end of treatment and at six-month follow up. In the FBT group, 39% achieved full remission at end of treatment, compared to only 18% in the SPT group, - an advantage that was maintained at follow up although to a lesser degree. Secondary outcome assessment also revealed main effects in favour for FBT with regards to eating psychopathology, but not depression or self-esteem. FBT-BN also appeared better than SPT in producing early symptomatic relief. Outcome was similar for adolescents with BN and those with related EDNOS. Treatment adherence was high for FBT-BN as well as for SPT. The main limitation of this study was that the assessor was not blinded.

3.4.3 DBT-AN/BN versus CBT-AN/BN

One study evaluating DBT for children and adolescent with bulimia nervosa was included in this review (Salbach-Andrae et al., 2009) and has been discussed above.

Unfortunately, no differentiation between BN and AN was made, and it is therefore impossible to find out whether the approaches work better with a particular diagnostic group.

4. Summary, conclusions and recommendations

4.1 Anorexia nervosa and related EDNOS

Ten original randomised controlled trials evaluating psychological treatments for anorexia nervosa have been conducted with children and adolescents in the age range eleven to twenty-one. The majority of trials have looked at family therapy-based treatments, using individual supportive or psychodynamic treatments as control treatments. More recently, trials evaluating cognitive therapies have been conducted.

Family therapy originating from the approach developed at the Maudsley hospital in London, has proven to be especially valuable for young people whose illness duration is less than three years at the start of treatment (Russell et al., 1987). Young people with longer illness duration appeared to have a poorer prognosis, regardless of treatment choice (Russell et al., 1987; Eisler et al., 2000). Shorter illness duration seems indeed to be the norm for this population. The average illness duration in a large community sample was thirteen months; however, outcomes from this study, which compared inpatient-, outpatient- and community treatment, were modest (Gowers et al., 2007). It seems therefore, that providing the right treatment as early as possible with young people who have anorexia nervosa is of particular importance. In three studies with young people with short illness duration, family therapy approaches produced slightly better results than individual non-cognitive therapies and/or better results were longer maintained, but individual therapies also produced positive results for some young people (Lock et al.,

2010; Russell et al., 1987; Robin et al., 1999). Lock et al. (2005; 2006) also showed that many adolescents with short illness duration can be equally well treated with a briefer form of family therapy, but that young people from non-intact families, or who have more severe and persistent eating-related obsessive thinking, benefit from longer forms of the treatment. Research also shows that young people who had been treated in the past for their eating disorder had a poorer outcome (Eisler et al., 2000).

Despite the overall positive outcomes of family therapy, research indicates that including the family in family therapy, but not having conjoint sessions, appears advantageous, especially for families where familial critical comments and maternal criticism levels are high (le Grange et al. 1992; Eisler et al., 2000; 2007). In those families, separate family session might lead to less drop outs of therapy than conjoint sessions (Dare et al., 1990). Additionally, Geist et al. (2000) showed that providing separate sessions for more than one family at a time is more cost effective than traditional family therapy. Only one study which compared an individual cognitive behavioural therapy with a behavioural family therapy, found the individual therapy as effective as the family therapy (Ball and Mitchell, 2004). Gowers et al. (2007), on the other hand, concluded that in their study the outcome of individual CBT was poorer than reported for family-based treatments. Robin et al. (1999) showed that family conflict improved equally much in the individual ego-orientated therapy, which included some separate sessions with the parents, as it did in the family therapy. The authors suggest that family conflicts may be secondary to the effects of starvation, and therefore improve with weight gain and independent of treatment.

In Salbach-Andrea et al.'s (2009) study, which compared cognitive behavioural therapy and dialectical behaviour therapy, participants had lower BMIs and longer illness duration, but results were comparable to Le Grange et al. (2007). Both the CBT and the

DBT approach in this study included the family in therapy. This seems to support Fairburn's (2005) suggestion that it is the involvement of parents in psychotherapy that is important for positive progress, rather than family therapy. Salbach-Andrea et al.'s (2009) study also showed that DBT might be advantageous to CBT in treating eating disorders in adolescents. As participants in this study were more severely ill, it could be that it is more severely ill patients who benefit more from the DBT approach. This study was the only study including a waiting control group and it showed that patients in the DBT and CBT groups did much better, than those in the waiting control group.

When comparing treatment settings, Gowers et al. (2007) found that for young people with anorexia nervosa less specialist treatment setting are not necessarily less effective than more intense and specialist settings. These results also have a cost implication.

It can be concluded that for young people with anorexia nervosa providing psychological treatment is better than providing no treatment; and that including the family in therapy is likely to produce better results than not including the family in therapy. It can also be established that for young people who have had anorexia nervosa for less than three years, family therapy is more effective than some individual non-cognitive therapies. However, it is not possible to ascertain from the literature whether cognitive therapy approaches produce equally good outcomes as family therapy. It seems however, that where family therapy is not available or appropriate, adolescent-focused therapy or cognitive therapy approaches provide at least a good alternative for young people with anorexia nervosa.

4.2 Bulimia nervosa and related EDNOS

Only three randomised controlled trials have been published for adolescents with bulimia nervosa between the ages of twelve and twenty-one, two of which include adolescents with related EDNOS. Therefore, any conclusions can at best be tentative. It appears from the literature that psychological treatments for adolescents are at least partly effective in reducing the symptomatology of bulimia nervosa. One study has shown that family therapy is more effective than individual supportive therapy (Le Grange et al., 2007). The other study that included just young people with bulimia nervosa showed that family therapy and cognitive-behavioural approaches are able to produce similar outcomes (Schmidt et al., 2007). It also showed that while family involvement can be helpful, it might also hinder initial take up. The one-quarter of participants, who decided to involve a close other instead of their parents, were older, less likely to live at home or have a good relationship with their parents, more chronically ill and had a higher comorbidity. However, in Schmidt et al.'s (2007) study family therapy consisted of thirteen sessions, while Le Grange et al.'s (2007) participants received twenty sessions, which may account for some of the differences. In addition, treatment adherence was better in the latter study. And while Le Grange et al.'s (2007) study showed that family-based treatment produced earlier symptom relief than individual supportive therapy, Schmidt et al. (2007) found that CBT guided self-care produced quicker symptom reduction than family therapy. It is therefore unclear from the literature whether the involvement of the family aids or hinders early symptom relief, or whether it is indeed due to other factors. Early symptom relief is important as it is a major predictor of overall positive treatment outcome in bulimia nervosa.

The only other randomised controlled trial including adolescents with bulimia nervosa is the study by Salbach-Andrea et al. (2009), which also included adolescents with anorexia nervosa. Unfortunately, it doesn't differentiate between diagnoses and the adolescents with bulimia nervosa only constitute 26% of all participants. Results of this study point to the fact that both DBT-BN and CBT-BN are more effective than no treatment at all for adolescents with bulimia nervosa.

It appears from the literature that family therapy, CBT guided self-care, CBT-BN and DBT-BN can produce comparable outcomes. However, with the most effective treatment in each study achieving between 40% and 60% of full remission, outcomes are modest. These comparable results also support the suggestion by Fairburn (2005) that it might be the involvement of the family in therapy, rather than family therapy, which facilitates improvement. It can also be concluded that for some adolescents with bulimia nervosa, especially those who are older, more removed from their families and have more complex presentations, the involvement of parents is not acceptable. Indeed, it seems that individual as well as family therapy should be offered, as to avoid therapy not being taken up at all. In addition, CBT guided self-care for bulimia nervosa appears to be more cost effective than family therapy (Schmidt et al., 2007).

4.3 Limitations of reviewed studies

There are various limitations, which affect most of the studies under review. First of all, the sample size of the majority of studies was small. In addition, most studies only included two treatment groups, whose differences were not always well described. Generalisation of the results of the majority of studies is limited by including only females over the age of eleven, who have been ill for a short duration. Furthermore, comparison

across studies is made problematic by the use of heterogeneous inclusion criteria, various outcome measures, and variable remission criteria. However, whilst earlier studies were lacking treatment manuals, this problem does not apply to later studies anymore.

4.4 Recommendations for future research

Future research needs to include larger numbers of children and adolescents, as many studies conducted so far have at best been adequately powered to differentiate between treatments. Only one study has included a waiting control group, and future studies should think more creatively of how to include a no treatment control group, despite the obvious ethical problems. While the majority of studies have evaluated family therapy approaches, only one trial for bulimia nervosa has compared family therapy with individual CBT. It would be important for future trials to compare family therapy with CBT with and without family involvement. In order to answer the question whether it is family therapy or involvement of the family in therapy that leads to good outcomes, other type of therapies than CBT which have a family component could be used as well. It would also be of interest whether children, adolescents and their families who agree to take part in family therapy, already differ pre-treatment from those who don't. A large proportion of young people do not improve sufficiently, even when receiving specialist treatment. Research, which explores factors which hinder improvement and innovative treatments for this subgroup of the population, is very much needed. In addition, research on EDNOS/atypical eating disorders is needed, as these are the majority of clinical cases.

There are no randomised controlled trials with children from the age eight to eleven, even though this age group presents to services. In addition, most research has only included participants with anorexia nervosa of short duration, and evaluating which

treatments may be effective for those with longer duration seems important. Moreover, only some studies have included males, and those which have, did not differentiate between genders. This is despite the fact that a substantial amount of adolescents with an eating disorder are males. There has also been a lack in reporting or looking at ethnicity.

4.5 Overall summary

Twelve randomised controlled trials evaluating psychological treatments for young people aged eleven to twenty-one and living with an eating disorder have been reviewed. Whilst some conclusions can be drawn, there is a need for further studies. Family therapy is the treatment that has been studied the most for this population. It appears to produce a good outcome for some young people; however this varies quite substantially across studies (30% - 90%). Family therapy has shown to be more or equally effective than alternative treatments, but has not been tested against a waiting control group. There is also some evidence that cognitive/dialectical behavioural therapies are effective for this population, producing between 20% and 63% of remission, while adolescent-focused therapy has shown to produce between 18% and 47% of remission.

Unfortunately, at present, there is still only a small evidence base to guide the psychological treatment of children and adolescents with an eating disorder.

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Public Domain Paper

Metacognitions, Emotion and Disordered Eating in Women

Susanne Norweg

University of Birmingham, June 2012

The aim of the empirical component of this thesis was to gain a better understanding of the interaction of thinking about one's thoughts (metacognitions), emotion and disordered eating in women. The aim of the literature review component of this thesis was to review the existing literature on randomised controlled psychological therapy trials for children and adolescents living with an eating disorder.

Empirical Paper

Background and objective: Recently, cognitive behavioural therapies for a variety of mental health problems have benefitted from the inclusion of the concept of metacognitions. Metacognitions can be described as the cognitive processes that help us to control, modify and interpret our thoughts – or shorter: thinking about thinking. For eating disorders, outcomes achieved with cognitive behavioural therapy (CBT) often lag behind that achieved for other disorders. Therefore, it is of interest whether metacognitions are relevant with regards to eating disorders. Five studies have been conducted that show metacognitive concern is linked to disordered eating (Cooper, Grocutt, Deepak & Bailey, 2007; Konstantellou & Reynolds, 2010; McDermott & Rushford, 2011; Todd, 2006; Woolrich, Cooper & Tuner, 2008). This study is the first to investigate the relationships between metacognitions, emotions (anxiety and depression) and disordered eating in

women with or without an eating disorder. It also explores differences with regards to these factors between women with and without an eating disorder.

Method: 326 women, who were recruited through the eating disorder charity ‘Beat’, the University of Birmingham or a specialist eating disorder service, were included in the study. They completed the following questionnaires: Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), Meta-Cognitions Questionnaire 30 (MCQ-30; Cartwright-Hatton & Wells, 1997) and the Eating Disorder Examination Self-Report Questionnaire (EDE-Q; Fairburn & Beglin, 1994). They also provided information about their age, ethnicity and mental health.

Results: Women with an eating disorder have higher levels of metacognitive concerns than women without a significant disordered eating pathology. The relationship between most eating disorder symptoms and metacognitive concerns was mediated by anxiety and depression levels. However, the need to control thoughts was the only metacognition that was linked to disordered eating without this relationship being mediated by depression and anxiety.

Discussion: This research lends further support to the usefulness of including metacognitive concerns in eating disorder models and treatments. In particular, beliefs about the need to control thoughts appear to play an important role with regards to disordered eating. This research also highlights the importance of aversive emotional states on eating disorder pathology as well as on disordered eating variables in the normal population and its role as mediator of metacognitive concern on disordered eating pathology.

Literature Review

Background and objective: There has been little research comparing psychological interventions for children and adolescents living with an eating disorder, which could inform clinical practice. This review was conducted in order to review all randomised controlled trials for psychological interventions for young people, between eight and twenty-one years of age, who are living with an eating disorder.

Method: Relevant articles were identified via an electronic search. Reference lists of all selected papers were also inspected for relevant studies.

Results: Twelve randomised controlled trials conducted for psychological treatments for young people between eleven and twenty-one years of age, who are living with an eating disorder, were identified and reviewed. Family therapy approaches have been trialled the most for this population, but cognitive behavioural therapy approaches, dialectical behaviour therapy and adolescent-focused therapy have also been studied. The research quality criteria ratings for each study are reported.

Conclusion: Family therapy appears to produce a good outcome for some young people; however this varies quite substantially across studies (30% - 90%). There is also evidence that cognitive/dialectical behavioural therapies are effective for this population, producing between 20% and 63% of remission, while adolescent-focused therapy has shown to produce between 18% and 47% of remission. Whilst some conclusions can be drawn, these are based on few studies and there is a need for further research trials.

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Appendices

Appendix A

Metacognitions, Emotion and Disordered Eating in Women

Participant Information Sheet

Version 2C

My name is Susanne Norweg, and I am a trainee on the Doctorate course of Clinical Psychology at the University of Birmingham. I am the principal investigator of this research project, which is supervised by Dr Christopher Jones at the University of Birmingham and Dr Newman Leung, Consultant Clinical Psychologist at the Birmingham and Solihull Eating Disorder Service (Birmingham and Solihull Mental Health Foundation Trust). This study has been approved by the National Research Ethics Service.

Invitation

You are being invited to take part in this research study, which has been given the title 'Metacognitions, Emotions and Disordered Eating in Women'. Please take your time to read this information carefully before making a decision about participation. You have no obligation to take part in this study. This information leaflet will outline what participation in this project may involve. Should you wish to discuss any aspect of this study or would like some further information before making your decision please do not hesitate to contact us.

What is the purpose of this research?

The purpose of this research study is to further our understanding of the relationships between thinking about our thoughts, emotion and disordered eating, which is a new area of research. Research in this area may help to improve psychological therapies for individuals with a diagnosis of an eating disorder. Additionally, it is hoped that this kind of research furthers our general understanding of the relationship between thoughts, emotion and behaviour.

What are the potential benefits or disadvantages of taking part in this study?

There are no known benefits for participants, but sometimes individuals may feel inconvenienced by spending time completing questionnaires, or they may get distressed by the content of the questionnaires. Should you feel distressed by the content of the questionnaires, you can contact:

Dr Newman Leung, [REDACTED]

[REDACTED]

Tel: [REDACTED]

**UNIVERSITY OF
BIRMINGHAM**

Will my taking part in the study be kept confidential?

All data that will be collected about you will be kept in strict confidence. Data from the questionnaires will be anonymous. You will be given a number, which will allow you to withdraw your data. We will **not** keep a record of your personally identifiable information (like your name and address).

What if there is a problem?

Should you have cause to complain you can contact the Programme Director of the University of Birmingham Clinical Psychology Doctorate course:

Jan Oyebode, University of Birmingham
School of Psychology, Edgbaston
Birmingham, B15 2TT

Additionally, the normal National Health Service complaints mechanisms are open to you.

What will happen to the results of the research study?

Results of this study are hoped to be published in a research journal. No published data will be identifiable as yours. Additionally, a summary of the research and its' results will be published on the website of the National Eating Disorder Association (www.b-eat.co.uk).

Please contact me if you would like to request a questionnaire pack or if you require some further information:

Email:

Post: Susanne Norweg

University of Birmingham, School of Psychology

Edgbaston, Birmingham, B15 2TT

Thank you very much for taking the time to read this information.

Metacognitions, Emotion and Disordered Eating in Women

Participant Information Sheet

Version 2ED

My name is Susanne Norweg, and I am a trainee on the Doctorate course of Clinical Psychology at the University of Birmingham. I am the principal investigator of this research project, which is supervised by Dr Christopher Jones at the University of Birmingham and Dr Newman Leung, Consultant Clinical Psychologist at the Birmingham and Solihull Eating Disorder Service (Birmingham and Solihull Mental Health Foundation Trust). This study has been approved by the National Research Ethics Service.

Invitation

You are being invited to take part in this research study, which has been given the title 'Metacognitions, Emotions and Disordered Eating in Women'. You have been given this information because you are currently receiving treatment through the Birmingham and Solihull Eating Disorder Service. However, you have no obligation to take part in this study. It is important to know that your decision about participation will have no impact on any treatment or care you are currently receiving or will receive in the future.

Please take your time to read this information carefully before making a decision about participation. It will outline what participation in this project may involve. Please do not hesitate to contact us if you would like some further information before making your decision.

What is the purpose of this research?

The purpose of this research study is to further our understanding of the relationships between thinking about our thoughts, emotion and disordered eating, which is a new area of research. Research in this area may help to improve psychological therapies for individuals with a diagnosis of an eating disorder. Additionally, it is hoped that this kind of research furthers our general understanding of the relationship between thoughts, emotion and behaviour.

What are the potential benefits or disadvantages of taking part in this study?

There are no known benefits for participants, but sometimes individuals may feel inconvenienced by spending time completing questionnaires, or they may get distressed by the content of the questionnaires. Should you feel distressed by the content of the questionnaires, you can contact:

Dr Newman Leung, [REDACTED]

[REDACTED]

[REDACTED]

Tel: [REDACTED]

**UNIVERSITY OF
BIRMINGHAM**

Will my taking part in the study be kept confidential?

All data that will be collected about you will be kept in strict confidence. Data from the questionnaires will be anonymous. You will be given a number, which will allow you to withdraw your data (this is only possible for the paper or electronic versions of the questionnaires, not the online version). However, we will **not** keep a record of your personally identifiable information (like your name and address).

What if there is a problem?

Should you have cause to complain you can contact the Programme Director of the University of Birmingham Clinical Psychology Doctorate course:

Jan Oyebode,

University of Birmingham

School of Psychology

Birmingham

B15 2TT

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(www.b-eat.co.uk).

Please contact me if you would like to request a questionnaire pack or if you require some further information:

Email:

Post: Susanne Norweg, University of Birmingham

School of Psychology, Edgbaston

Birmingham, B15 2TT

Thank you very much for taking the time to read this information.

Information published on www.b-eat.co.uk

Project Title: **Metacognitions, Emotion and Disordered Eating in Women**

Researchers: Susanne Norweg (Principal Investigator) and Dr Newman Leung

I am a trainee on the Doctorate course of Clinical Psychology at the University of Birmingham. My research study investigates how individuals think about their thoughts (metacognitions) and how that relates to disordered eating and emotion. The purpose of this research study is to further our understanding of the relationships between thinking about our thoughts, emotion and disordered eating, which is a new area of research. Research in this area may help to inform and improve psychological therapies for individuals with a diagnosis of an eating disorder. Additionally, it is hoped that this kind of research furthers our general understanding of the relationship between thoughts, emotion and behaviour. This study has been approved by the National Research Ethics Service.

- **What will happen to me if I agree to take part?**

You will be asked to fill in four questionnaires, either in paper form, as an electronic version or online, whichever suits you best. You can complete these questionnaires when and where convenient for you. Completing the questionnaires may take approximately 30 minutes.

We then ask you to send the questionnaires back to us either by email (to [SXN829@bham.ac.uk](mailto: SXN829@bham.ac.uk)) or in a SAE, which we provide, unless you have chosen the online version.

- **Who can get involved?**

Women who are 16 to 65 years of age, with or without an eating disorder.

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

All data that will be collected about you will be kept in strict confidence. Data from the questionnaires will be anonymous. You will be given a number, which will allow you to withdraw your data (this is only possible for the paper or electronic versions of the questionnaires, not the online version). However, we will **not** keep a record of your personally identifiable information (like your name and address).

If you would like to request an information and questionnaire pack or would like to discuss any aspect of this research, please contact me via email or by post:

████████████████████

Susanne Norweg
University of Birmingham
School of Psychology (Clin.Psy.D)
Edgbaston, Birmingham
B15 2TT

**Thank you for reading this information.
I look forward to hearing from you, Susanne Norweg**

Appendix B

Questionnaire Pack Ref:

Please keep a note of the reference number above so that we can exclude and destroy your data if you decide to withdraw from the research at any time before the data is analysed.
Please return this questionnaire as an attachment to: [REDACTED]

General Information

Please provide the following information about yourself:

Gender: Female Male

Age (please type in response): Weight: Height:

How would you describe your ethnicity (please tick)?

White	<input type="checkbox"/>	Black or Black British	<input type="checkbox"/>
Mixed ethnicity	<input type="checkbox"/>	Asian or Asian British	<input type="checkbox"/>
Other ethnic group	<input type="checkbox"/>	(if other, please specify):	

Is English your first language or are you proficient in reading English? Yes No

Have you ever been diagnosed with an Eating Disorder? Yes No

Do you **currently** have an Eating Disorder? Yes No

If **yes**, please could you indicate which type(s) of eating disorder you **currently** have:

Anorexia Nervosa

Bulimia Nervosa

Binge Eating Disorder

Eating Disorder Not Otherwise Specified

Other, please specify:

Do you **currently** experience difficulties related to eating? Yes No

Have you ever been diagnosed with, or are currently experiencing any of the following mental health problems?

Depression	Currently <input type="checkbox"/>	In the past <input type="checkbox"/>
Anxiety Disorder	Currently <input type="checkbox"/>	In the past <input type="checkbox"/>
Obsessive Compulsive Disorder	Currently <input type="checkbox"/>	In the past <input type="checkbox"/>
Psychosis (e.g. Schizophrenia, Bipolar Disorder)	Currently <input type="checkbox"/>	In the past <input type="checkbox"/>

META-COGNITIONS QUESTIONNAIRE 30
MCQ-30
Adrian Wells & Samantha Cartwright-Hatton (1999)

[Not available in the digital version of this thesis]

EDE-Q.

[Not available in the digital version of this thesis].

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

[Not available in the digital version of this thesis]

Appendix C

[Not available in the digital version of this thesis]