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Cognitive behaviour therapy compared to other psychotherapies for treatment of bulimia nervosa

Systematic review

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Key messages

Bulimia nervosa is an eating disorder characterized by repeated episodes of binge eating where the binge eating is followed by behaviours to prevent weight gain. Bulimia nervosa affects approximately 2% of women between the ages of 14 and 44 years.

We have conducted a systematic review about the effect of cognitive behaviour therapy compared to other psychotherapies for treatment of bulimia nervosa. We have included 14 randomized controlled trials in total.

Cognitive behaviour therapy compared to other psychotherapies for people who suffer from bulimia nervosa:

- **Probably leads to more people who stop bingeing and purging, a better mean bulimic symptom score, similar number of people dropping out of treatment and similar mean weight/ BMI at end of treatment (moderate certainty of the evidence)**
- **Possibly leads to similar improvement in general psychiatric symptoms and psychosocial/ interpersonal functioning at the end of treatment but there is considerable variation in scores between studies (low certainty of the evidence)**
- **There is very little information about drop out due to adverse events (very low certainty of the evidence)**

Title:

Cognitive behaviour therapy compared with other psychotherapy for treatment of bulimia nervosa

Type of publication:

Systematic review

A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies.

Doesn't answer everything:

- Excludes studies that fall outside of the inclusion criteria
- No health economic evaluation
- No recommendations

Publisher:

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Peer review:

Jan Rosenvinge, Øyvind Rø

Both are members of the Guideline Panel for the Norwegian Directorate of Health

Executive summary

Background

Bulimia nervosa is an eating disorder characterized by repeated episodes of bingeing where the binge eating is followed by behaviours to prevent weight gain. Bulimia nervosa affects approximately 2% of women between the ages of 14 and 44 years.

Objective

We have conducted a systematic review about the effect of cognitive behaviour therapy compared to other psychotherapies for the treatment of bulimia nervosa in persons over 16 years.

Method

We searched for randomized controlled trials in the following databases (November 2015): MEDLINE; Embase; Cochrane CENTRAL; PsycINFO; CINAHL, SveMed+, Web of Science, ClinicalTrials.gov and ICTRP World Health Organization.

Two persons assessed all references for inclusion independently of each other. All references considered potentially relevant were assessed in full text. Two persons independently evaluated the risk of bias in the included studies.

The relevant population was persons over 16 years who suffer from bulimia nervosa. Relevant interventions was cognitive behavioural therapy compared with other psychotherapies. One person extracted information and another person double-checked that the important and correct information were collected. We evaluated our confidence in the results using GRADE (Grading of Recommendations, Assessment, Development, and Evaluation).

Results

We have included 14 randomized controlled trials in total. Cognitive behaviour therapy compared to other psychotherapies for people who suffer from bulimia nervosa:

- Probably leads to more people who stop bingeing and purging (RR 0.84 (95% CI 0.72 to 0.97)), a better mean bulimic symptom score (SMD -0.23 (95% CI -0.45 to -0.01)), similar number of people dropping out of treatment (RR 1.11 (95% CI 0.88 to 1.39)) and similar mean weight/ BMI at end of treatment (SMD -0.04 (95% CI -0.13 to 0.22)) (moderate certainty of the evidence)
- Possibly leads to improvement in mean depression score (SMD -0.36 (95% CI -0.71 to -0.02)), but there is considerable variation in peoples' general psychiatric symptoms (low certainty of the evidence)
- Possibly leads to similar improvement in general psychiatric symptoms (SMD -0.18 (95% CI -0.55 to 0.18)) and psychosocial/ interpersonal functioning at the end of treatment (SMD -0.53 (95% CI -1.21 to 0.15) but there is considerable variation in scores between studies (low certainty of the evidence)
- There is very little information about drop out due to adverse events (very low certainty of the evidence)

Discussion

All of the 14 randomized controlled trials included in this systematic review were conducted in high-income countries. The trials were small, only between 14 and 293 persons in each trial, and most of the trials had an unclear risk of bias.

The methods of diagnosis and the criteria for the diagnosis of bulimia nervosa has been changing over time. Therefore, there were some variation in how serious the symptoms were among the people who took part in the different studies. The conclusion of the meta-analysis of the outcomes mean bulimic symptom scores and mean depression scores changed when conducted without the one study that only included people with the non purging type of bulimia. This clearly demonstrates the importance of the changing diagnostic criteria.

Conclusion

Cognitive behaviour therapy compared to other psychotherapies for people who suffer from bulimia nervosa probably leads to more people who stop bingeing and purging and a better mean bulimic symptom score at end of treatment.

Hovedfunn (norsk)

Bulimi (bulimia nervosa) er en spiseforstyrrelse som kjennetegnes av gjentatte episoder av overspising der episoden etterfølges av atferd for å unngå vektøkning. Forekomsten av bulimia nervosa i Norge er ca. to prosent blant kvinner i alder 14 til 44 år.

Vi har utarbeidet en systematisk oversikt om effekten av behandling med kognitiv atferdsterapi sammenlignet med annen psykoterapi for voksne personer med bulimia nervosa. Vi har inkludert totalt 14 randomiserte kontrollerte studier.

Kognitiv atferdsterapi sammenlignet med annen psykoterapi til personer med bulimi:

- Fører trolig til at flere personer slutter med overspisingsepisoder og kompensere atferd, skårer bedre på skala for bulimisyptomer. Men det er omtrent like mange personer som slutter med begge behandlingene og ingen sikker forskjell i vekt/ KMI etter endt behandling (middels kvalitet på dokumentasjonen)
- Fører muligens til liknende skårer på generelle psykologiske symptomer og psykososial/mellommenneskelig fungering ved avsluttet behandling, men det er betydelig variasjon i skårene mellom studiene (lav kvalitet på dokumentasjonen)
- Det er lite tilgjengelig dokumentasjon om frafall grunnet alvorlige hendelser (svært lav kvalitet på dokumentasjonen)

Tittel:

Kognitiv atferdsterapi sammenlignet med annen psykoterapi for personer med bulimia nervosa

Publikasjonstype:

Systematisk oversikt

En systematisk oversikt er resultatet av å

- innhente
- kritisk vurdere og
- sammenfatte relevante forskningsresultater ved hjelp av forhåndsdefinerte og eksplisitte metoder.

Svarer ikke på alt:

- Ingen studier utenfor de eksplisitte inklusjonskriteriene
- Ingen helseøkonomisk evaluering
- Ingen anbefalinger

Hvem står bak denne rapporten?

Kunnskapssenteret i Folkehelseinstituttet har skrevet rapporten på oppdrag fra Helsedirektoratet.

Når ble litteratursøket utført?

Søk etter studier ble avsluttet November 2015.

Fagfeller:

Jan Rosenvinge, Øyvind Rø

Begge medlemmer av Helsedirektoratets faggruppe for retningslinjer for spiseforstyrrelser

Sammendrag (norsk)

Kognitiv atferdsterapi sammenlignet med annen psykoterapi for personer med bulimia nervosa

Bakgrunn

Bulimi (bulimia nervosa) er en spiseforstyrrelse som kjennetegnes av gjentatte episoder av overspising der episoden etterfølges av atferd for å unngå vektøkning. Forekomsten av bulimi i Norge er ca. to prosent blant kvinner i alder 14 til 44 år.

Problemstilling

Vi har utarbeidet en systematisk oversikt som besvarer følgende spørsmål: Hva er effekten av behandling med kognitiv atferdsterapi sammenlignet med annen psykoterapi for voksne personer med bulimia nervosa.

Metode

Vi har søkt etter randomiserte kontrollerte forsøk i følgende elektroniske databaser (søket ble utført i november 2015): MEDLINE; Embase; Cochrane CENTRAL; PsycINFO; CINAHL, SveMed+, Web of Science, ClinicalTrials.gov and ICTRP World Health Organization.

To personer vurderte alle referansene mot inklusjonskriteriene uavhengig av hverandre. Alle referansene som ble vurdert som mulig relevante ble hentet i fulltekst. To personer vurderte risiko for skjevheter i de inkluderte studiene, igjen, uavhengig av hverandre.

Relevante personer var personer over 16 som lider av bulimia nervosa. Relevant behandling var kognitiv atferdsterapi sammenlignet med annen psykoterapi. En person hentet informasjon fra studiene og en annen dobbeltsjekket at den viktige informasjonen var hentet og korrekt gjengitt. Vi vurderte hvilken tillit vi har til resultatene ved hjelp av GRADE (Grading of Recommendations, Assessment, Development, and Evaluation) metoden.

Resultat

Vi inkluderte totalt 14 randomiserte kontrollerte studier. Kognitiv atferdsterapi sammenlignet med annen psykoterapi til personer med bulimia nervosa:

- Fører trolig til at flere personer slutter med overspisingsepisoder og kompensere atferd (RR 0.84 (95% KI 0.72 to 0.97)), skårer bedre på skala for bulimisyntomer (SMD -0.23 (95% KI -0.45 to -0.01)). Men det er omtrent like mange personer som slutter med begge behandlingene (RR 1.11 (95% KI 0.88 to 1.39)) og ingen sikker forskjell i vekt/ KMI etter endt behandling (SMD -0.04 (95% KI -0.13 to 0.22)) (middels kvalitet på dokumentasjonen)
- Fører muligens til liknende skårer på generelle psykologiske symptomer (SMD -0.18 (95% KI -0.55 to 0.18)) og psykososial/mellommenneskelig fungering ved avsluttet behandling (SMD -0.53 (95% KI -1.21 to 0.15)), men det er betydelig variasjon i skårene mellom studiene (lav kvalitet på dokumentasjonen)
- Det er lite tilgjengelig dokumentasjon om frafall grunnet alvorlige hendelser (svært lav kvalitet på dokumentasjonen)

Diskusjon

Alle de 14 randomiserte kontrollerte studiene som er inkludert i denne systematiske oversikter er utført i høyinntektsland. Studiene er små, det var kun mellom 14 og 293 personer i hver studie, og de fleste har en uklar risiko for skjevheter.

Metodene som har blitt brukt for å stille diagnose, og hvilke kriterier som oppfyller en diagnose har endret seg over tid. Derfor var det variasjon i alvorlighetsgrad og symptombelastning hos inkluderte personer i de forskjellige studiene. Hvor viktige disse endringene i diagnoser er, blir tydeliggjort ved at metaanalysene for de to utfallene gjennomsnittlig skåre for bulimisyntomer og gjennomsnittlig skåre for depresjon, endret konklusjon om vi hadde med den ene studien som kun inkluderte personer med bulimi som hverken kastet opp eller brukte avføringsmiddel.

Konklusjon

Kognitiv atferdsterapi sammenlignet med annen psykoterapi for personer med bulimia nervosa fører trolig til at flere personer slutter med overspisingsepisoder og kompensere atferd, og at de skårer bedre på skala for bulimisyntomer ved avsluttet behandling.

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Preface

The Norwegian Directorate of Health commissioned a summary of available research on the effect of cognitive behavioural therapy compared to other psychotherapies as a treatment for persons who suffer from bulimia nervosa. This systematic review will be part of the evidence used during the revision of the national guidelines for eating disorders.

The Norwegian Knowledge Centre for the Health Services in the Norwegian Institute of Public Health supports the Directorate of Health in its work with national guidelines. We produce systematic reviews at speed for prioritized questions. The Directorate of Health formulates a very precise question of effect, and two of the content experts of the guideline panel act as external peer reviewers for the systematic review.

As part of the Directorate of Health's preparation in formulating a precise question, they conduct a search for previously published systematic reviews. For this question, they found a systematic review of high quality that answers the question. However, that review was based on a literature search conducted in June 2007, and there is a need for a more updated answer to the question.

The project group consisted of:

Gunn Elisabeth Vist, *(Project leader), Norwegian Institute of Public Health*

Siri Jung, *Norwegian Directorate of Health*

Gyri Hval Straumann, *Norwegian Institute of Public Health*

Kristoffer Yungpeng Ding, *Norwegian Institute of Public Health*

Liv Merete Reinart, *Norwegian Institute of Public Health*

We thank Vigdis Underland for helping us with reading, assessing and data extraction of the German study.

Signe Flottorp
Department director

Gunn E Vist
Unit director and project coordinator

Objective

We conducted a systematic review about the effect of cognitive behavioural therapy compared to other psychotherapies as treatment for persons who suffer from bulimia nervosa.

This is one of several questions included in an already existing Cochrane review conducted by Hay et al 2009 (1). We included the relevant studies that they had already included for 'our question' and combined them with studies published after the literature search they conducted in 2007. We used the methods described in their review.

Background

Bulimia nervosa is an eating disorder characterized by repeated episodes of bingeing where the binge eating is followed by behaviours to prevent weight gain. Compensating behaviour can be purging behaviour (physically eliminate the food from the body) such as self-induced vomiting or use of laxatives, or non-purging behaviour such as periods of starvation or over-exercising. People who suffer from bulimia nervosa are often of normal weight or overweight.

Bulimia nervosa affects both men and women, it is estimated that approximately 2% of women between the ages of 14 to 44 years are affected (2, 3). We are unsure how many men who are affected. Bulimia nervosa can have serious and long-lasting consequences for both physical and psychological health. Self-induced vomiting alters the natural salt and electrolyte balance in the body, and can result in acid-damage to the teeth. The use of laxatives can interfere with normal bowel functions.

Treatment for bulimia nervosa often entails cognitive behavioural therapy (CBT) and/or medication with anti-depressive drugs (3, 4). Cognitive behavioural therapy is provided individually or in groups, both versions have a common focus on the person's thought pattern and ways in which those patterns influence feelings and behaviour. A version of cognitive behavioural therapy specially adapted for persons with bulimia nervosa (CBT-BN and CBT-E) is developed for individual therapy and has a focus on the enforcing factors of bulimia nervosa such as restrictive eating, emotionally triggered overeating, bodily obsession and body controlling behaviour. An important component of this therapy is that the person register food intake and that this registration is used actively together with the therapist for normalising eating behaviour. Therapy often involves 15 to 20 sessions spaced over several months (1, 3, 4, 5). CBT-BN/E is an intensive treatment and questions have been raised as to the necessity of so much treatment as some persons may experience effects from shorter duration of treatment (1). On the other hand, some may need much more and longer treatment. Therefore, the commissioner wants a comparison of cognitive behavioural therapy with other forms of psychotherapy.

Hay et al 2009 (1) included randomized controlled trials of persons with bulimia nervosa and persons with other overeating/ binge disorders and other disorders not otherwise specified (EDNOS). Some of these studies included the comparison of cognitive behavioural therapy with other psychotherapies for people with bulimia nervosa. These studies are included in our systematic review.

Method

We have conducted a systematic review about the effect of cognitive behavioural therapy compared to other psychotherapies for persons with bulimia nervosa.

Literature search

The literature search used by Hay et al 2009 was not available. Research librarian Gyri Hval Straumann planned the searches in collaboration with the project group. Another research librarian peer reviewed the search strategy before GHS executed the search. The following databases were systematically searched in November 2015:

- MEDLINE
- Embase
- Cochrane CENTRAL
- PsycInfo
- CINHAHL
- SveMed+
- Web of Science
- ClinicalTrials.gov
- ICTRP World Health Organization

Although the earlier search by Hay et al 2009 was not available, we still restricted our search back in time to the stated search date, June 2007. We had no language restrictions in the search. Complete search strategies are available in Appendix 1.

Inclusion criteria

Population

Persons who suffer from bulimia (Bulimia Nervosa) who are older than 16 years

Intervention

Cognitive behavioural therapy (CBT).
This includes all forms of CBT such as:
- adapted for people who suffer from an eating disorder (CBT-E).
- adapted for people who suffer from bulimia nervosa (CBT-BN)

Comparison	Any other form of psychotherapy. This includes psychoanalytic therapy, psychodynamic therapy, interpersonal therapy (IPT), guided self-help, dialectic behavioural therapy and supportive therapy
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Outcome	Primary outcomes: Remission (100% abstinence from binge eating and vomiting as number of people who have stopped) Mean bulimic symptom score at the end of treatment Secondary outcomes: Side effects or negative effects of therapy Psychosocial functioning General psychiatric symptoms Loss to follow up Weight or BMI
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Study design	Randomized controlled trials
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Language

We read publications in English, Norwegian, Swedish, Danish, German and French. We would have translated publications in other languages as needed if relevant competencies had been found. We would have presented any non-translated publications on a separate list.

Exclusion criteria

Comparison	Hypnotherapy Mindfulness
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Article selection and quality assessment

GEV and LMR independently read all identified references and titles. Potentially relevant publications were collected in full text and independently assessed by GEV, LMR and SJ.

The risk of bias of all the included studies was evaluated by GEV, LMR and SJ independently of each other according to the Risk of bias instructions in the Cochrane handbook (6)

Data extraction and analysis

Information was collected by SJ who noted the reference, information about study design, setting, participants, description about the interventions, who provided the interventions and the comparison treatment. GEV double checked the information. KYD extracted results and GEV double checked.

For the studies that had already been included in Hay et al 2009 (1), we used the numbers and risk of bias assessments presented in their published review.

We present the results in text and tables. KYD conducted meta-analysis where possible and appropriate using random effect models in the Review Manager software. Pre-planned sub group analysis was performed for different risk of bias groups (low risk/ unclear risk/ high risk), duration of intervention (3 to 4 weeks/ 15 to 21 weeks/ 50 weeks) and comparison treatments. Binary outcomes are presented as risk ratio (RR) with 95% confidence interval. Continuous outcomes are presented as mean differences (MD) with confidence intervals. Where similar outcomes were presented on different units or scales, we calculated standardized mean differences (SMD) with confidence intervals.

Assessing the quality of the evidence

We used the GRADE methodology to assess the quality/ certainty of the evidence for each of the important outcomes (7, www.gradeworkinggroup.org). For each outcome, our confidence in the evidence was assessed using eight criteria: five for downgrading (risk of bias, consistency, directness, precision and publication bias), and three for potential upgrading (dose-response relationship, large or very large effects and possible confounding). The grading results in four categories:

High quality: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

Results

Our electronic literature search identified 1090 references. We considered 39 of the references as potentially relevant and read them in full text. Six of the studies identified in our electronic literature search fulfilled the inclusion criteria and are included in this systematic review. The 33 references that did not fulfil the inclusion criteria are presented in Appendix 2 together with an explanation for exclusion.

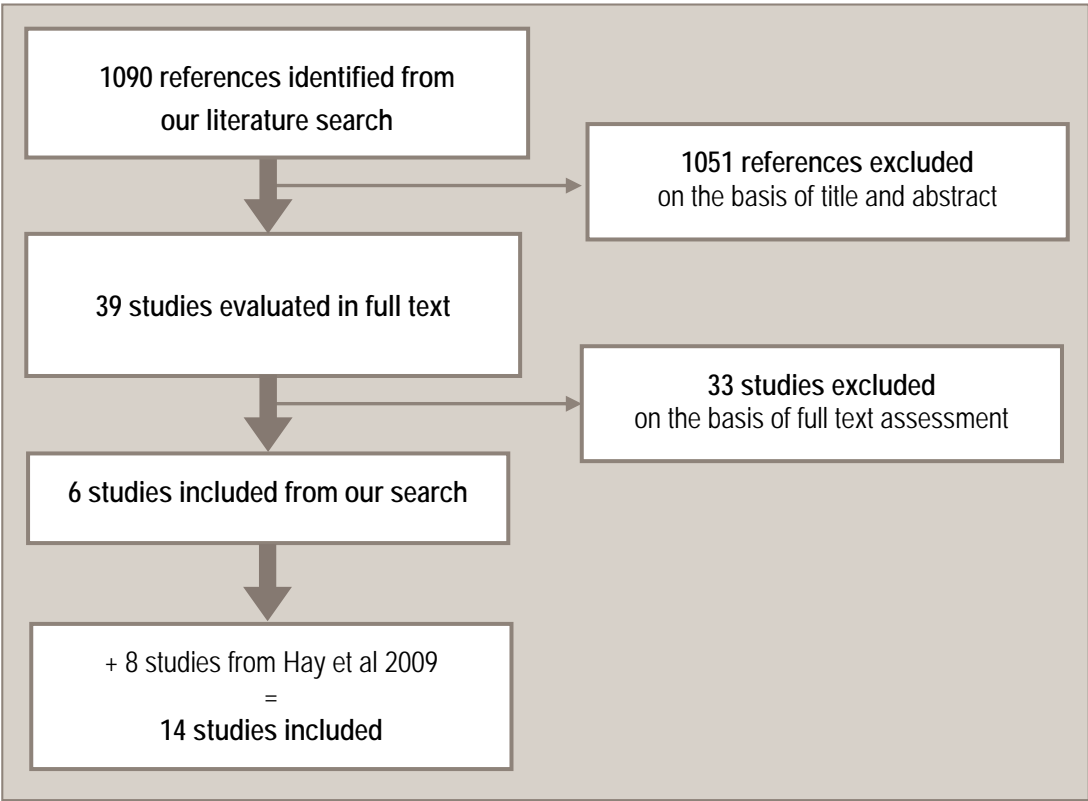


Figure 1. Flow chart of the references

The systematic review by Hay et al 2009 (1) was based on a literature search that was conducted in June 2007. Hay et al 2009 included several comparisons, including the comparison relevant for this systematic review: cognitive behavior psychotherapy (CBT) compared with other psychotherapies. The population included in Hay et al 2009 was wider than our population as we have our focus on people with bulimia nervosa, whereas Hay et al 2009 included people with both bulimia nervosa, binge eating disorders and eating disorders not otherwise specified (EDNOS). Seven of the studies in Hay et al 2009 met our inclusion criteria (8, 9, 10, 11, 12, 13, 14).

One study by Wilfley et al (15) included only people who had the non-purging type of bulimia nervosa. This study meets our inclusion criteria based on new diagnostic tools, but not if using older diagnostic tools. We are unsure about this study, but we have included it in the tables. We have conducted our meta-analysis both with and without this study (15).

Description of included studies

The 14 randomized controlled trials included in this systematic review were published between 1986 and 2014. The two smallest studies included 14 people each and the largest study included 293 people. Total number of people included in the 14 randomized controlled trials were 1326: 570 from the eight earlier studies and 756 from the six newer studies. Seven of the studies were conducted in the UK, four in the USA, two in Germany and one in Denmark. All the participants in these studies were 16 years or older. Table 1 shows the diagnostic criteria used to obtain the diagnosis, and the diagnosis given to the people who participated. All of the included studies are described in more detail in Appendix 3.

Table 1. Table of the diagnostic criteria used to diagnose participants

Reference, date and country	Diagnostic criteria used	Diagnosis
Agras 2000 (8) UK	DSM-III-R (SCID); the Hopkins Symptom Checklist-90-Revised (SCL-90-R)	Bulimia nervosa purging type
Bossert 1989 (9) Germany	DSM-III; Russell criteria for bulimia nervosa including a previous episode of anorexia nervosa	Bulimia nervosa
Cooper 1995 (10) UK	DSM-III-R	Bulimia nervosa purging type
Fairburn 1986 (11) UK	The strict diagnostic criteria of Russell; DSM-III	Bulimia nervosa
Fairburn 1991 (12) UK	DSM-III-R	Bulimia nervosa
Freeman 1988 (13) UK	DSM-III (In retrospect the authors found that all patients met the criteria of DSM-III-R)	Bulimia nervosa
Katzman 2010 (16) UK	DSM-IV for BN or EDNOS	Bulimia nervosa or eating disorder not otherwise specified
Lavender 2012 (17) UK	DSM-IV for BN or EDNOS	Bulimia nervosa or eating disorder not otherwise specified

Mitchell 2011 (18) US	DSM-IV	Bulimia nervosa purging and non-purging
Poulson 2014 (19) Denmark	Eating disorder psychopathology was assessed using the Eating Disorder Examination interview (binge eating, purging)	Bulimia nervosa
Salbach-Andrea 2009 (20) Germany	DSM-IV BN judged by eating disorder specialist	Bulimia nervosa
Walsh 1997 (14) USA	DSM-III-R	Bulimia nervosa purging type
Wilfley 1993 (15) USA	DSM-III-R - modified criteria (i.e. met all criteria for BN except purging)	Bulimia nervosa non purging type
Wonderlich 2014 (21) USA	DSM-VI BN	Bulimia nervosa symptoms (bulimic symptoms: frequency of binge eating and purging)

All of the studies involved cognitive behavioural therapy (CBT) with some form of modification to eating disorders. Most of the interventions involved weekly sessions spanning 15 to 21 weeks, one study had only three sessions and one study had four sessions, the longest study included weekly sessions for 50 weeks. There was also considerable variation in type of other psychotherapies that were compared to the CBT. Information about the intervention and comparison is presented in Table 2.

Table 2. Information about the intervention and comparison

Referanse	Intervention	# sessions, # weeks of CBT	Comparison	# people, country
Agras 2000 (8)	CBT modified (Individual)	19 sessions, 20 weeks	Interpersonal psychotherapy	220, USA
Bossert 1989 (9)	CBT modified (individual)	3 sessions, 3 weeks	Non-specific psychotherapy	14, Germany
Cooper 1995 (10)	CBT modified (individual)	19 sessions, 18 weeks	Behavioural therapy (ERP exposure and response prevention treatment)	31, UK
Fairburn 1986 (11)	CBT-BN (individual)	19 sessions, 18 weeks	Short-term focal psychotherapy STP	24, UK
Fairburn 1991 (12)	CBT-BN (individual)	19 sessions, 18 weeks	Interpersonal psychotherapy Behavioural therapy	66, UK

			Control/ waiting list	
Freeman 1988 (13)	CBT modified	15 sessions, 15 weeks	Behaviour therapy Psychoeducation	112, UK
Katzman 2010 (16)	CBT (individual)	4 sessions, 4 weeks	MET. Motivational enhancement therapy Group + individual	225, UK
Lavender 2012 (17)	CBT-BN (group followed by individual)	12 group sessions + 4 individual sessions, 16 weeks	Emotional and social mind training Group followed by individual	74, UK
Mitchell 2011 (18)	CBT (individual)+ fluoxetine	20 sessions, 18 weeks	Stepped care treatment + fluoxetine	293, USA
Poulson 2014 (19)	CBT-BN	20 sessions, 20 weeks	Psychoanalytic psychotherapy Weekly for 2 years	70, Denmark
Salbach- Andrae 2009 (20)	CBT (individual & group sessions)	25 individual sessions + 25 group sessions, 25 weeks	DBT-AN/BN (Dialectic behavioral therapy) Group sessions	14, Germany
Walsh 1997 (14)	CBT-BN	20 sessions, 16 weeks	Supportive psychotherapy	47, USA
Wilfley 1993 (15)	CBT-BN (group)	16 sessions, 16 weeks	IPT (group) Waiting list	56, USA
Wonderlich 2014 (21)	CBT-E	21 sessions, 19 weeks	ICAT Integrative cognitive- affective therapy	80, USA

The risk of bias assessment of the included randomized controlled trials are shown in Table 3. More details about the risk of bias judgements of the newer studies are provided in Appendix 4.

Table 3. Risk of bias in included studies

Reference	Risk of bias assessment							Total judgment
	1 ¹	2 ²	3 ³	4 ⁴	5 ⁵	6 ⁶	7 ⁷	
Agras 2000 (8)*	+	+		-	+			Low risk
Bossert 1989 (9)*	?	?		+	+			Unclear
Cooper 1995 (10)*	?	-		+	-			Unclear
Fairburn 1986 (11)*	?	?		+	-			Unclear
Fairburn 1991 (12)*	?	-		+	-			Unclear

Freeman 1988 (13)*	+	?		NA	+			Unclear
Katzman 2010 (16)	+	+	-	+	+	+	+	Low risk
Lavender 2012 (17)	+	?	-	+	+	+	+	Unclear
Mitchell 2011 (18)	+	?	-	?	+	+	-	High risk
Poulson 2014 (19)	+	+	-	+	+	+	+	Low risk
Salbach-Andrea 2009 (20)	?	?	-	?	+	+	+	Unclear
Walsh 1997 (14)*	?	-		+	+			Unclear
Wilfley 1993 (15)*	?	-		-	+			Unclear
Wonderlich 2014 (21)	+	+	-	+	+	+	+	Low risk

*Risk of bias assessments as reported in Hay et al 2009

1. Adequate sequence generation?
2. Allocation concealment?
3. Blinding of participant and personnel?
4. Blinding of outcome assessor?
5. Incomplete outcome data addressed?
6. Free of selective reporting?
7. Free of other bias?

We note that there are fewer unclear overall judgements of risk of bias (marked as ? in table 3) among the newer studies; this may indicate that reporting has improved over the timespan of these studies. However, it may also just be a systematic difference between our judgements and the judgements conducted by Hay et al 2009 (1).

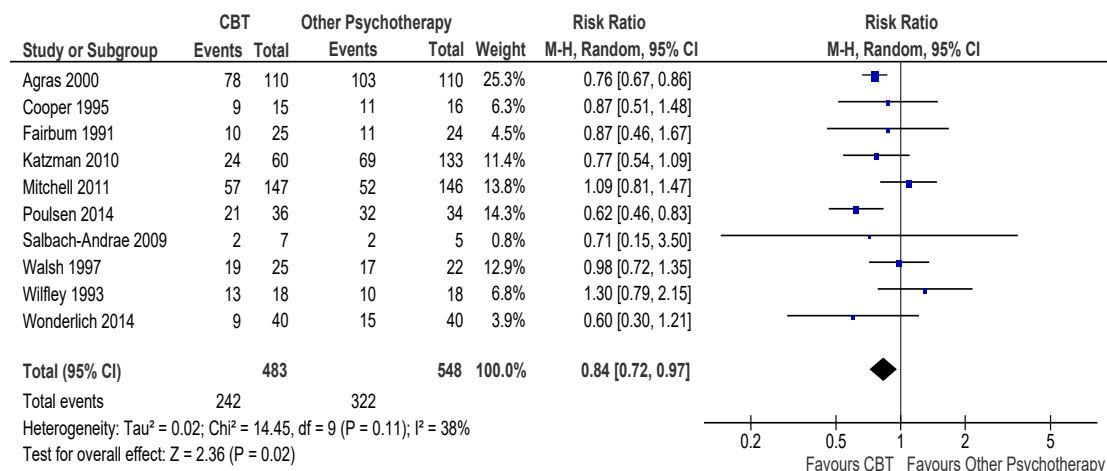
Effect of cognitive behaviour therapy compared with other psychotherapies

Several of the studies included several study arms with different treatments; we have extracted information regarding CBT and other psychotherapies, ignoring groups of people who were on waiting lists and control groups. We show the meta-analysis with all studies included in the analysis in the text, and we show the meta-analysis excluding the study with only people with non-purging bulimia (15) in appendix 5.

Remission at end of treatment

The number of people who did not show remission at end of treatment was measured in 10 RCTs. Results are combined in a meta-analysis shown in Figure 2 which shows that there are fewer people who do not show remission at the end of treatment after CBT than after other psychotherapies (RR 0.84 (95% CI 0.72 to 0.97)). In other words, when measured at the end of treatment; There are more people who have stopped bingeing and purging in the group who received treatment with CBT than in the group who received other psychotherapies. Many of the studies included in this meta-analysis had an unclear risk of bias. This has reduced our confidence in these results from high to moderate using GRADE.

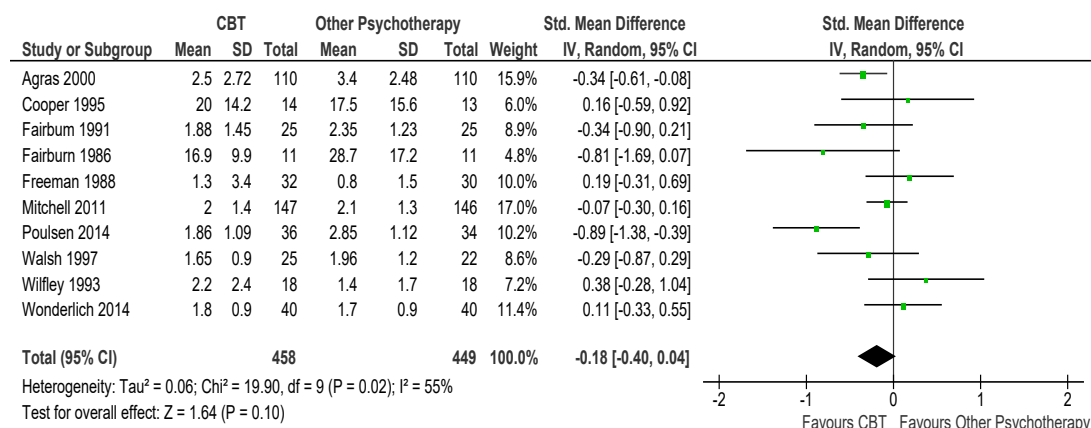
Figure 2. Number of people who did not show remission at end of treatment



Bulimic symptom score at the end of treatment

Mean bulimic symptom score at end of treatment was measured in 10 RCTs. Results were measured on different scales so results are combined in meta-analysis using standardized mean difference as shown in Figure 3. These results are less consistent (I²=55%), but indicate a likely trend for better improvement in bulimic symptom score after CBT than after other psychotherapies (SMD -0.18 (95% CI -0.40 to 0.04)). However, when we removed the study that only included people with non-purging bulimia (15), there was a significant difference (SMD -0.23 (95% CI -0.45 to -0.01)).

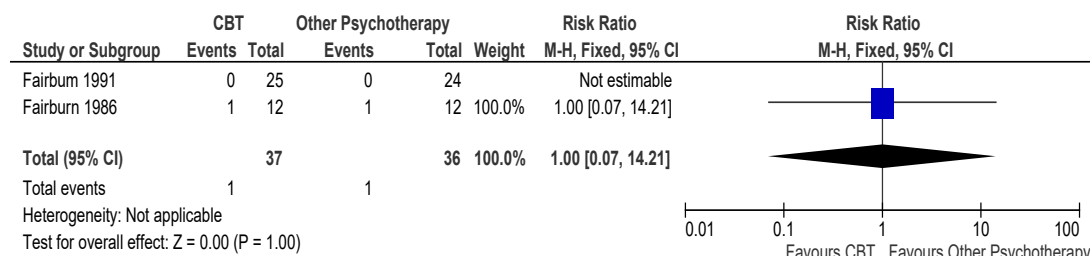
Figure 3. Mean bulimic symptom scores at the end of treatment



Drop out due to adverse events

The number of people who dropped out due to adverse events was measured in two small studies, one from 1986 (11) and one from 1991 (12). Figure 4 shows a graphic representation of the two measured events.

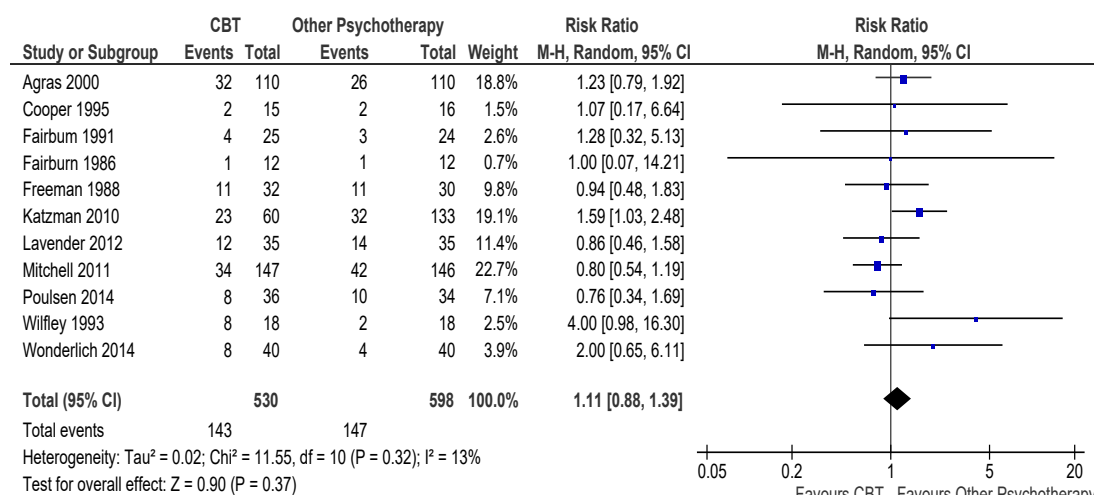
Figure 4. Number of people who dropped out due to adverse events



Drop out due to any reason

The number of people who dropped out due to any reason was measured in 11 RCTs, these results are shown in Figure 5. The consistent results indicate a similar rate of drop out from the two treatments (RR 1.11 (95% CI 0.88 to 1.39)).

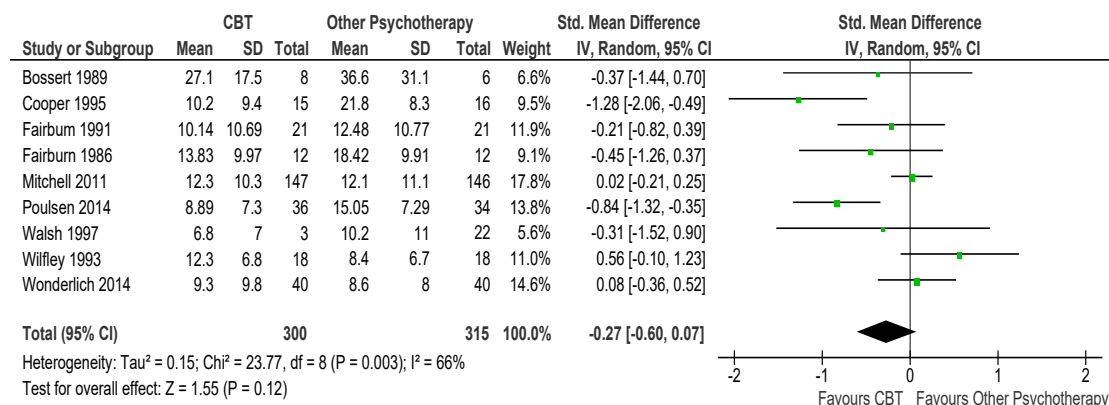
Figure 5. Number of people who dropped out due to any reason.



Depression scores at the end of treatment

Mean depression scores at the end of treatment was measured in 9 RCTs. Results were measured on different scales so results are combined in meta-analysis using standardized mean difference as shown in Figure 6. These results are less consistent (I²=66%), but indicate a likely trend for less depression (lower depression score) in people who receive CBT than in people who receive other psychotherapies (SMD - 0.27 (95% CI -0.60 to 0.07)). However, when we removed the study that only included people with non-purging bulimia (15), there was a significant improvement (SMD -0.36 (95% CI -0.71 to -0.02)).

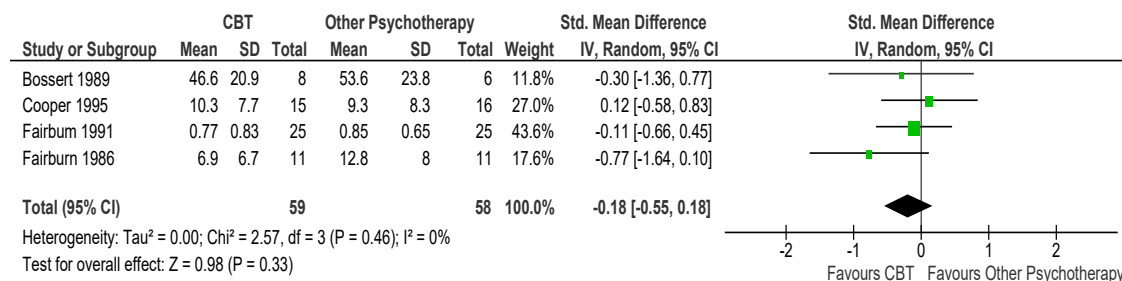
Figure 6. Mean depression scores at the end of treatment



Scores of general psychiatric symptoms at end of trial

The mean difference in scores of general psychiatric symptoms at the end of trial was measured in four trials. Results were measured on different scales, so results are combined in meta-analysis using standardized mean difference as shown in Figure 7. These results have a wide confidence interval so we are unsure if there is a difference in general psychiatric symptom scores in people who receive CBT compared to people who receive other psychotherapies (SMD -0.18 (95% CI -0.55 to 0.18)).

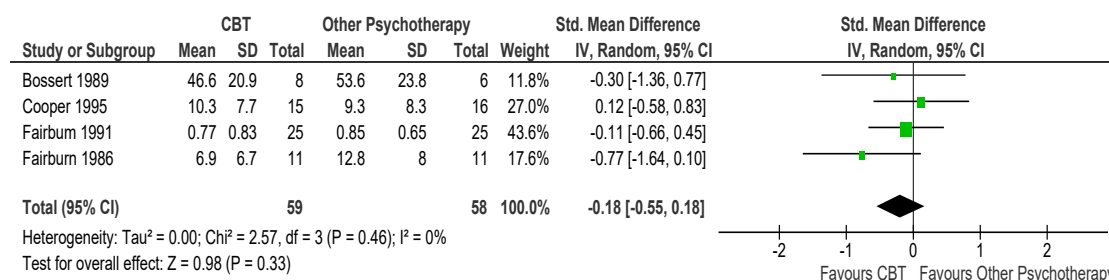
Figure 7. Scores of general psychiatric symptoms at end of treatment



Psychosocial/interpersonal functioning at end of treatment

The mean difference in psychosocial/ interpersonal functioning at end of treatment was measured in 5 RCTs. Results were measured on different scales so results are combined in meta-analysis using standardized mean difference as shown in Figure 8. These results are affected by heterogeneity, i.e. they are not consistent (I²=85%). The confidence interval includes both the possibility of a considerable benefit in favour to the CBT group and a benefit in favour of the other psychotherapies so we are unsure if there is a difference in psychosocial/interpersonal functioning at the end of treatment (SMD -0.36 (95% CI -0.95 to 0.23)). When we removed the study that only included people with non-purging bulimia (15), the confidence intervals remained wide and we are still uncertain (SMD -0.53 (95% CI -1.21 to 0.15)).

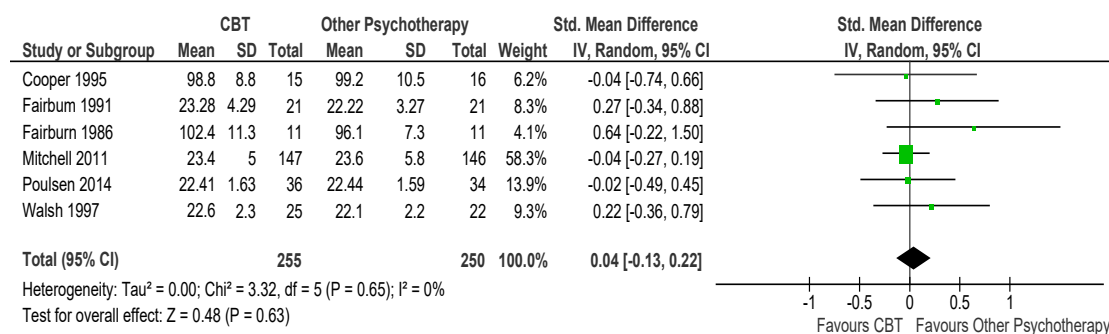
Figure 8. Mean difference in psychosocial/interpersonal functioning scores at end of treatment.



Weight/BMI at the end of treatment

The mean weight/ BMI at end of treatment was measured in 6 RCTs. Results were measured on different scales so results are combined in meta-analysis using standardized mean difference as shown in Figure 9. The consistent results indicate that there is little or no difference in weight or BMI change whether people with bulimia receive CBT or other psychotherapies (SMD -0.04 (95% CI -0.13 to 0.22)).

Figure 9. Mean weight/BMI at the end of treatment



Pre-planned subgroup analysis

We had pre-planned several subgroup analysis that we conducted. None of them achieved a Tau² above 1. This means that none of our prior theories for possible explanations for differences between the studies or causes for heterogeneity were supported. This is not surprising as many of the planned groups ended up with only a few, and even sometimes just one trial. Additionally, several of the studies were very small.

We conducted the following subgroup analysis:

- Risk of bias groups: low risk/unclear risk/high risk of bias
- Duration of intervention: 3 to 4 weeks/15 to 21 weeks/ 50 weeks
- Comparison treatments

Summary of findings

CBT compared with other psychotherapies for people with bulimia nervosa

Outcomes	Anticipated absolute effects		Relative effect (95% CI)	Nº of participants (studies)	Quality of the evidence (GRADE)
	Risk with another psychotherapy	Risk difference with CBT			
Number of people who did not show remission at end of treatment	588 per 1000	494 per 1000 (423 to 570)	RR 0.84 (0.72 to 0.97)	1031 (10 RCT)	⊕⊕⊕○ MODERATE ¹
Mean bulimic symptom scores at the end of treatment	-	SMD 0.18 lower (0.40 lower to 0.04 higher)	-	907 (10 RCT)	⊕⊕⊕○ MODERATE ¹
Mean bulimic symptom scores at the end of treatment-without Wilfley 1993	-	SMD 0.23 lower (0.45 lower to 0.01 lower)	-	871 (9 RCT)	⊕⊕⊕○ MODERATE ¹
Number of people who dropped out due to adverse events	28 per 1000	28 per 1000 (2 to 395)	RR 1.00 (0.07 to 14.21)	73 (2 RCT)	⊕○○○ VERY LOW ^{1,2,3}
Number of people who dropped out due to any reason	246 per 1000	273 per 1000 (216 to 342)	RR 1.11 (0.88 to 1.39)	1128 (11 RCT)	⊕⊕⊕○ MODERATE ¹
Mean depression scores at the end of treatment	-	SMD 0.27 lower (0.60 lower to 0.07 higher)	-	615 (9 RCT)	⊕⊕○○ LOW ^{1,2}
Mean depression scores at the end of treatment-Without Wilfley 1993	-	SMD 0.36 lower (0.71 lower to 0.02 lower)	-	579 (8 RCT)	⊕⊕○○ LOW ^{1,2}
Mean end of trial scores of general psychiatric symptoms	-	SMD 0.18 lower (0.55 lower to 0.18 higher)	-	117 (4 RCT)	⊕⊕○○ LOW ^{1,2}
Mean difference in psychosocial/interpersonal functioning at end of treatment	-	SMD 0.36 lower (0.95 lower to 0.23 higher)	-	400 (5 RCT)	⊕⊕○○ LOW ^{1,2}
Mean difference in psychosocial/interpersonal functioning at end of treatment -without Wilfley 1993	-	SMD 0.53 lower (1.21 lower to 0.15 higher)	-	364 (4 RCT)	⊕⊕○○ LOW ^{1,2}
Mean weight/BMI at end of treatment	-	SMD 0.04 higher (0.13 lower to 0.22 higher)	-	505 (6 RCT)	⊕⊕⊕○ MODERATE ¹

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI). CI: Confidence interval; RR: Risk ratio; OR: Odds ratio;

1. Unclear or high risk of bias
2. Wide confidence intervals
3. Only two events, so extremely sparse data

GRADE Working Group grades of evidence

High quality: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

Many of the studies had an unclear risk of bias and this has reduced our confidence in the results. For some of the outcomes, there were wide confidence intervals reducing our confidence further. Only two of the studies had looked for drop out due to adverse events, together they identified two events from the 73 persons in those trials (11, 12). Because of low numbers, we have even less confidence in this effect estimate. One of the included studies included only people with the non-purging bulimia. On those occasions where inclusion of this study gave different results from when the study was not included, we have based our conclusion on the results when this study was not included.

Cognitive behaviour therapy compared to other psychotherapies for people who suffer from bulimia nervosa:

- Probably leads to more people who stop bingeing and purging, a better mean bulimic symptom score, similar number of people dropping out of treatment and similar mean weight/ BMI at end of treatment (moderate certainty of the evidence)
- Possibly leads to similar improvement in general psychiatric symptoms and psychosocial/ interpersonal functioning at the end of but there is considerable variation in scores between studies (low certainty of the evidence)
- There is very little information about drop out due to adverse events (very low certainty of the evidence)

Discussion

We have conducted a systematic review about the effect of cognitive behaviour therapy compared to other psychotherapies for the treatment of bulimia nervosa. We have included 14 randomized controlled trials in total. Eight of the trials were included in a previously published Cochrane systematic review by Hay et al 2009 (1). We identified six of the studies in our own systematic literature search conducted for the period after the search by Hay et al 2009.

The included studies were conducted in the UK (7), USA (4), Germany (2) and one in Denmark, and they are published between 1986 and 2014, half of them before 2000. These studies are small studies, the two smallest of them includes only 14 people each and the biggest study includes 293 people. Additionally, nine of the studies have an unclear risk of bias, these factors reduces our confidence in the results.

The number of participants in the included studies have more than doubled from the previously published systematic review (1) to this one. One of the two main outcomes, remission at end of treatment, remained very stable changing from seven trials with 484 persons with RR 0.83 (95% CI 0.71 to 0.97) to 10 trials with 1031 persons with RR 0.84 (95% CI 0.72 to 0.97). Bulimic symptom score also remained stable, changing from eight trials with 514 persons with SMD -0.15 (95% CI -0.38 to 0.07) to 10 trials with 907 persons and SMD -0.18 (95% CI -0.40 to 0.04). When we excluded the non-purging trial with 36 persons, SMD was -0.23 (95% CI -0.45 to -0.01).

The methods of diagnosis and the criteria for diagnosis of bulimia nervosa has been changing during the time period that the included studies have been conducted and published. Therefore, there are some variations in the seriousness and/ or degree of symptoms suffered by the people who took part in the different studies. The importance of the changing diagnostic criteria was clearly demonstrated in the outcomes mean bulimic symptom scores and mean depression scores that changed conclusion when the meta-analyses when conducted without the one study that only included people with the non purging type of bulimia (15).

Most of the studies included cognitive behavioural therapy with some form of modification to eating disorder. Most involved weekly sessions spanning 15 to 21 weeks.

We found that there was considerable variation in the type of other psychotherapies that were used as comparators: interpersonal therapy; non-specific psychotherapy; behavioural therapy; motivational enhancement therapy; emotional and social mind training; stepped care; psychoanalytic psychotherapy; dialectic behavioural therapy; supportive psychotherapy; integrative cognitive-affective therapy. Actually, this variation combined with the clear and consistent results for the main outcome, remission, might be seen as support of the comparative benefit of cognitive behavioural therapy over other psychotherapies.

These studies only reported outcomes at the end of treatment, for two of them that was after 3-4 weeks, and for one study after 50 weeks. For the majority of studies, the outcomes were measured after between 15 to 21 weeks. We therefore do not have information about longer term effects.

A strength with this systematic review is the systematic approach and the methods used to summarize an a priori set question: What is the effect of cognitive behavioural therapy compared to other psychotherapies for the treatment of people who suffer from bulimia nervosa? The systematic methods include selection and assessments conducted by at least two persons independently of each other, which reduces risks of error and bias.

An inborne limitation with systematic reviews is the fact that new relevant studies can be published continuously. A systematic review can never include studies that are published later than the day that the search is conducted. This systematic review is up-to-date as of November 2015.

Conclusion

We have conducted a systematic review about the effect of cognitive behaviour therapy compared to other psychotherapies for the treatment of bulimia nervosa. We have included 14 randomized controlled trials in total.

Cognitive behaviour therapy compared to other psychotherapies for people who suffer from bulimia nervosa:

- Probably leads to more people who stop bingeing and purging, a better mean bulimic symptom score, similar number of people dropping out of treatment and similar mean weight/ BMI at end of treatment (moderate certainty of the evidence)
- Possibly leads to similar improvement in general psychiatric symptoms and psychosocial/ interpersonal functioning at the end of treatment, but there is considerable variation in scores between studies (low certainty of the evidence)
- There is very little information about drop out due to adverse events (very low certainty of the evidence)

References

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Appendix

Appendix 1. Search strategies

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily, Ovid MEDLINE(R) and Ovid OLDMEDLINE(R) 1946 to Present. Dato for søk: 26.11.15

#	Searches	Results
1	Bulimia/	5056
2	Bulimia Nervosa/	1785
3	bulimi*.ti,ab.	7070
4	or/1-3	9244
5	exp Cognitive Therapy/	18928
6	cognitive*.ti,ab.	235002
7	cbt*.ti,ab.	6556
8	or/5-7	242619
9	randomized controlled trial.pt.	417389
10	controlled clinical trial.pt.	92255
11	randomized.ab.	339492
12	randomised.ab.	69266
13	randomly.ab.	244981
14	trial.ab.	353561
15	groups.ab.	1524713
16	allocat*.ab.	78558
17	conceal*.ab.	8488

18	((single or double or triple) adj blinded).ab.	10033
19	or/9-18	2246352
20	exp animals/ not humans.sh.	4156249
21	19 not 20	1879820
22	4 and 8 and 21	426
23	("2007*" or "2008*" or "2009*" or "2010*" or "2011*" or "2012*" or "2013*" or "2014*" or "2015*" or "2016*").yr,dp,ep,ed.	9155923
24	22 and 23	206

Database: Embase 1974 to 2015 November 24
Dato for søk: 26.11.15

#	Searches	Results
1	bulimia/	11654
2	bulimi*.ti,ab.	9223
3	or/1-2	13021
4	cognitive therapy/	39278
5	cognitive*.ti,ab.	319093
6	cbt*.ti,ab.	10050
7	or/4-6	337372
8	"randomized controlled trial (topic)"/	87723
9	Randomized Controlled Trial/	392085
10	randomization/	68853
11	double blind procedure/	127480
12	single blind procedure/	21352
13	randomized.ti,ab.	493034
14	randomised.ti,ab.	98760
15	randomly.ab.	309054
16	trial.ab.	472933
17	groups.ab.	1997292

18	allocat*.ab.	97382
19	conceal*.ab.	10255
20	((single or double or triple) adj blinded).ab.	13646
21	or/8-20	2921031
22	3 and 7 and 21	557
23	("2007*" or "2008*" or "2009*" or "2010*" or "2011*" or "2012*" or "2013*" or "2014*" or "2015*" or "2016*").yr,em,dp.	10959718
24	22 and 23	299

Database: PsycINFO 1806 to November Week 3 2015

Dato for søk: 26.11.15

#	Searches	Results
1	bulimia/	6946
2	bulimi*.ti,ab.	9837
3	or/1-2	10142
4	cognitive behavior therapy/	13680
5	cognitive*.ti,ab.	316563
6	cbt*.ti,ab.	9461
7	or/4-6	318229
8	3 and 7	1423
9	limit 8 to "therapy (maximizes sensitivity)"	1137
10	("2007*" or "2008*" or "2009*" or "2010*" or "2011*" or "2012*" or "2013*" or "2014*" or "2015*" or "2016*").yr,dp.	1511819
11	9 and 10	425

Database: CENTRAL. Dato for søk: 26.11.15

#1	MeSH descriptor: [Bulimia] this term only	359
#2	MeSH descriptor: [Bulimia Nervosa] this term only	157
#3	bulimi*	986
#4	#1 or #2 or #3	986

#5	MeSH descriptor: [Cognitive Therapy] this term only	5301
#6	cognitive*	32548
#7	cbt*	3344
#8	#6 or #7	32816
#9	#5 or #6	32548
#10	#4 and #9 Publication Year from 2007 to 2015, in Trials	111

Database: Cinahl. Dato for søk: 26.11.15

#	Query	Results
S20	S3 AND S6 AND S17 Limiters - Exclude MEDLINE records; Published Date: 20070101-2015123	8
S19	S3 AND S6 AND S17	90
S18	S3 AND S6 AND S17	170
S17	S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16	377,199
S16	AB ((single or double or triple) W0 blinded)	1,681
S15	AB conceal*	2,427
S14	AB allocat*	12,181
S13	AB groups	269,425
S12	TI trial OR AB trial	115,159
S11	AB randomly	33,167
S10	TI randomised OR AB randomised	20,443
S9	TI randomized OR AB randomized	68,613
S8	(MH "Randomized Controlled Trials")	24,832
S7	PT randomized controlled trial	30,395
S6	S4 OR S5	52,719
S5	TI (cognitive* OR cbt*) OR AB (cognitive* OR cbt*)	48,660
S4	(MH "Cognitive Therapy")	8,407
S3	S1 OR S2	2,742
S2	TI bulimi* OR AB bulimi*	1,803
S1	(MH "Bulimia") OR (MH "Bulimia Nervosa")	2,154

Database: SveMed+. Dato for søk: 26.11.15

1 exp: "Bulimia"	63
2 exp: "Bulimia Nervosa"	24
3 bulimi*	86
4 #1 OR #2 OR #3	86
5 #1 OR #2 OR #3 AND year: [2007 TO 2015]	21

Database: PubMed. Dato for søk: 26.11.15

Search ((bulimi*) AND (cognitive* OR cbt*)) AND publisher [sb] 14

Database: Web of Science – Core Collection

Dato for søk: 26.11.15

# 3	649	#2 AND #1 <i>Indexes=SCI-EXPANDED, SSCI Timespan=2007-2015</i>
# 2	2,389,672	TOPIC: (random* OR trial OR allocat* OR conceal* OR ((single OR double OR triple) AND blind*) OR groups) <i>Indexes=SCI-EXPANDED, SSCI Timespan=2007-2015</i>
# 1	998	TOPIC: ((bulimi* AND (cognitive* OR cbt*))) <i>Indexes=SCI-EXPANDED, SSCI Timespan=2007-2015</i>

Database: ClinicalTrials.gov. Dato for søk: 27.11.15

«bulimia» AND «cognitive» : 54

Database: ICTRP World Health Organization

Dato for søk: 27.11.15

condition=bulimi* AND intervention=cognitive* : 4

Appendix 2. Excluded studies table

Reference	Reason
Accurso EC, Fitzsimmons-Craft EE, Ciao A, Cao L, Crosby RD, Smith TL, Klein MH, Mitchell JE, Crow SJ, Wonderlich SA, Peterson CB. Therapeutic alliance in a randomized clinical trial for bulimia nervosa. <i>Journal of consulting and clinical psychology</i> Jun 2015; 83(3): 637-42	See Wonderlich 2014

Allen,K. L.; Fursland,A.; Raykos,B.; Steele,A.; Watson,H.; Byrne,S. M. Motivation-focused treatment for eating disorders: a sequential trial of enhanced cognitive behaviour therapy with and without preceding motivation-focused therapy. <i>European Eating Disorders Review</i> 2012; 20(3): 232-239	Another comparison, CMT-E vs CBT-E + MFT. Not RCT
Bauer, S.; Okon, E.; Meermann, R.; Kordy, H. Aftercare Based on Text Messaging: Services Across Health Care Sectors for Patients with Bulimia Nervosa. <i>Verhaltenstherapie</i> 2013; 23(3): 204-209	Another comparison, effect of SMS
Bauer,S.; Okon,E.; Meermann,R.; Kordy,H. Technology-enhanced maintenance of treatment gains in eating disorders: efficacy of an intervention delivered via text messaging. <i>Journal of Consulting & Clinical Psychology</i> 2012; 80(4): 700-706	Another comparison, effect of SMS
Berg, KC. [Commentary On] Comparing a 5-month trial of enhanced cognitive behavioural therapy to a 24-month trial of psychoanalytic psychotherapy for the treatment of bulimia nervosa. <i>Evidence Based Mental Health</i> 2014; 17(3): 92-93	Not a study, discusses Poulson 2014
Bulik, CM.; Marcus, MD.; Zerwas, S; Levine, MD.; Hofmeier, S, Trace, SE.; Hamer, RM.; Zimmer, B; Moessner, M; Kordy, H. CBT4BN versus CBTF2F: Comparison of online versus face-to-face treatment for bulimia nervosa. <i>Contemporary Clinical Trials</i> Sep 2012; 33(5): 1056-1064	Protocol for comparison of CBT online vs CBT face-to-face
Byrne SM, Fursland A, Allen KL, Watson H. The effectiveness of enhanced cognitive behavioural therapy for eating disorders: an open trial. <i>Behaviour Research & Therapy</i> 2011; 49(4): 219-226	All participants received same treatment, looked at different dx. Not RCT
Castellini G, Sauro CL, Mannucci E, Ravaldi C, Rotella CM, Faravelli C, Ricca V. Diagnostic crossover and outcome predictors in eating disorders according to DSM-IV and DSM-V proposed criteria: A 6-year follow-up study. <i>Psychosomatic medicine</i> 2011; 73(3): 270-279	All participants received same treatment, looked at different dx. Not RCT
Castro U, Larroy C, Gomez MA. Cognitive behavioral and parental group intervention for adolescents in the treatment of bulimia nervosa. (Intervencion cognitivo conductual para pacientes adolescentes y sus padres en el tratamiento de la bulimia nerviosa) 2010; 15(1): 49-60	Another comparison, with parents involved or not
Crow SJ, Agras WS, Halmi KA, Fairburn CG, Mitchell JE, Nyman JA. A cost effectiveness analysis of stepped care treatment for bulimia nervosa. <i>International Journal of Eating Disorders</i> 2013; 46(4): 302-307	See Mitchell 2011
Crow SJ, Mitchell JE, Crosby RD, Swanson SA, Wonderlich S, Lancaster K. The cost effectiveness of cognitive behavioral therapy for bulimia nervosa delivered via telemedicine versus face-to-face. <i>Behaviour Research & Therapy</i> 2009; 47(6): 451-453	Another comparison, telemedicine versus face-to-face

<p>Fairburn CG, Bailey-Straebler S, Basden S, Doll HA, Jones R, Murphy R, O'Connor ME, Cooper Z. A transdiagnostic comparison of enhanced cognitive behaviour therapy (CBT-E) and interpersonal psychotherapy in the treatment of eating disorders. <i>Behaviour Research and Therapy</i> 2015;70():64-71</p>	<p>59% of participants had another diagnosis, not Bulimia. Results were not presented separately for diagnosis groups.</p>
<p>Fernandez-Aranda F, Jimenez-Murcia S, Santamaria JJ, Giner-Bartolome C, Mestre-Bach G, Granero R, Sanchez I, Aguera Z, Moussa MH, Magenat-Thalmann N, Konstantas D, Lam T, Lucas M, Nielsen J, Lems P, Tarrega S, Menchon JM. The Use of Videogames as Complementary Therapeutic Tool for Cognitive Behavioral Therapy in Bulimia Nervosa Patients. <i>Cyberpsychol Behav Soc Netw</i> 2015; 18(12): 744-51</p>	<p>Another comparison, effect of video games in addition to CBT</p>
<p>Ghaderi A. Does individualization matter? A randomized trial of standardized (focused) versus individualized (broad) cognitive behavior therapy for bulimia nervosa. <i>Behaviour Research & Therapy</i> 2006; 44(2): 273-288</p>	<p>Another comparison, two types of CBT standardized versus individual based</p>
<p>Ghaderi A. Attrition and outcome in self-help treatment for bulimia nervosa and binge eating disorder: A constructive replication. <i>Eating Behaviors</i> 2006; 7(4): 300-308</p>	<p>Another comparison, two types of CBT standardized versus individual based</p>
<p>Graham L, Walton M. Investigating the use of CD-Rom CBT for bulimia nervosa and binge eating disorder in an NHS adult outpatient eating disorders service. <i>Behav Cogn Psychother</i> 2011; 39(4): 443-56</p>	<p>Another comparison, CBT with and without self-help. Not an RCT</p>
<p>Hardy SA, Thiels C. Using latent growth curve modeling in clinical treatment research: An example comparing guided self-change and cognitive behavioral therapy treatments for bulimia nervosa. <i>International Journal of Clinical and Health Psychology</i> 2009; 9(1): 51-71</p>	<p>Another comparison, CBT with and without self-help before treatment. Qasi-randomized.</p>
<p>Hogdahl L. Evaluation of internet-based, guided, self-help, cognitive behavioural therapy for bulimia nervosa and similar eating disorders in a specialist outpatient setting: a randomized controlled trial. ISRCTN44999017 DOI 10.1186/ISRCTN44999017</p>	<p>Protocol.</p>
<p>Le Grange D, Lock J, Agras WS, Bryson SW, Jo B. Randomized clinical trial of family-based treatment and cognitive-behavioral therapy for adolescent bulimia nervosa. <i>Journal of the American Academy of Child & Adolescent Psychiatry</i> 2015; 54(11): 886-894</p>	<p>Patient population adolescents with average age of 15,7 and 15,9 years old in the two groups</p>

Le Grange D, Crosby RD, Rathouz PJ, Leventhal BL. A randomized controlled comparison of family-based treatment and supportive psychotherapy for adolescent bulimia nervosa. <i>Archives of General Psychiatry</i> 2007; 64(9): 1049-1056	Another comparison, does not include CBT
Marco JH, Perpina C, Botella C. Effectiveness of cognitive behavioral therapy supported by virtual reality in the treatment of body image in eating disorders: One year follow-up. <i>Psychiatry research</i> 2013; 209(3): 619-625	Another comparison, CBT-E with vs without body image
Mitchell JE, Crosby RD, Wonderlich SA, Crow S, Lancaster K, Simonich H, Swan-Kremeier L, Lysne C, Cook Myers T. A randomized trial comparing the efficacy of cognitive-behavioral therapy for bulimia nervosa delivered via telemedicine versus face-to-face. <i>Behaviour Research and Therapy</i> 2008; 46(5): 581-592	Another comparison, CBT telemedicine versus face-to-face
Nevonen L, Broberg AG. A comparison of sequenced individual and group psychotherapy for patients with bulimia nervosa. <i>International Journal of Eating Disorders</i> 2006; 39(2): 117-127	Another comparison, CBT group versus CBT individual
Polnay A, James VAW, Hodges L, Murray GD, Munro C, Lawrie SM. Group therapy for people with bulimia nervosa: Systematic review and meta analysis. <i>Psychological medicine</i> 2014; 44(11): 2241-2254	SR of another comparison
Schmidt U, Andiappan M, Graver M, Robinson S, Perkins S, Dugmore O, Landau S, Treasure J, Eisler I, Williams C. Randomised controlled trial of CD-ROM-based cognitive-behavioural self-care for bulimia nervosa. <i>British Journal of Psychiatry</i> 2008; 193(6): 493-500	Another comparison, CBT with versus without CD-rom
Schmidt U, Landau S, Pombo-Carril MG, Bara-Carril N, Reid Y, Murray K, Treasure J, Katzman M. Does personalized feedback improve the outcome of cognitive-behavioural guided self-care in bulimia nervosa? A preliminary randomized controlled trial. <i>British Journal of Clinical Psychology</i> 2006; 45(Pt 1): 111-121	Another comparison, CBT self-help with versus without feedback
Schmidt U, Lee S, Beecham J, Perkins S, Treasure J, Yi I, Winn S, Robinson P, Murphy R, Keville S, Johnson-Sabine E, Jenkins M, Frost S, Dodge L, Berelowitz M, Eisler I. A randomized controlled trial of family therapy and cognitive behavior therapy guided self-care for adolescents with bulimia nervosa and related disorders. <i>American Journal of Psychiatry</i> 2007; 164(4): 591-8	Another intervention, CBT self-care compared with family therapy
Steele AL, Wade TD. A randomised trial investigating guided self-help to reduce perfectionism and its impact on bulimia nervosa: A pilot study. <i>Behaviour research and therapy</i> 2008; 46(12): 1316-1323	Another comparison, CBT-perfection versus CBT-E
Vrijzen J, Schene A. Cognitive therapy is more effective than psychoanalysis in bulimia nervosa. <i>Nederlands Tijdschrift voor Geneeskunde</i> 2014; 158(12): 538	Not a study, discusses Poulson 2014

Wagner G, Penelo E, Nobis G, Mayerhofer A, Schau J, Spitzer M, Imgart H, Karwautz A. Is technology assisted guided self-help successful in treating female adolescents with bulimia nervosa? <i>Neuropsychiatrie</i> 2013; 27(2): 66-73	Another comparison, CBT internet versus CBT bibliography
Wagner G, Penelo E, Nobis G, Mayrhofer A, Wanner C, Schau J, Spitzer M, Gwinner P, Trofaier ML, Imgart H, Fernandez-Aranda F, Karwautz A. Predictors for Good Therapeutic Outcome and Drop-out in Technology Assisted Guided Self-Help in the Treatment of Bulimia Nervosa and Bulimia like Phenotype. <i>European Eating Disorders Review</i> 2015; 23(2): 163-169	Another comparison, CBT internet versus CBT bibliography
Wagner G, Penelo E, Wanner C, Gwinner P, Trofaier ML, Imgart H, Waldherr K, Wober-Bingol C, Karwautz AF. Internet-delivered cognitive-behavioural therapy v. conventional guided self-help for bulimia nervosa: long-term evaluation of a randomised controlled trial. <i>British Journal of Psychiatry</i> 2013; 202: 135-141	Another comparison, CBT internet versus CBT bibliography
Wonderlich SA, Peterson CB, Crosby RD, Smith TL, Klein MH, Mitchell JE, Crow SJ. "A randomized controlled comparison of integrative cognitive-affective therapy (ICAT) and enhanced cognitive-behavioral therapy (CBT-E) for bulimia nervosa": Corrigendum. <i>Psychological Medicine</i> 2014; 44(11): 2462-2463	See Wonderlich 2014

Appendix 3. Tables of included studies

Katzman 2010	Katzman MA, Bara-Caril N, Rabe-Hesketh S, Schmidt U, Troop N, Treasure J. A Randomized Controlled Two-Stage Trial in the Treatment of Bulimia Nervosa, Comparing CBT Versus Motivational Enhancement in Phase 1 Followed by Group Versus Individual CBT in Phase 2. <i>Psychosomatic Medicine</i> . 2010; 72: 656-663.
Country	UK, 1997 until 2002
Study design	RCT This is a two-phase study. 1 st phase compares CBT with MET (Motivational enhancement therapy, individual therapy). Phase 2 continues CBT for the CBT-group, the MET groups are given either CBT-group therapy or CBT individual therapy. The overall comparison is then CBT versus another CBT (another pico) We have included the 1 st phase comparing CBT with MET Risk of bias is shown in Appendix 4
Participants	Number randomized: 225

	<p>Number of dropouts 1st phase: CBT (n=23 of 60); MET (n=32 of 133) Age, mean (±SD): 29.3 (7.5) BMI: mean (±SD): 24.7 (7.6) Binges¹: mean (±SD): 3.6 (1.4) Vomiting²: mean (±SD): 3.4 (1.7) Laxatives³: mean (±SD): 1.8 (1.6)</p> <p>Method of diagnosis: DSM-IV for BN or EDNOS Diagnosis: Bulimia Nervosa (BN), and 27% with eating disorder not otherwise specified (EDNOS) Recruitment: primary care or secondary care referrals Treatment setting: Outpatient (NHS eating disorder service catchment-area)</p>
Intervention	Individual CBT, four sessions of individual CBT where the therapist followed the instructions of the first four chapters of “bulimia nervosa” and included active strategies of behavior change from session 1
Comparison	MET, four sessions of manualized individual MET where therapists used principles of motivational interviewing and accompanying worksheets guided by the manual “A clinician’s guide to getting better bit(e) by bit(e)”
Outcomes	<p>Key behavioural symptoms (binge eating, self-induced vomiting, laxative/diuretics abuse) were measured using the short evaluation of eating disorders – patients and therapists rated these variables separately at pretreatment and after Phase 1 /4 weeks (and after twelve weeks /Phase 2 and follow-up 2.5 years);</p> <p>Change Assessment Scale</p> <p>Treatment adherence Phase 1: completion defined as attendance at all four individual sessions</p>

¹Binges= Coding frequency: 1 = not at all»; «2 = up to 1 X week»; «3 = 2 to 3 X week»; «4 = 4X week up t daily»; «5 = more 1X day»

² Vomiting = Coding frequency: 1 = not at all»; «2 = up to 1 X week»; «3 = 2 to 3 X week»; «4 = 4X week up t daily»; «5 = more 1X day»

³ Laxatives= Coding frequency: 1 = not at all»; «2 = up to 1 X week»; «3 = 2 to 3 X week»; «4 = 4X week up t daily»; «5 = more 1X day»

Notes	<p>A number of the participants were receiving antidepressant medication, but no differences between groups in this respect. There was also some indication of comorbid substance abuse and depression, however, not different between groups.</p> <p>No significant differences between any of the three groups on baseline characteristics except from age (mean age 29.3years; MET-I 31.0 years; MET-G 28.9 years; CBT-G 27.8 years)</p>
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Lavender 2012	Lavender A, Stertup H, Naumann U, Samarawickrema N, DeJong H, Kenyon M, van den Eynde F, Schmidt U. Emotional and Social Mind Training: A Randomised Controlled Trial of a New Group-Based Treatment for Bulimia Nervosa. PLoS ONE 2012; 7(10): e46047. Doi:10.1371/journal.pone.0046047.
Country	UK, outpatient service between March 2009 and November 2010
Study design	RCT. Risk of bias is shown in Appendix 4
Participants	<p>Number randomized: 74</p> <p>Recruitment: referred (consecutively) by their GP</p> <p>Number of dropouts high but ITT analysis</p> <p>Gender: male: female CBT=4:30; ESM=1:34</p> <p>Age: 18-60 years (mean (±SD)); CBT = 27.7 (7.3); ESM 27.7 (7.6)</p> <p>Binge past month (mean (±SD)): ESM 18.5 (23); CBT 19.8 (24.8)</p> <p>Vomit past month (mean (±SD)): ESM 24.5 (35.6); CBT 21.6 (32.1)</p> <p>Laxative past month (mean (±SD)): ESM 8.0 (16.1); CBT 4.4 (11.9)</p> <p>BMI (mean (±SD)): ESM 24.4 (5.7); CBT 25.3 (7.7)</p> <p>Medication for depression n=yes (%): ESM 12 (34%); CBT 13 (37%)</p> <p>Method of diagnosis: DSM-IV for BN: ESM 19 (54%); CBT 22 (63%) or EDNOS: ESM 16 (46%); CBT 13 (37%)</p>
Intervention	<p>Cognitive Behavioural Therapy Group (CBT) treatment: all the participants (n=35) were offered 17 sessions: 12 group sessions (90 minutes) and 4 individual (60 minutes) sessions, and 1 additional follow-up session (group). The intervention was based on the group CBT treatment for BN.</p> <p>Assessment by research worker at baseline, four months (end of weekly treatment), and six months (follow-up). BN 63%; EDNOS 37%.</p>
Comparison	<p>Emotional and Social Mind Training Group (ESM): all the participants (n=35) were offered 17 sessions: 12 group sessions (90 minutes) and 4 individual (60 minutes) sessions, and 1 additional follow-up session (group). The ESM treatment was based on a manual divided into three</p>

	<p>stages (sessions 1-5; sessions 6-10; sessions 11-12). First stage had as key themes identification and understanding of inter- and intra-personal emotions, the social context of emotions and understanding others' emotions, and identifying and understanding difficulties with self-esteem and the role of BN as a coping strategy. Second stage had as theme to develop non-BN ways of coping. The theme of the third stage was consolidation of therapeutic gains and relapse prevention strategies. The follow up session focused on relapse prevention and maintenance.</p> <p>Assessment by research worker at baseline, four months (end of weekly treatment), and six months (follow-up). BN 54%; EDNOS 46%.</p>
Outcomes	<p>Eating disorder: Eating Disorder Examination (EDE) Global score; EDE four subscales</p> <p>Psychopathology and demographics: Depression, Anxiety and Stress Scale (DASS-21); Clinical Impairment Assessment (CIA); Levels of Self-Criticism Scale (LOSCICS and LOSCCSC); Submissive Behaviour Scale (SBS); Beliefs About Emotions Scale (BES); Distress Tolerance Scale (DTS1, DTS 2, DTS3).</p> <p>Completed treatment CBT n=23/35 (66%); 6 month follow-up n=19/35 (54%)</p> <p>Completed treatment ESM n=21/35 (60%); 6 months follow-up n=16/35 (46%).</p>
Notes	<p>The intervention was based on the group CBT treatment for BN developed by Chen <i>et al</i>, adapted from Fairburn <i>et al</i>. The ESM treatment manual was developed by the authors.</p> <p>Patients in the two groups did not differ significantly in terms of any recorded baseline demographics or clinical characteristics, but there was a significant difference in attendance between both treatment groups.</p>

Mitchell 2011	Mitchell JE, Agras S, Crow S, Halmi K, Fairburn CG, Bryson S, Kraemer H. Stepped care and cognitive-behavioural therapy for bulimia nervosa: randomized trial. <i>The British Journal of Psychiatry</i> . 2011; 198: 391-397.
Country	USA, four centres (Cornell, Minnesota, North Dakota and Stanford)
Study design	RCT (NCT00733525). Risk of bias is shown in Appendix 4
Participants	<p>Number randomized: 293 (CBT 147; Stepped care 146)</p> <p>Number of dropouts at end of treatment CBT 34 of 147 / Stepped care 42 of 146</p> <p>Number of dropouts at 1 year CBT 44 of 147 / Stepped care 52 of 146</p> <p>Gender: Both male and female participants, but how many of each not mentioned</p> <p>Age: 18 years or older; intervention group: mean (\pmSD); CBT 29.5 (8.0); Stepped-care 29.8 (9.8)</p>

	<p>BMI: mean (\pmSD); CBT 23.4 (4.5); Stepped-care 23.5 (5.3)</p> <p>Global EDE: mean (\pmSD); CBT 3.1 (1.1); Stepped-care 3.2 (1.2)</p> <p>Method of diagnosis: DSM-IV, Bulimia Nervosa purging and non-purging</p> <p>Recruitment: referral from clinicians at the clinical sites involved; mailings to clinicians in the areas in which the study was conducted; advertisements in the media</p>
Intervention	<p>(n=147) CBT augmented by fluoxetine if indicated: manual-based CBT delivered in an individual therapy format involving 20 sessions of 50 minutes over 18 weeks (4 sessions in the first 2 weeks). Participants who were predicted to be non-responders after 6 sessions of CBT had fluoxetine added to treatment (week four of treatment).</p>
Comparison	<p>(n=146) Stepped-care treatment: the approach began with supervised self-help (therapist-assisted), with focus on the participants using a self-help book <i>Overcoming Binge Eating</i> as the main source of information regarding behavior change. Participants were seen for approximately 20 minutes on eight occasions with weekly sessions for 4 weeks, diminishing to bi-weekly and then to monthly, a total of 18 weeks. They were told they would be offered fluoxetine (mediation continued until the 1-year follow-up assessment) if predicted to be non-responders after six sessions (week ten of treatment), followed by full CBT for those who failed to achieve abstinence with self-help and medication management.</p>
Outcomes	<p>Eating disorder symptoms: Eating Disorder Examination (EDE); height and weight were measured by the assessor at baseline, post-treatment and follow-up evaluation; Yale-Brown-Cornell Eating Disorder Scale (YBC-EDS).</p> <p>Comorbid psychopathology and personality: SCID-I/P; SCID-II; Beck Depression Inventory (BDI).</p> <p>Social and interpersonal functioning: Social Adjustment Scale (SAS)</p>
Notes	<p>After 18 months of treatment, the participants in the self-help group who did not achieve abstinence were offered full CBT, and we include the outcome data up to 18 months of the trial for both treatment arms. The manual-based CBT used in this trial in both arms was also used in two recent large multicentre trials of BN; in which CGF participated as co-author in one. Patients were seen for medication management for 20 minutes at two week intervals (five visits), then monthly. Medication was initiated at a dose of 20 mg; if still symptomatic after 2 weeks the dosage increased to 40 mg; and if continuing symptoms 60 mg. Training of therapists were overseen by supervisor SA and CGF. There were large</p>

	variations in baseline characteristics and drop-out rates between the two strata as well as between the four sites.
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Poulsen et al 2014	Poulsen S, Lunn S, Daniel SIF, Folke S, Bork Mathiesen B, Katznelson H, Fairburn CG. A Randomized Controlled Trial of Psychoanalytic Psychotherapy or Cognitive-Behavioral Therapy for Bulimia Nervosa. <i>American Journal of Psychiatry</i> . 2014; 171(1): 109-116.
Country	Denmark
Study design	RCT. Risk of bias is shown in Appendix 4
Participants	<p>Number randomized: 70</p> <p>Number of dropouts: Psychoanalytic psychotherapy (N=34) dropout before 5 months (N=4), dropout after 5 months (N=6). CBT (N=36) dropout (N=7)</p> <p>Gender (N=69): F 98.6%</p> <p>Age: 25.8 years, SD =4.9</p> <p>History of anorexia nervosa (N=67): 37.3%</p> <p>Previous treatment for eating disorder (N=41): 58.6%</p> <p>Personality disorder (N=26): 37.1%</p> <p>Antidepressant medication (N=10): 14.3</p> <p>Duration of eating disorder features years (N=69) EDE Global mean=3.79 SD 1.10</p> <p>Duration of eating disorder features years (N=69) BMI mean 22.60 SD 2.33</p> <p>Objective binges/ 28 days: median 25 IQR 28.50</p> <p>Purging episodes/28 days (N=69)⁴: 35 IQR 39.50</p> <p>Method of diagnosis: Eating disorder psychopathology was assessed using the Eating Disorder Examination interview (binge eating, purging) version 14.4; general psychopathology was assessed using the Present State Examination. The Symptom Checklist-90-Revised, the Beck Depression Inventory-II and the State Trait Anxiety Inventory were administered at baseline and 5, 12, 18, and 24 months after starting treatment. Personality disorder status assessed using the Structured Clinical Interview for DSM – IV Axis II Personality Disorders. Interpersonal functioning was assessed with the Inventory of Interpersonal Problems. Patients' expectations of treatment outcome were rated before randomization on a 5-point Likert scale. Adherence to CBT was assessed using a revised version of the Cognitive-Behavioral Therapy Treatment Protocol Adherence</p>

⁴ Sum of vomiting, laxative, diuretic misuse episodes

	<p>Scale. Adherence to psychoanalytic psychotherapy was measured by Adherence Scale for Psychoanalytic Psychotherapy for BN.</p> <p>Diagnosis: Bulimia Nervosa (BN)</p> <p>Recruitment: Advertisements and referrals from local clinics between October 15, 2004, and April, 2008.</p> <p>Treatment setting: University outpatient clinic</p>
Intervention	<p>20 sessions of CBT over 5 months. The treatment comprises 20 50-minute sessions that are preceded by one 90-minute preparatory session and followed by on review session 20 weeks after treatment. The sessions are twice-weekly for the first 4 weeks, weekly for the next 10 weeks, and every 2 weeks over the final 6 weeks. The “enhanced” version of the original CBT for BN is characterized by increased focus on engagement, greater emphasis on the modification of concerns about shape and weight, and the development of skills to deal with setbacks. It’s designed to be “transdiagnostic” in scope, but can be used for patients with a specific eating disorder such as BN. The intervention used the focused form of the treatment, which concentrates exclusively on modifying the patient’s eating disorder psychopathology.</p>
Comparison	<p>2 years of weekly psychoanalytic psychotherapy. The treatment consists of three phases: an initial phase focusing on establishing the therapeutic frame and alliance and addressing the bulimic symptoms, the work phase where additional attention is directed toward the transference relationship, and the termination phase. It involves weekly 50-minute sessions over 2 years, based on the assumption that bulimic symptoms are rooted in a need to ward off inner feeling states and desires and in difficulties acknowledging and regulating such inner states. The therapy aims to increase the capacity to reflect on and tolerate affective experience and to facilitate insight into the mechanisms hiding unconscious and disavowed aspects of the patient. It has a nondirective approach where the patient is invited to talk as freely as possible with a focus on the therapeutic relationship, and involvement of the patient in a mutual reflection on the function of and the circumstances triggering the symptoms of the disorder. Bulimic symptoms aren’t necessarily discussed every session, but the therapist assists the patient in understanding the connections between the way she eats and her affective state. Mean number of sessions in non-dropout cases, 72.3; SD=10.6; range=42-86; N=24.</p>
Outcomes	<p>The main outcome measure was the Eating Disorder Examination interview (binge eating, purging), version 14.4, conducted at baseline, after 5 months, and after 2 years. Definition: no binge eating or purging over the previous 28 days (due to the different lengths of the treatments,</p>

	<p>three comparisons were made: status 5 months after beginning treatment / end of CBT; status 24 months / end of psychoanalytic psychotherapy / after beginning treatment, and status at the end of CBT (i.e., after 5 months) compared with status at the end of psychoanalytic psychotherapy (19 months later).</p>
Notes	<p>The psychoanalytic psychotherapy treatment was developed by the first two authors specifically for people with BN. This study tests this longer-term psychoanalytic psychotherapeutic treatment specifically designed for patients with BN by comparing it with the “enhanced” version of the original CBT. The version of CBT was thoroughly tested, whereas this was the first trial of longer-term psychoanalytic psychotherapy, which may have contributed to the difference in outcome: After 5 months, 42% of patients in CBT (N=36) and 6% of patients in psychoanalytic psychotherapy (N=34) had stopped binge eating and purging. At 2 years, 44% in the CBT and 15% in the psychoanalytic psychotherapy had stopped binge eating and purging. 24 (70.6%) of the psychoanalytic psychotherapy completed two years of treatment, and 28 (77.8%) of the CBT patients completed their 5 months of treatment. 11 of the CBT completers received additional treatment during follow-up (three outpatient psychiatric treatment for an eating disorder, one of whom was prescribed antidepressant medication, and eight patients received some form of psychotherapy – not known whether this was directed at the eating disorder or at other psychological difficulties. The outcome of CBT completers who received additional treatment did not differ significantly from the outcomes of patients who did not, neither at the end of treatment nor 19 months later. Substantial improvements were observed in global eating disorder psychopathology, more rapidly in the CBT-group (5 months), but difference between groups 2 years after starting treatment not statistically significant. The data do not indicate adverse effects of CBT in terms of symptom substitution.</p>

Salbach-Andrae 2009	Salbach-Andrae H, Bohnenkamp I, Bierbaum T, Schneider N, Thurn C, Stiglmayr C, Lenz K, Pfeiffer E, Lehmkuhl U. Dialektisch Behaviorale Therapie (DBT) für Jugendliche mit Anorexia und Bulimia nervosa im Vergleich. <i>Kindheit und Entwicklung</i> 2009; 18(3): 180-190
Country	Germany
Study design	RCT. Risk of bias is shown in Appendix 4
Participants	Number randomised: 50 women (Two intervention groups: CBT N=19, DBT-AN/BN N=16. One waiting list control group N=15).

	<p>Number of participants who did not complete treatment or were withdrawn: 9 (18%)</p> <p>Non-completion figures by diagnosis: Not specified</p> <p>Age: 12-21 years, mean =16.9 & SD =1.7</p> <p>Method of diagnosis: DSM-IV for BN (13/26%) and DSM-IV for AN (37/74%)</p> <p>Diagnosis: AN or BN judged by eating disorder specialist.</p>
Intervention	<p>CBT: 25 (50 minutes) individual sessions and 25 (100 minutes) group sessions over 25 weeks. Parents were included in 5 of the individual sessions and in 8 of the group sessions.</p> <p>The CBT program consisted of attention on attitudes towards eating behavior and weight, body image disorder, self-esteem, social training, supporting autonomy, dealing with interactions within the family and relapse prevention. The interventions were led by behavioral therapists, or psychologists specializing in treating children and adolescents, supervised by experienced behavioral therapist.</p>
Comparison	<p>DBT-AN/BN (Dialectic behavioral therapy): 25 (50 minutes) individual sessions and 25 (100 minutes) group sessions over 25 weeks. Parents were included in 5 of the individual and 8 of the group sessions. DBT-specific telephone contact.</p> <p>The DBT-AN/BN program consisted of four goals: 1) Reduction of suicidal and self-harming behavior, 2) Reduction of behavior that might interfere with therapy (not attending, not fulfilling tasks etc), 3) Reduction of behavior that might reduce quality of life, 4) Improvement of behavioral skills, such as attention to emotions, adequate dealing with food and weight. The interventions were led by behavioral therapists who had recently completed their education as DBT-therapists, or were currently specializing in DBT. They were supervised by a DBT-behavior therapist with additional DBT education.</p>
Outcomes	<p>Number of individuals (percentage) with diagnosis of AN or BN or ED-NOS after treatment for each group.</p>
Notes	<p>No significant difference in baseline characteristics between the groups.</p> <p>CBT group: Before treatment: AN 12(63.2%), BN 7(36.8). At end of treatment: No diagnosis of eating disorder 11(57.9%), AN 3(15.8%), BN 2(10.5%), EDNOS 3(15.8).</p> <p>DBT-AN/BN group: Before treatment: AN 11(68.7%), BN 5(31.3%). At end of treatment: No diagnosis of eating disorder 10(62.5%), AN 2(12.5%), BN 12.5%), EDNOS 2(12.5%).</p>

Wonderlich 2014	Wonderlich SA, Peterson CB, Crosby RD, Smith TL, Klein MH, Mitchell JE, Crow SJ. A randomized controlled comparison of integrative cognitive-affective therapy (ICAT) and enhanced cognitive-behavioral therapy (CBT-E) for bulimia nervosa. <i>Psychological medicine</i> 2014; 44(3): 543-553
Country	USA, Minnesota and North Dakota
Study design	RCT, Risk of bias is shown in Appendix 4
Participants	<p>Number randomized: 80</p> <p>Number of dropouts: CBT-E (n=8 from 40); ICAT (n=4 from 40). 64 participants completed treatment. All 80 participants were included in the analysis</p> <p>Gender: predominantly female (n=72, 90%)</p> <p>Age: mean (\pmSD) = 27.3 (9.6)</p> <p>BMI: mean (\pmSD) = 23.9 (5.5)</p> <p>EDE Global score: mean (\pmSD) = 3.3 (1.1)</p> <p>Method of diagnosis: DSM-VI BN</p> <p>Diagnosis: Bulimia Nervosa symptoms (bulimic symptoms: frequency of binge eating and purging). Participants on a stable dose of antidepressant medication for at least 6 weeks could be included.</p> <p>Recruitment: community by media advertising and referrals from local eating disorder treatment clinics and health professionals,</p> <p>Treatment setting: two-site (Minnesota and North Dakota). Four Ph. D. psychologists (two per site) delivered both treatments.</p>
Intervention	<p>CBT-E is a recently updated but established treatment that employs psychoeducation, self-monitoring, and behavioral exposure to normalize eating patterns and modify cognitive biases particularly over-evaluation of shape and weight.</p> <p>Therapeutic alliance (Working Alliance Inventory) and 21 sessions (50-minutes-sessions) of enhanced cognitive-behavioral therapy (CBT-E) over 19 weeks, with twice weekly sessions for the first 4 weeks</p>
Comparison	<p>ICAT is a new treatment based on the idea that emotional states serve as proximal antecedents of BN behavior and that BN behavior regulates emotional state. Interventions includes four phases; focus on identifying cues for binge eating and managing binge urges, normalizing eating patterns with meal planning, and modifying behavioral reactions to cues that elicit negative emotion.</p> <p>Therapeutic alliance (Working Alliance Inventory) and 21 sessions (50-minutes-sessions) of integrative cognitive-affective therapy (ICAT) over 19 weeks, with twice weekly sessions for the first 4 weeks</p>
Outcomes	Bulimic symptoms assessed (weekly written patient recalls) at each session, posttreatment, and treatment follow-up (32 weeks).

	<p>Therapeutic alliance was assessed (patients reported) at Session 2, 8, 14, and posttreatment, which occurred the week after the last session (Working Alliance Inventory)</p> <p>Baseline assessments:</p> <p>Eating disorder diagnosis determined by interview EDE (Fairburn); comorbid psychiatric diagnoses determined by Structured Clinical Interviews for DSM-IV Axis I; measure of initial eating disorder symptoms (EDE Global score; depressive symptoms (Beck Depression Inventory (BDI); anxiety symptoms (Spielberger Trait Anxiety Inventory); emotion dysregulation (Difficulties in Emotion Regulation Scale); personality pathology (Dimensional Assessment of Personality Pathology, Basic Questionnaire (DAPP-BQ)); patients reported on therapeutic alliance</p>
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Below follows a description also of the studies that was already included in Hay et al 2009:

Agras 2000	Agras WS, Walsh T, Fairburn CG, Wilson T, Kraemer HC. A Multicenter Comparison of Cognitive-Behavioral Therapy and Interpersonal Psychotherapy for Bulimia Nervosa. Archives of General Psychiatry. 2000; 57: 459-466
Country	USA; UK
Study design	RCT
Participants	<p>Number randomised: 220</p> <p>Number of dropouts: 57 (CBT-group 31 (28%) and IPT-group 26 (24%) (Hay 61)</p> <p>Gender: not specified</p> <p>Age: years, mean = 28.1 ± 7.2</p> <p>BMI: mean 23.0</p> <p>Numbers binged and purged by inducing vomiting; 69 (31%) used laxatives; 25 (11%) used diuretics; duration of binge eating just over 11 years; duration of purging nearly 10 years.</p> <p>Method of diagnosis: DSM-III-R (SCID); the Hopkins Symptom Checklist-90-Revised (SCL-90-R)</p> <p>Diagnosis: Bulimia Nervosa purging type</p> <p>Recruitment: media advertising and referrals from clinics</p> <p>Treatment setting: outpatient, multisite (2 treatment sites: Columbia (C)) and Stanford (S); one quality-control center, Oxford (O))</p>

Intervention	CBT (focusing on treating the eating disorder and associated cognitive disturbances) has three overlapping phases : 19 individual sessions (50 minutes) over a 20-week period (twice weekly for the first 2 weeks, weekly for the next 12 weeks, and then at 2-week intervals for the last 6 weeks) and evaluated for 1 year after treatment. This treatment was manualized and based on the therapy used in the previous treatment trial comparing CBT and IPT. 110 allocated to CBT – 54 at Columbia (C) and 56 at Stanford (S).
Comparison	IPT (focusing on achieving interpersonal change) has three phases: 19 individual sessions (50 minutes) over a 20-week period (twice weekly for the first 2 weeks, weekly for the next 12 weeks, and then at 2-week intervals for the last 6 weeks) and evaluated for 1 year after treatment. This treatment was manualized and based on treatment of depressed outpatients, but was modified for BN for the previous comparison between CBT and IPT. 110 participants allocated to IPT - 56 at (C) and 54 at (S).
Outcomes	<p>General psychopathology: The Hopkins Symptom Checklist-90-Revised (SCL-90-R)</p> <p>Eating Disorder: Eating Disorder Examination (EDE) measures from interview (binge eating; purging included self-induced vomiting and laxative and diuretic use; concerns about weight and shape; and dietary restraint)</p> <p>Interpersonal functioning: The Inventory of Interpersonal Problems-global score (IPP) The self-report form of the social adjustment scale-global score</p> <p>Self-esteem: The Rosenberg Self-esteem Scale</p> <p>Completers (defined as individuals who had completed treatment as well as the 4-month and either the 8- or 12-month follow-up): 129 (dropouts: 57 (CBT-group 31 (28%) and IPT-group 26 (24%); Number of patients withdrawn from treatment: 9 participants (6 allocated to CBT and 3 allocated to IPT); Number of non-completers: 25). Dropout-rates between sites were significant: Columbia (35.9%), Stanford (18.5%). Assessment at baseline; End of Treatment; 4-Month Follow-up; 8-and 12 Month Follow-up.</p>
Notes	<p>This trial was designed to repeat the comparison between CBT and IPT with a larger sample and two sites. Four therapists at each site treated participants in each of the 2 treatments condition, with approximately equal numbers of participants in each treatment condition for each therapist.</p> <p>Oxford served as an independent quality control center, and had developed both the treatments being studied as well as the main measure of outcome; and had conducted the previous comparison of CBT & IPT.</p>

The quality of each therapy was monitored by the investigator CGF, who had carried out the previous study. The integrity and boundaries of each therapy were carefully defined and monitored (audiotapes recorded and audited by CGF and written feedback was sent the principal investigator and to the therapist. CGF (the investigator) developed this standardized interview as well as monitoring the assessment of eating-disorder pathologic processes using the EDE.

The IPT treatment was originally developed by Klerman et al for the treatment of depressed outpatients, modified to suit treatment of patients with BN. The IPT treatment does not contain any of the specific behavioral or cognitive procedures that characterize CBT. No self-monitoring is used in this treatment. At no stage in the treatment is attention paid to eating habits or attitudes toward weight and shape.

Participants were similar to most other samples of bulimic subjects on aspects of psychopathology: slightly more than half having lifetime major depression; 22% with current major depression; just over one third with a personality disorder; nearly one quarter with a lifetime history of substance dependence or abuse; almost one quarter having a history of anorexia nervosa (AN). The IPT group scored higher than the CBT group at the pretreatment evaluation between treatment groups for episodes of purging ($P=.003$) and for eating concerns ($P=.02$).

Several differences in pretreatment characteristics of participants (P) between sites; P at (S) seemed initially less disabled than those at the site (C): P at S on average 3 years older than P at C (significant site X treatment interaction); P at C longer duration of purging; were less likely to have had a previous diagnosis of AN; had less concern about eating and shape; had a lower SCL-90 global score. P at S were twice as likely to have been diagnosed with lifetime substance abuse or dependence than P at C.

None of the patients received any other psychotherapy or pharmacotherapy during the treatment phase of the study. During follow-up, 19 participants (29%) treated with CBT and 17 (27%) treated with IPT sought further treatment for their eating disorder: for CBT, 9 (14%) received some form of psychotherapy, 7 (10%) received medication, 3 (5%) received a combination of psychotherapy and medication; for IPT, 3 (5%) received psychotherapy, 9 (14%) received medication; and 3 (8%) received combined treatment. A post hoc analysis excluding those who received treatment during follow-up found no significant differences between treatments during follow-up.

Adequacy of therapy: ratings were made on a Likert scale

Suitability of treatment:

	Suitability rated on a 10-point visual analog scale at weeks 2, 10, and 20; patients 'expectations of improvement' rated in a similar manner.
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Bossert 1989	Bossert S, Schnabel E, Krieg J-C. Effects and Limitations of Cognitive Behavior Therapy in Bulimia Inpatients. <i>Psychotherapy and Psychosomatics</i> . 1989; 51: 77-82
Country	Germany
Study design	RCT
Participants	Number randomised: 14, Number of dropouts: 0 Gender: all women (F) Age: Intervention group mean = 21.6 & SD =3.2; comparison group mean =22.5 & SD = 4.3 Method of diagnosis: DSM-III (14); Russell criteria for bulimia nervosa including a previous episode of anorexia nervosa (19) Diagnosis: Bulimia Nervosa Recruitment: community) Treatment setting: inpatient, specialist)
Intervention	CBT self-management (n=8): three weekly 40-min sessions of individual therapy; not standardized or limited in time (i. e. duration of hospital stay). The program consisted of five components and phases: self-monitoring, training of alternative behavior, contract system and self-administered response prevention, breaks from hospital treatment/ partial hospitalization.
Comparison	Nonspecific psychotherapy (n=6): three weekly 40-min sessions of individual therapy; not standardized or limited in time (i. e. duration of hospital stay). Based on a supportive therapeutic relationship, introspection and self-disclosure were emphasized. Did not provide any specific self-control techniques to the patients.
Outcomes	Bulimic behavior (binging and vomiting): a) medical records; b) semi-standardized interview (SIAN-EX); c) observations by nursing staff Weight status: recorded twice a week Distress and Depressed Mood: the AMS self-rating scale (original version "Be-findlichkeitsskala"); Paranoid Depression Scale (PDS) (original version "Paranoid-Depressivitäts-Skala"; the Inpatient Multidimensional Psychiatric Scale IMPS).
Notes	Therapeutic groups and ward activities same for patients in both treatment conditions The transfer to a natural environment was only fostered in the CBT-group and the improvement in this group is probably more generalized and stable, but this assumption has to be proven by a 2-year follow-up study in progress.

Cooper 1995	Cooper PJ, Steere J. A comparison of two Psychological treatments for bulimia nervosa: implications for models of maintenance. <i>Behaviour Research and Therapy</i> . 1995; 33(8): 875-885.
Country	UK
Methods / Study design	RCT
Participants	<p>Number randomised: 31</p> <p>Number of dropouts: 2 (CBT 1; ERP 1); Number of withdrawn: 2 (CBT 1; ERP 1)</p> <p>Gender: Female</p> <p>Age: 18-33 years, mean = 23.8</p> <p>Method of diagnosis: DSM-III-R</p> <p>Diagnosis: Bulimia Nervosa purging type</p> <p>Recruitment: Referrals to a local BN clinic (over a period of 18 months)</p> <p>Treatment setting: outpatient, tertiary unit</p>
Intervention	<p>CBT: Cognitive-behavioural treatment (modified version; absence of explicit exposure instructions); n= 13</p> <p>18 weeks with 19 individual treatment sessions (50 minutes); manual-based, and treatment consisted of three distinct phases. Phase 1: eight sessions were conducted on a twice-weekly basis. Identical in the comparison group. Phase 2: eight sessions conducted once-weekly; homework assignments and behavioural tasks were set. Phase 3: three fortnightly sessions were held; aiming to assist the patients in maintaining their gains as therapy terminated, and avoiding future relapse. Identical for the comparison group.</p>
Comparison	<p>ERP: Exposure and response prevention treatment (purely behavioural; absence of cognitive restructuring procedures); n=14</p> <p>18 weeks with 19 individual treatment sessions (50 minutes); manual-based, and treatment consisted of three distinct phases. Phase 1: eight sessions were conducted on a twice-weekly basis. Identical in the intervention group. Phase 2: eight sessions conducted, of which 4 were scheduled twice a week (homework assignments) and 4 scheduled once a week (homework assignments). Phase 3: three fortnightly sessions were held; aiming to assist the patients in maintaining their gains as therapy terminated, and avoiding future relapse. Identical for the intervention group.</p>
Outcomes	<p>Self-reported specific psychopathology:</p> <p>The Eating Disorder Examination (EDE); the Eating Attitudes Test of EAT; The Body Shape Questionnaire (BSQ); the Three Factor Eating Questionnaire or SRQ</p> <p>Non-specific psychopathology:</p> <p>The Present State Examination or PSE; the Montgomery and Asberg Depression Rating Scale (MADRS)</p>

	<p>Self-reported non-specific psychopathology: The Beck Depression Inventory (BDI); the Spielberger State-Trait Anxiety Inventory (STAI); the Rosenberg Self-Esteem Inventory (RSE)</p> <p>Suitability and expectancy: Attitudes assessed using 10 cm visual analogue scales</p> <p>Patients assessed pretreatment, midway through treatment, at the end of treatment and at 12 month follow-up.</p> <p>Patients completed the full treatment: 27</p>
Notes	<p>Cognitive-behavioural treatment; based on Fairburn (Fairburn & Cooper, 1989), but differed in order to allow the necessary comparison between the two treatment conditions in the study.</p> <p>Exposure and response prevention treatment developed by Rosen and Leitenberg (1982, 1985), based on an anxiety-reduction model of the maintenance of bulimia nervosa, which asserts that the symptom cycle of the disorder is maintained by the anxiety-reducing properties of purging.</p> <p>Both authors acted as therapists and treated patients in both conditions, following treatment manuals. Sessions were audiotaped and monitored to ensure standardization of therapeutic techniques.</p> <p>Predictors of treatment outcome: No significant differences except purging and bulimic episodes MADRS. No therapist or therapist-by-group effects. Small sample size. Type II error (a "false negative"); absence of detectable differences.</p>

Fairburn 1986	Fairburn CG, Kirk J, O'Connor M, Cooper PJ. A comparison of two psychological treatments for bulimia nervosa. Behaviour Research and Therapy. 1986; 24(6): 629-643.
Country	UK
Study design	RCT
Participants	<p>Number randomized: 24 Number of dropouts: 0; Number of withdrawn: 2 (CBT 1, STP 1) Gender: all women (F) Age: >17 years, mean = 22.9 & SD =4.4 Married: 5experienced bulimic episodes at least once a day: 11 (46%) Vomiting once a day: 18 (75%) Age at the onset of bulimic episodes: mean 20.0 & SD 4.2 Age at the onset of self-induced vomiting: 19.5 & SD 3.4 Weight: mean 96.9% MPMW & SD 9.4</p>

	<p>Method of diagnosis: the strict diagnostic criteria of Russell (1979) – see Fairburn and Cooper 1984a); DSM-III</p> <p>Diagnosis: Bulimia Nervosa</p> <p>Recruitment: GPs and psychiatrists received a letter requesting the referral of patients (Hay primary care)</p> <p>Treatment setting: outpatient (Hay tertiary settings)</p>
Intervention	<p>Cognitive behavior therapy (CBT) 18 weeks (16 months study), treatment was manual-based and specifically designed for patients with BN, and is manual-based with three distinguished stages. It is semi-structured, problem oriented and primarily concerned with the patient's present and future rather than his or her past. Sessions were twice weekly for the first month, weekly for the following two months and fortnightly during the final 6 weeks. n=12.</p>
Comparison	<p>Short-term focal psychotherapy (STP) 18 weeks (16 months study), treatment was manual-based and designed especially for this study (modelled on Rosen's method of structured brief psychotherapy, 1979, and adapted to suit patients with BN with four main adaptations). The major aim is to help patients identify difficulties and understand how the eating problem had served to disguise/perpetuate them. Sessions were twice weekly for the first month, weekly for the following two months and fortnightly during the final 6 weeks. n=12.</p>
Outcomes	<p>Specific psychopathology: A semi-structured pre-coded interview was used as the principal measure; concerning the frequency of episodes of bulimia, self-induced vomiting and purgative use.</p> <p>Self-report Eating Attitudes Test (EAT).</p> <p>General psychopathology: The Present State Examination (PSE); the Montgomery and Asberg Depression Rating Scale (MADRS)</p> <p>Social adjustment: The British adaptation of the self-report Social Adjustment Scale (SAS)</p> <p>Patients' own perception of their outcome: Suitability, expectancy and 'subjective outcome' patient-rated on a 4-point scale (suitability before, after eight sessions, EOT, three follow-ups; expectations similar ratings before and after eight sessions; patient-rated 'the extent to which they regard themselves as having an eating problem or other psychological difficulties' on similar scale at the end of treatment and at each follow-up.</p> <p>Global clinical state: A 'global clinical score' (a quantifying scheme) was based upon the patients' level of specific and general psychopathology and on their social adjustment.</p>

	Improvement persisted throughout the 12-month follow-up period Assessments at beginning, EOT, and at 4-, 8- and 12-month follow-up
Notes	<p>The two treatments CBT/STP were matched in terms of their duration and the frequency of therapy sessions (intensity), and they were applied in a standard fashion.</p> <p>The CBT group was younger ($P<0.05$) and heavier ($P<0.1$) compared to the STP group, but data suggests that neither had a discernible effect on outcome.</p> <p>The omission of the 2 patients who were withdrawn had no significant effect on the pre-treatment group comparison.</p> <p>None of the 22 patients received additional psychiatric or psychological treatment during treatment phase or 12-month follow-up.</p> <p>Two of the authors (CGF, JK) implemented the treatments (therapists) and had regular meetings to review and discuss progress.</p> <p>No waiting list, no placebo control group.</p> <p>STP-group improvement probably due to this particular form of focal psychotherapy rather than “non-specific therapeutic factors”.</p> <p>CBT improvements maintained throughout the 12-month follow-up period.</p> <p>4 patients allocated to one therapist and 8 patients to the other therapist.</p> <p>The follow-up interviews did not involve further treatment from the therapists. The patients’ travelling expenses were paid for the follow-up interviews to maximize compliance.</p> <p>Small sample size.</p>

Fairburn 1991	Fairburn CG, Jones R, Peveler RC, Carr SJ, Solomon RA, O’Connor ME, Burton J, Hope RA. Three Psychological Treatments for Bulimia Nervosa. <i>Archives of General Psychiatry</i> . 1991; 48: 463-469
Country	UK
Study design	RCT
Participants	<p>Number randomised: 66</p> <p>Number of dropouts: 13 (CBT 4; IPT 3; BT 6)</p> <p>Gender: all women (F)</p> <p>Age: years, mean = 24.2 & CI 95% =22.8-25.6</p> <p>BMI: mean 22.2 & CI 21.5-23.0</p> <p>Frequency of objective bulimic episodes: mean 23 & CI 19.7-27.6</p> <p>Frequency of self-induced vomiting: mean 28.9 & CI 23.2-34.7</p> <p>Frequency of laxative use: mean 14.7 & CI 8.9-20.4</p> <p>Duration of bulimia nervosa: mean 4.4 & CI 3.4-5.3</p>

	<p>Method of diagnosis: DSM-III-R</p> <p>Diagnosis: Bulimia Nervosa (BN)</p> <p>Recruitment: GPs and psychiatrists were asked to refer patients (female, 17 or older, complained of having lost control over eating and used either self-induced vomiting, laxatives, or extreme dieting to control their shape or weight) (Hay primary and secondary sources)</p> <p>Treatment setting: outpatient (Hay tertiary level therapists)</p>
Intervention	<p>Group 1: Cognitive behavior therapy (CBT) 19 treatment sessions (40-50 minutes) over 18 weeks; twice weekly for the first month, weekly for the following 2 months, and fortnightly during the final 6 weeks. Three stages may be distinguished; behavioral techniques; cognitively oriented; maintenance of progress.</p> <p>Group 2: CBT in a simplified behavioral version- 19 treatment sessions (40-50 minutes) over 18 weeks; twice weekly for the first month, weekly for the following 2 months, and fortnightly during the final 6 weeks.</p>
Comparison	<p>Group 1: Interpersonal psychotherapy (IPT) 19 treatment sessions (40-50 minutes) over 18 weeks; twice weekly for the first month, weekly for the following 2 months, and fortnightly during the final 6 weeks. IPT was devised by Klerman and colleagues for the treatment of depressed outpatients, in this study modified to suit patients with BN (manual-based). No attention was paid to the patients' eating habits or attitudes to shape and weight, nor did the treatment contain any of the behavioral or cognitive procedures that characterized the two other approaches. No self-monitoring.</p> <p>Group 2: Behavior therapy (BT) 19 treatment sessions (40-50 minutes) over 18 weeks; twice weekly for the first month, weekly for the following 2 months, and fortnightly during the final 6 weeks. The focus was exclusively on the normalization of eating habits.</p>
Outcomes	<p>Eating Habits and Attitudes to Shape, Weight, and Eating: The 10th edition of the Eating Disorder Examination (EDE) – interview; The Eating Attitudes Test – self-report questionnaire</p> <p>General Psychiatric Symptoms: The Symptom Checklist-90; The Beck Depression Inventory</p> <p>Social Adjustment: The British adaptation of the self-report Social Adjustment Scale (functioning)</p> <p>Suitability of Treatment and Expectations of Improvement: Patient rated on visual analogue scales before treatment, after eight sessions, and at the end of treatment.</p>

Notes	<p>This study was designed to address two questions: firstly whether the effect of this treatment result from the specific techniques that characterize CBT rather than being due to nonspecific therapeutic factors common to many psychological treatments; secondly whether a simplified and exclusively behavioral version of CBT would be as effective as the full treatment.</p> <p>None of the patients received any other form of psychological or pharmacological treatment during the study. The history and current severity of the patients' eating disorder resembled that of other samples.</p> <p>All three treatments were rated by the patients as being equally suitable forms of therapy (before starting, after eight sessions, and at the end of treatment), and their expectations of improvement did not differ either across the groups or with exposure to treatment; thus differences in outcome are likely to have arisen from differences in the procedures employed rather than from nonspecific therapeutic factors.</p>
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Freeman 1988	Freeman CPL, Barry F, Dunkeld-Turnbull J, Henderson A. Controlled trial of psychotherapy for bulimia nervosa. British Medical Journal. 1988; 296: 521-525.
Country	UK
Study design	RCT
Participants	<p>Number randomised: 112</p> <p>Number of dropouts: 31 (CBT 11; BT 5; GT 11; WL 4)</p> <p>Gender: all women (F)</p> <p>Age >18 years, mean = 24.2 & SD =5.6</p> <p>Weight (% of matched population mean weight; Geigy Pharmaceuticals): mean 108.2 & SD 16.1</p> <p>Age at onset of vomiting: mean 19.1 & SD 4.4</p> <p>Age at onset of laxative abuse: mean 20.8 & SD 5.4</p> <p>Age at onset of bulimia nervosa: mean 18.2 & SD 4.6</p> <p>Duration of bulimia nervosa: mean 6.0 & SD 4.9</p> <p>Method of diagnosis: DSM-III (In retrospect the authors found that all patients met the criteria of DSM-III-R)</p> <p>Diagnosis: Bulimia Nervosa</p> <p>Recruitment: not mentioned</p> <p>Treatment setting: outpatient (Hay: secondary but with 'relatively inexperienced' therapists)</p>
Intervention	Cognitive behavior therapy CBT (n=32) for 15 weekly sessions (about one hour); structured format focusing on the patients dysfunctional beliefs about and preoccupation with food, eating, weight, and shape. Using graded behavioural tasks similar to those used in BT.

Comparison	Behaviour therapy BT (n=30) for 15 weekly sessions (about one hour); structured format focusing on eating patterns. Group Therapy GT (n=30) for 15 weekly sessions (about one hour); supportive and educational in orientation. Wait list WL (n=20) for 15 weeks.
Outcomes	Diaries (eating and bulimic behavior); the bulimia scale of the eating disorders inventory (EDI); anxiety scale (IDA); the DIET subscale of the eating attitudes test; questionnaires personal histories and histories of weight and eating behavior); self-rating scales of self-esteem, depression, and anxiety; The Montgomery and Asberg depression scale (MAD). All measurements before, halfway through (week 8), at the end of treatment, and at each three month follow-up. (Hay Snaith scale) WL (control): The bulimic investigatory test (BITE); briefly assessment to minimize the potential non-specific therapeutic effects of assessment. Follow-up: three months after treatment 55; at six months 38; at nine months 28; and at one year follow-up (n=24).
Notes	In terms of age, chronicity, weight history, and so on the subjects were similar to those described in other British studies. The assumption that CBT would be the most powerful treatment was not confirmed, most of the advantages that were found were straightforward behavior therapy, which had the lowest dropout rate (10%) and tended to modify symptoms earlier than CBT and GT. GT was the least satisfactory with highest dropout rate (37%), but proved remarkably effective for those who continued with it, and clearly is the most cost effective approach to the disorder.

Walsh 1997	Walsh BT, Wilson GT, Loeb KL, Devlin MJ, Pike KM, Roose SP, Fleiss J, Wateriaux C. Medication and Psychotherapy in the Treatment of Bulimia Nervosa. <i>The American Journal of Psychiatry</i> . 1997; 154: 523-531.
Country	USA
Study design	RCT
Participants	Number randomised: 120 Number of dropouts: 41 (Hay unclear) Gender: all women (F) Age: 18-45 years mean 26.1, CBT-medication mean = 26.1 & SD = 5.7 (CBT-placebo mean = 25.8 & SD = 4.4, SP-medication mean = 28.0 & SD = 5.3, SP-placebo mean = 26.9 & SD = 4.3) Method of diagnosis: DSM-III-R Diagnosis: Bulimia Nervosa purging type Recruitment: media advertising in local media (Hay community)

	Treatment setting: outpatient (Hay specialist)
Intervention	<p>1: Cognitive-behavioral therapy (CBT) in 20 sessions over 16 weeks, with two-stage medication intervention</p> <p>2: CBT with placebo</p> <p>This manual based CBT consists of three stages:</p> <p>Stage 1 - overview and explanation, homework, strategies, guidance, alternative coping strategies;</p> <p>Stage 2 – problem-solving strategies, cognitive restructuring, eating habits;</p> <p>Stage 3 – maintenance of improvement and relapse prevention</p> <p>Medication (16 sessions 16 weeks):</p> <p>Desipramine for 8 weeks, during the first week the dose was raised to 200 mg/day, and continued for 3 weeks, thereafter the dose could be raised to 300 mg/day if improvement was not satisfactory;</p> <p>Despramine discontinued for two weeks if binge frequency had not declined at least 75%, or side effects; and patients then received fluoxetine (initiated at 60 mg/day, could be lowered to minimize side effects).</p> <p>Placebo group received desipramine placebo and, following the same criteria, received fluoxetine placebo.</p>
Comparison	<p>1: Supportive Psychotherapy (SP) in 20 sessions over 16 weeks, with two-stage medication intervention</p> <p>2: SP with placebo</p> <p>This manual-based SP consists of three stages, and elements that overlap with the CBT was eliminated:</p> <p>Stage 1 – therapists helped patients to identify underlying problems that might be responsible for the BN;</p> <p>Stage 2 – aimed at encouraging patients to explore underlying emotional problems, foster independence and raise the issue of termination of treatment;</p> <p>Stage three – continued stage two</p> <p>Medication (16 sessions 16 weeks):</p> <p>Desipramine for 8 weeks, during the first week the dose was raised to 200 mg/day, and continued for 3 weeks, thereafter the dose could be raised to 300 mg/day if improvement was not satisfactory;</p> <p>Despramine discontinued for two weeks if binge frequency had not declined at least 75%, or side effects; and patients then received fluoxetine.</p> <p>Placebo group received desipramine placebo and, following the same criteria, received fluoxetine placebo.</p> <p>3: Medication alone (16 sessions over 16 weeks):</p> <p>Desipramine for 8 weeks, during the first week the dose was raised to 200 mg/day, and continued for 3 weeks, thereafter the dose could be raised to 300 mg/day if improvement was not satisfactory;</p>

	Despramine discontinued for two weeks if binge frequency had not declined at least 75%, or side effects; and patients then received fluoxetine (initiated at 60 mg/day, could be lowered to minimize side effects).
Outcomes	Binge eating and vomiting (primary outcome); and depression was assessed by the following measurements: the Eating Disorder Examination (EDE); the Structured Clinical Interview for DSM-III-R; physical examination; blood count, serum chemistries, and ECG obtained; the Body Shape Questionnaire; the Eating Attitudes Test; the Beck Depression Inventory; the SCL-90; the Three-Factor Eating Questionnaire; and a visual analogue scale to rate the treatment's logic and relevance. Data from all 120 patients randomized were included in the analyses. The report is based only on data available at the end of treatment (data on outcome during the succeeding year not yet analyzed).
Notes	CBT was originally developed by Fairburn. The CBT-treatment in this study was based on a manual (G.T. Wilson, 1989) derived from the treatment approach of Fairburn et al. SP manual-based modified version of the short-term psychotherapy used in the Fairburn et al study 1986. It was designed to control for non-specific therapeutic influences inherent in CBT. Slightly higher rate of dropout in the medication only condition. The study design did not include a psychotherapy-only group (psychotherapy plus placebo is equivalent to psychotherapy alone?); the presence of side effects may have compromised the double-blinded medication.

Wilfley 1993	Wilfley DE, Agras WS, Telch CF, Rossiter EM, Schneider JA, Cole AG, Sifford LA, Raeburn SD. Group Cognitive-Behavioral Therapy and Group Interpersonal Psychotherapy for the Nonpurging Bulimic Individual: A Controlled Comparison. <i>Journal of Consulting and Clinical Psychology</i> . 1993; 61(2): 296-305
Country	USA
Study design	RCT
Participants	Number randomised: 56 Number of "study dropouts": 3 (CBT 2, WL 1); number of "treatment dropouts": 8 (CBT 6, IPT 2) (Hay 9) Gender: all women (F) Age: 27-64 years, mean = 44.3 & SD =8.3 Weight: mean 87.3 SD 14.2; BMI: mean 32.8 SD 5.2 Age at onset of binge eating: mean 20.4 SD 12.4 Binge eating for an average of years: mean 23.7 SD 13.4

	<p>Method of diagnosis: DSM-III-R - modified criteria (i.e. met all criteria for BN except purging)</p> <p>Diagnosis: Bulimia Nervosa non purging type</p> <p>Recruitment: media advertising, community</p> <p>Treatment setting: outpatient (Hay specialist)</p>
Intervention	<p>CBT-group for binge eating (BE) (18 subjects assigned). 16 weekly sessions (90-minutes group therapy) in small groups (nine members and two therapists). CBT assumes that eliminating extreme dietary restriction, increasing the intake of a wider variety of foods, and decreasing cognitive distortions are sufficient for treatment effectiveness (Fairburn, 1985). Manual-based, and two treatment groups and two therapist teams. First priority was to eliminate binge eating, weight control secondary concern.</p>
Comparison	<p>IPT-group for binge eating (BE) (18 subjects assigned) 16 weekly sessions (90-minutes group therapy) in small groups (nine members and two therapists). IPT assumes that mastery of current social roles and adaptation to interpersonal situations are sufficient for treatment effectiveness (Fairburn et al, 1991). Manual-based, and two treatment groups and two therapist teams. Focus on current interpersonal relationships (grief, interpersonal disputes, role transitions, and interpersonal deficits) in three different sessions</p> <p>Wait-list control (WL) assessment at baseline and at 16 weeks, no other contact with study personnel during treatment, and their participation ended after the 16-week assessment (20 subjects assigned).</p>
Outcomes	<p>CBT and IPT assessed at baseline and 16-week posttest, and additionally 6-month and 1-year follow-ups; Self-reported bingeing, number of days being the primary outcome measure; Beck Depression Inventory (BDI); a 21-item inventory measuring severity of depression; the Inventory of Interpersonal Problems (IIP); a measure of interpersonal problems and the level of distress arising from interpersonal sources; the Rosenberg Self-Esteem Scale; a 10-item questionnaire measuring level of self-esteem; and the Stunkard and Messick (1985) Three-Factor Eating Questionnaire (TFEQ), a measure of cognitive restraint, perceived hunger, and tendency toward disinhibition of eating.</p>
Notes	<p>This study tested the applicability of the Fairburn et al (1991) results in a different population.</p> <p>The amount of food required to qualify as a binge relied on subjective judgments.</p> <p>Klerman et al (1984) developed IPT for the treatment of depression.</p> <p>Fairburn et al (1991) modified IPT for patients with BN. In this study the Fairburn approach was adjusted for group format.</p>

	<p>“study dropouts” – declined to complete posttest or follow-up assessments</p> <p>“treatment dropouts” quit before the completion of treatment</p> <p>Checks on treatment delivery suggested that outcomes were attributable to the treatments themselves.</p> <p>Two treatment manuals were developed to eliminate overlapping features. This separation may compromise either CBT or IPT, because dysfunctional interpersonal relating was not addressed in CBT and food, eating, shape, and weight were avoided in IPT.</p> <p>Small sample size</p>
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Appendix 4. Risk of bias assessments

Katzman 2010

	Support for judgment	Review author's judgment
Adequate sequence generation?	An independent investigator, using a table of random numbers, generated the randomization sequence	Low
Allocation concealment?	Allocation were contained in sequentially numbered, sealed, opaque envelopes opened by the clinician after the initial assessment, during which eligibility and willingness to participate were determined	Low
Blinding of participant and personnel?	Not mentioned and not possible and subjective outcomes	High
Blinding of outcome assessor?	Assessor were blind to the participant's treatment condition at the one year follow up. Immediately after treatment not = high	Low
Incomplete outcome data addressed?	LARGE DROP OUT, but ITT- analyses	Low
Free of selective reporting?	Expected outcomes reported	Low
Free of other bias?	None known	Low
Total judgment		Low

Lavender 2012

	Support for judgment	Review author's judgment
Adequate sequence generation?	..after consent had been obtained, s/he was introduced to the assessor who completed the research assessment. The patient was then randomized by a computerized system	Low
Allocation concealment?	Randomization was stratified for dx and assigned to group. Patients were told about the outcome of randomization	Unclear
Blinding of participant and personnel?	Not mentioned and not possible and subjective outcomes	High
Blinding of outcome assessor?	Assessor were blind to the participants treatment condition	Low
Incomplete outcome data addressed?	ITT- analyses and last observation carried forward	Low
Free of selective reporting?	Expected outcomes reported	Low
Free of other bias?	54 % in one group and 63 % in the other group had dx Bulimia	Low
Total judgment		Unclear

Mitchell 2011- frem til første utfallsmåling inn, etter det er det cbt mot cbt.

	Support for judgment	Review author's judgment
Adequate sequence generation?	Efron's biased coin design and two strata	Low
Allocation concealment?	Not mentioned	Unclear
Blinding of participant and personnel?	Not mentioned and not possible and subjective outcomes	High
Blinding of outcome assessor?	Assessors were masked to treatment assignment. However, the mask was not systematically examined, and unmasked may have occurred unintentionally	Low to Unclear
Incomplete outcome data addressed?	ITT- analyses, baseline data carried forward for 6 months outcome. High drop-out rate	Low
Free of selective reporting?	Expected outcomes reported	Low

Free of other bias?	65% of CBT participants received fluoxetine, 35% in the stepped care group. One of the study co-authors had authored the self-help manual for stepped care.	High
Total judgment		High

Poulsen 2014

	Support for judgment	Review author's judgment
Adequate sequence generation?	Stratified	Low
Allocation concealment?	Used sequentially numbered envelopes by an independent researcher who had no other involvement in the study	Low
Blinding of participant and personnel?	Not mentioned and not possible and subjective outcomes	High
Blinding of outcome assessor?	Assessor were blind to the participants treatment condition	Low
Incomplete outcome data addressed?	ITT- analyses and last observation carried forward	Low
Free of selective reporting?	Expected outcomes reported	Low
Free of other bias?	None known	Low
Total judgment		Low

Salbach-Andrea 2009

	Support for judgment	Review author's judgment
Adequate sequence generation?	Not mentioned	Unclear
Allocation concealment?	Not mentioned	Unclear
Blinding of participant and personnel?	Not mentioned and not possible and subjective outcomes	High
Blinding of outcome assessor?	Not mentioned and not possible and subjective outcomes	Unclear

Incomplete outcome data addressed?	ITT- analyses, all included in the analysis	Low
Free of selective reporting?	Expected outcomes reported	Low
Free of other bias?	None known	Low
Total judgment		Unclear

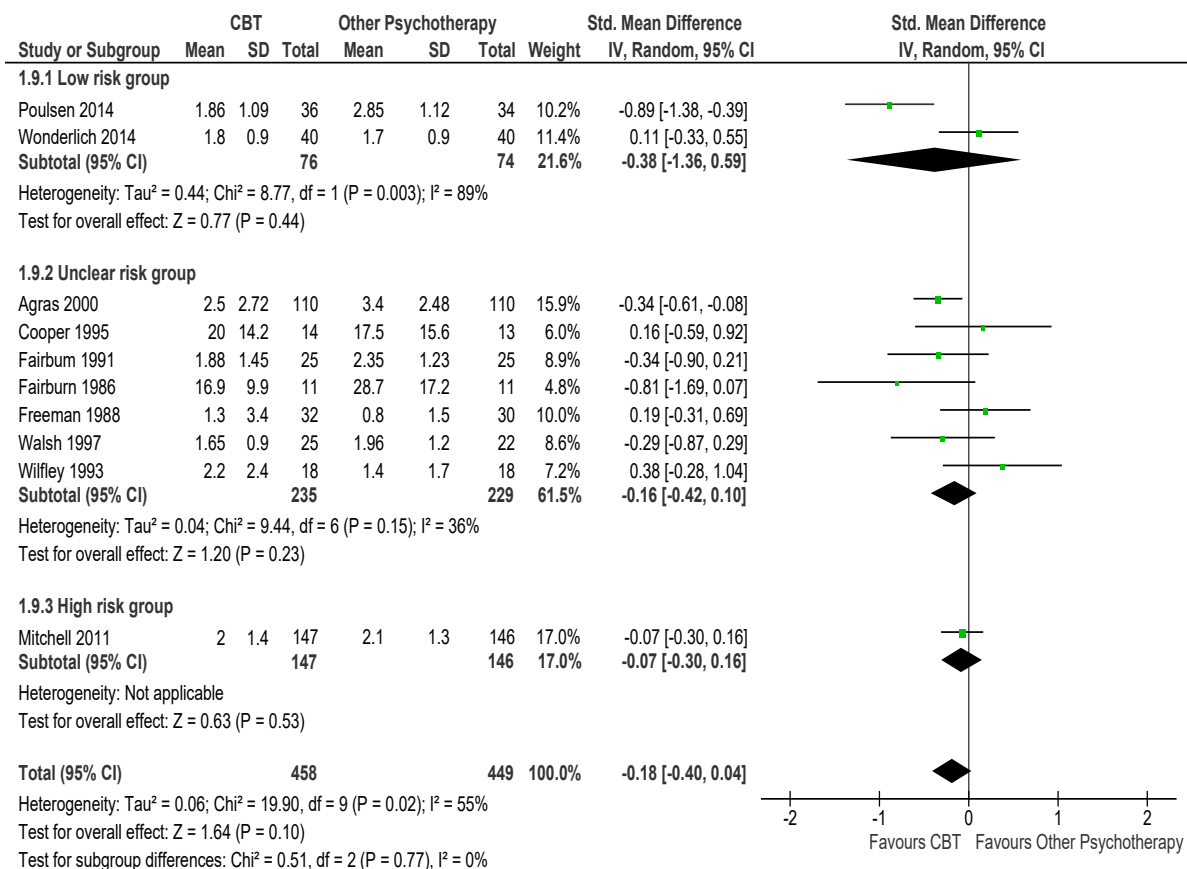
Wonderlich 2014 (and Accurso 2015)

	Support for judgment	Review author's judgment
Adequate sequence generation?	Participants were randomized to treatment condition by an independent biostatistician	Low
Allocation concealment?		Low
Blinding of participant and personnel?	Not mentioned and not possible and subjective outcomes	High
Blinding of outcome assessor?	Assessors who conducted the interviews were blind to participant randomization	Low
Incomplete outcome data addressed?	All participants included in the analysis in the group they were randomized to	Low
Free of selective reporting?	Expected outcomes reported	Low
Free of other bias?	None known	Low
Total judgment		Low

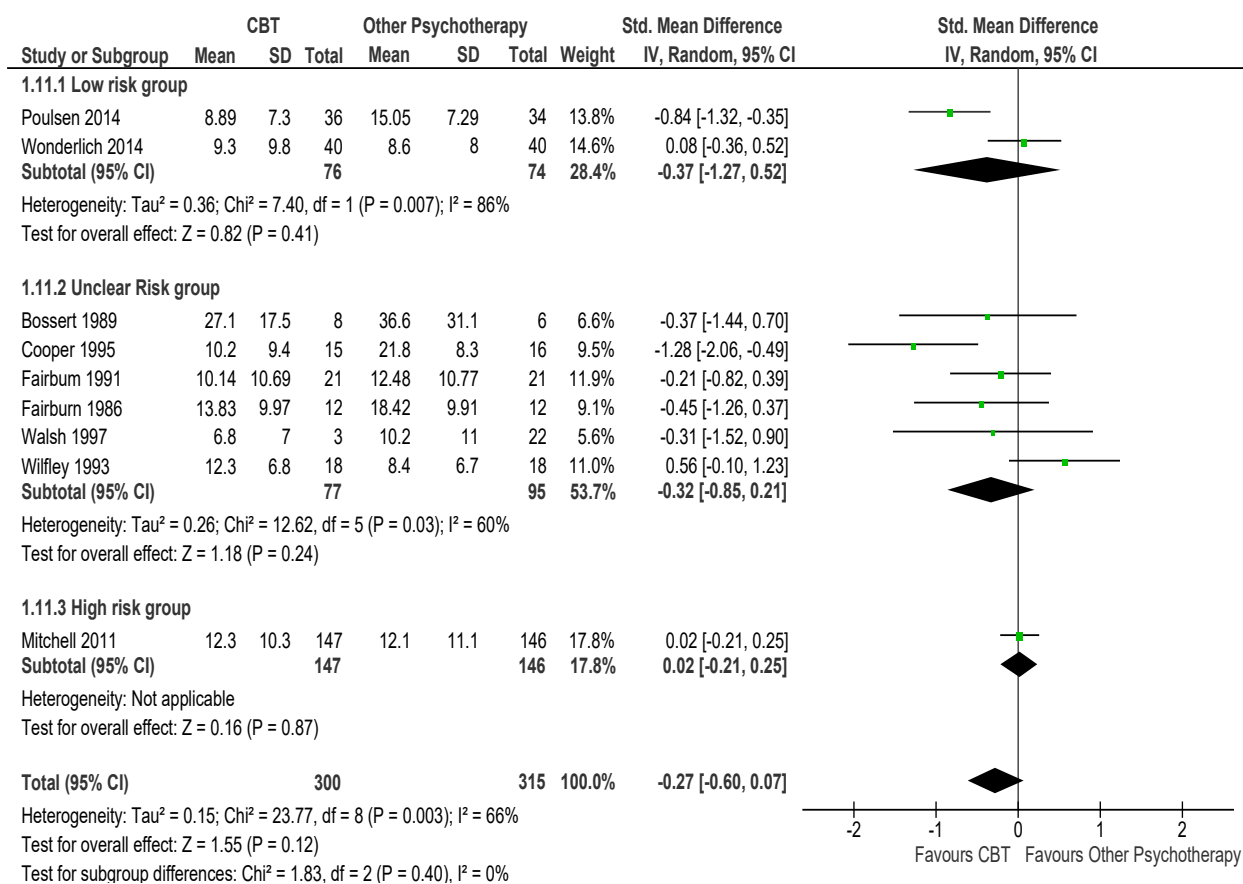
Appendix 5. Sub group analysis

1. Subgroup analysis according to risk of bias (low, high, unclear)

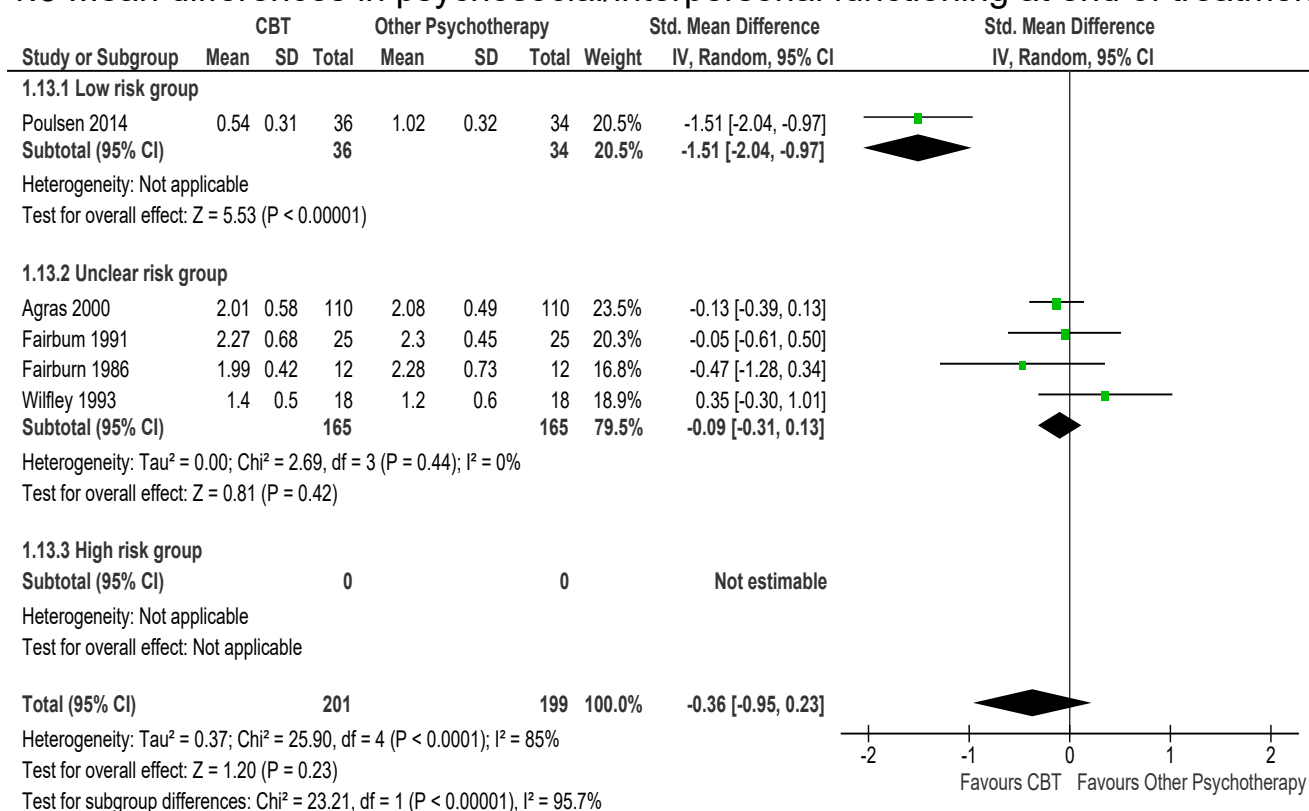
1.1 Mean bulimic symptom scores at end of treatment



1.2 Mean depression scores at end of treatment

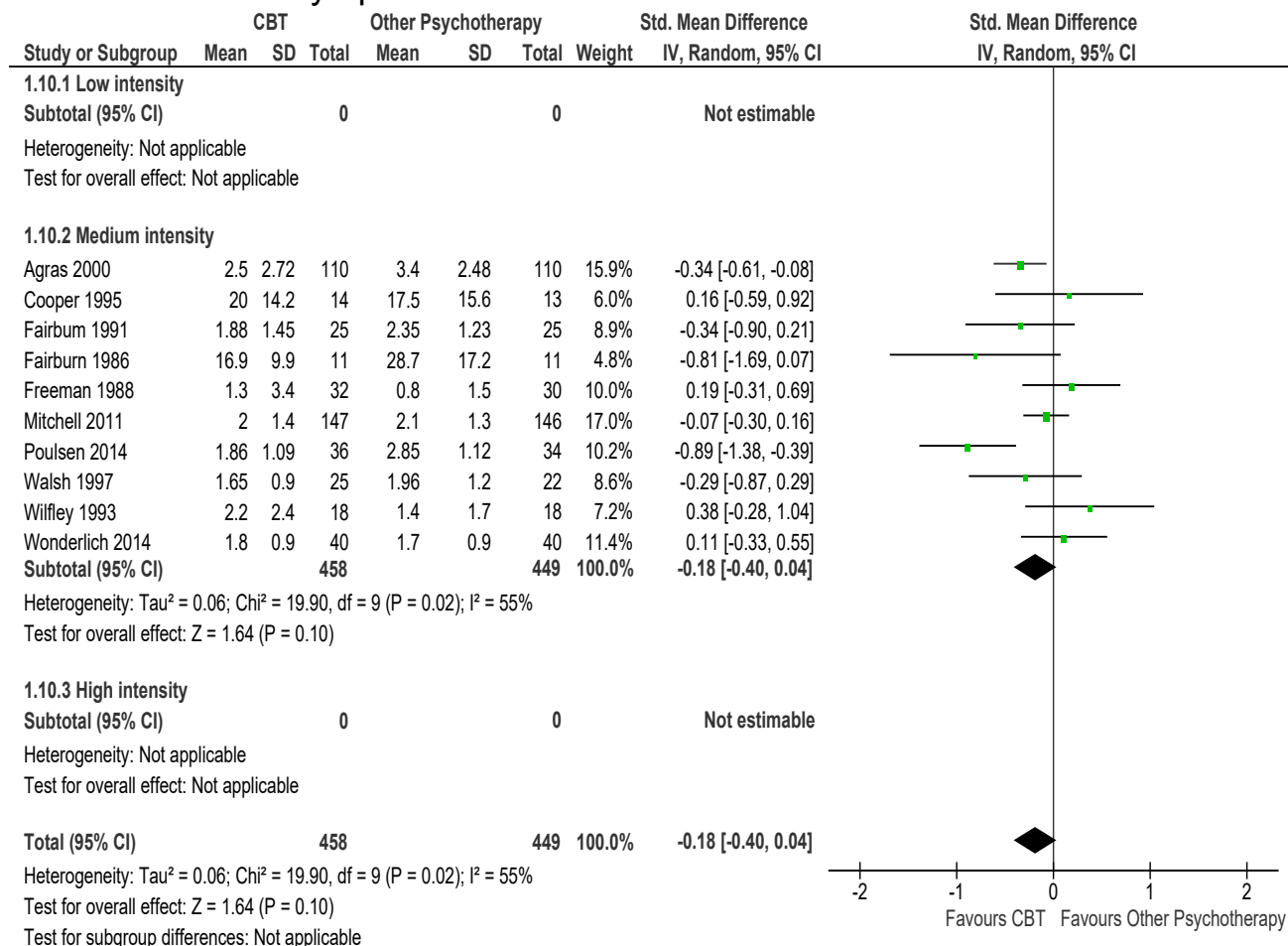


1.3 Mean differences in psychosocial/interpersonal functioning at end of treatment

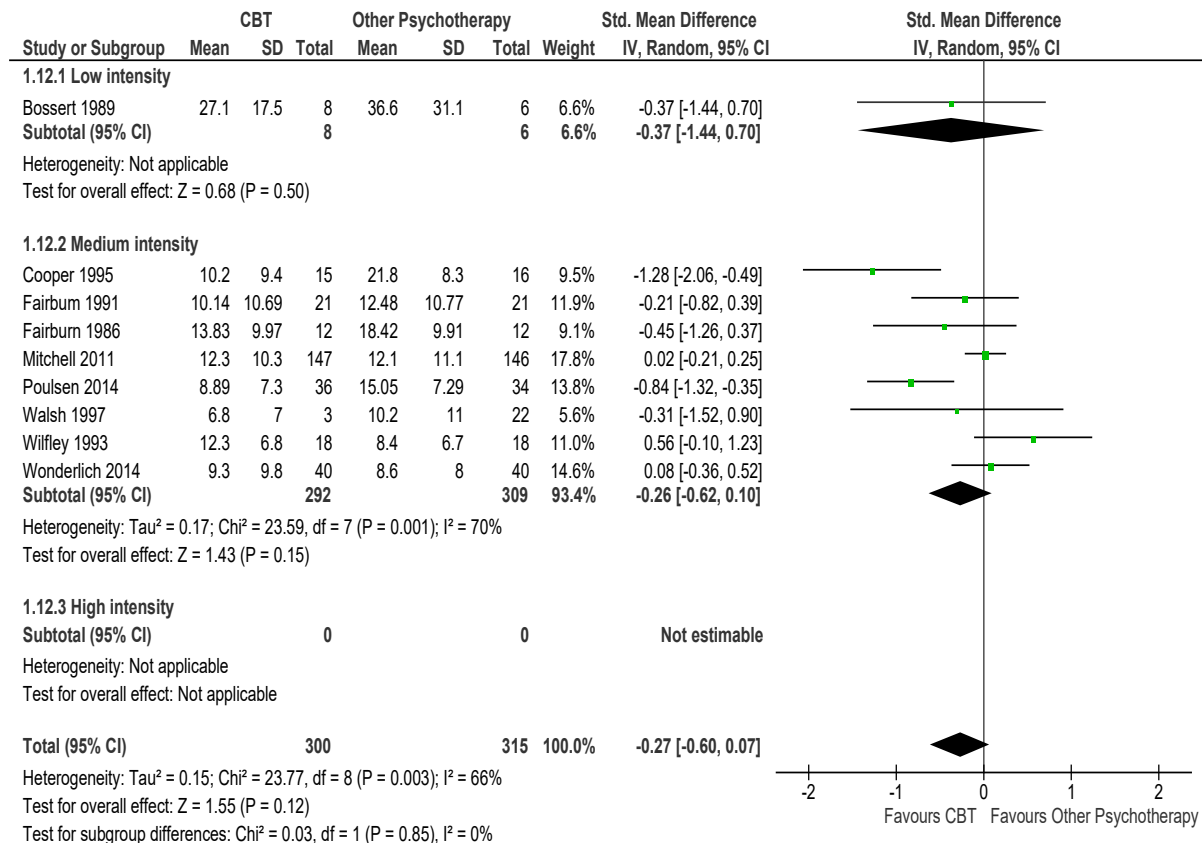


2. Subgroup analysis according to intensity of intervention (3-4 weeks as low, 15-21 weeks as medium and 50 weeks as high)

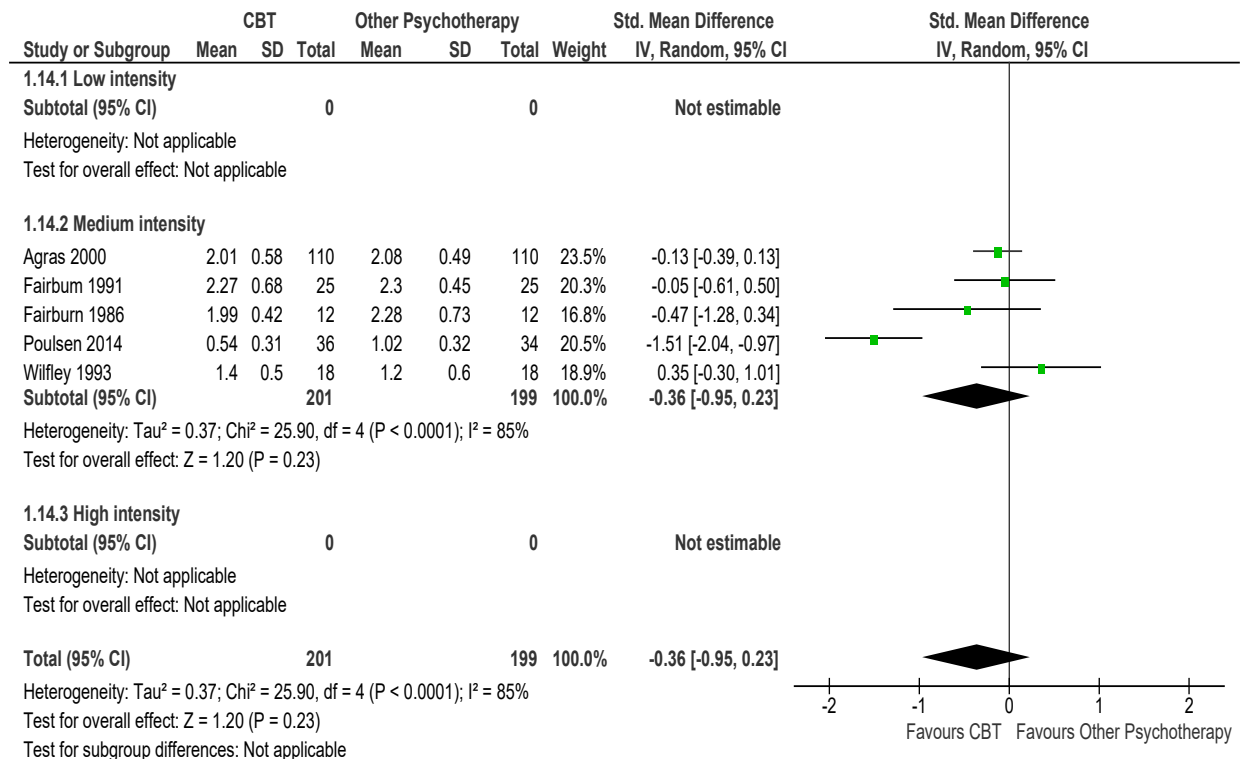
2.1 Mean bulimic symptom scores at end of treatment



2.2 Mean depression scores at end of treatment

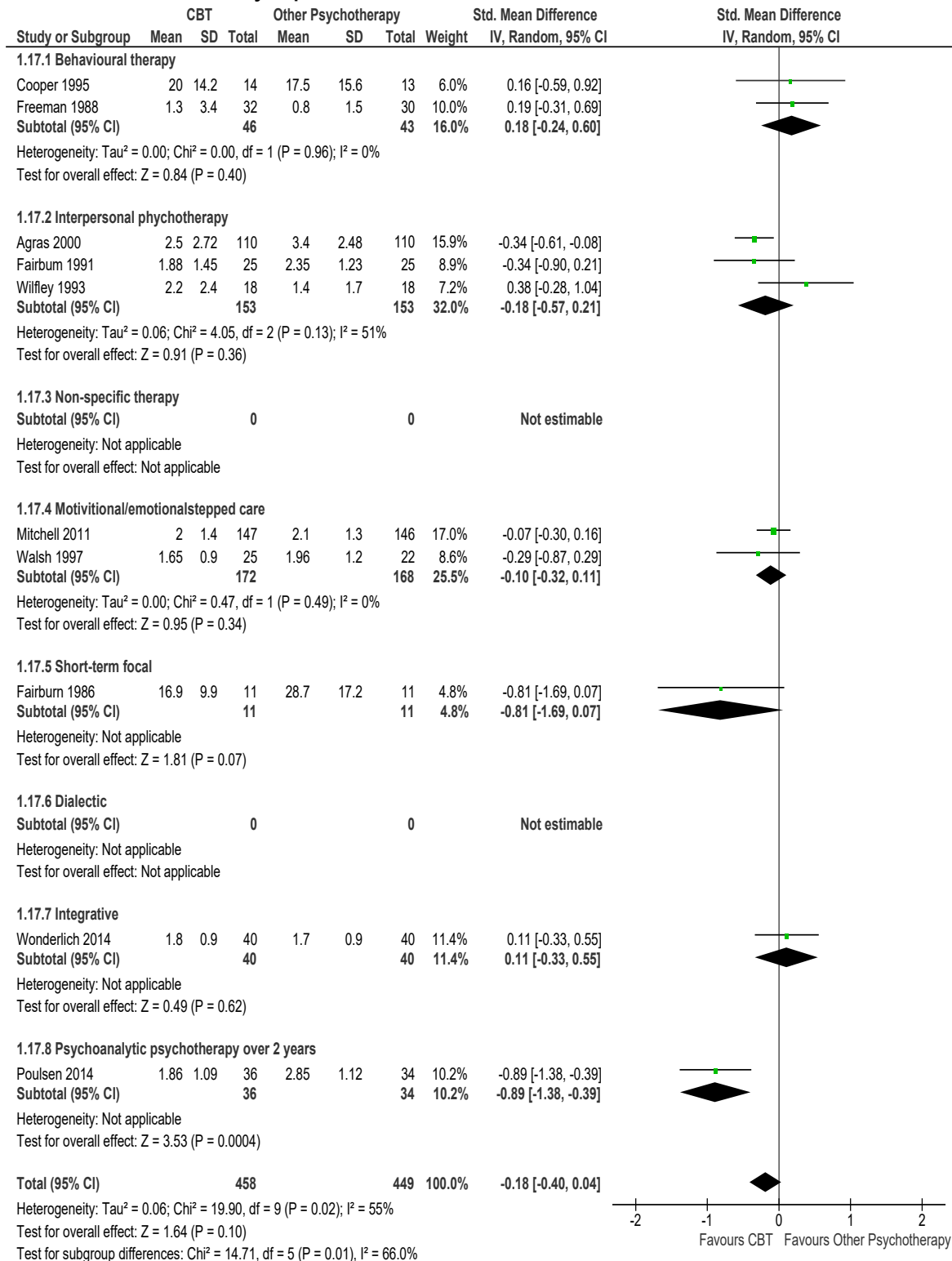


2.3 Mean differences in psychosocial/interpersonal functioning at end of treatment

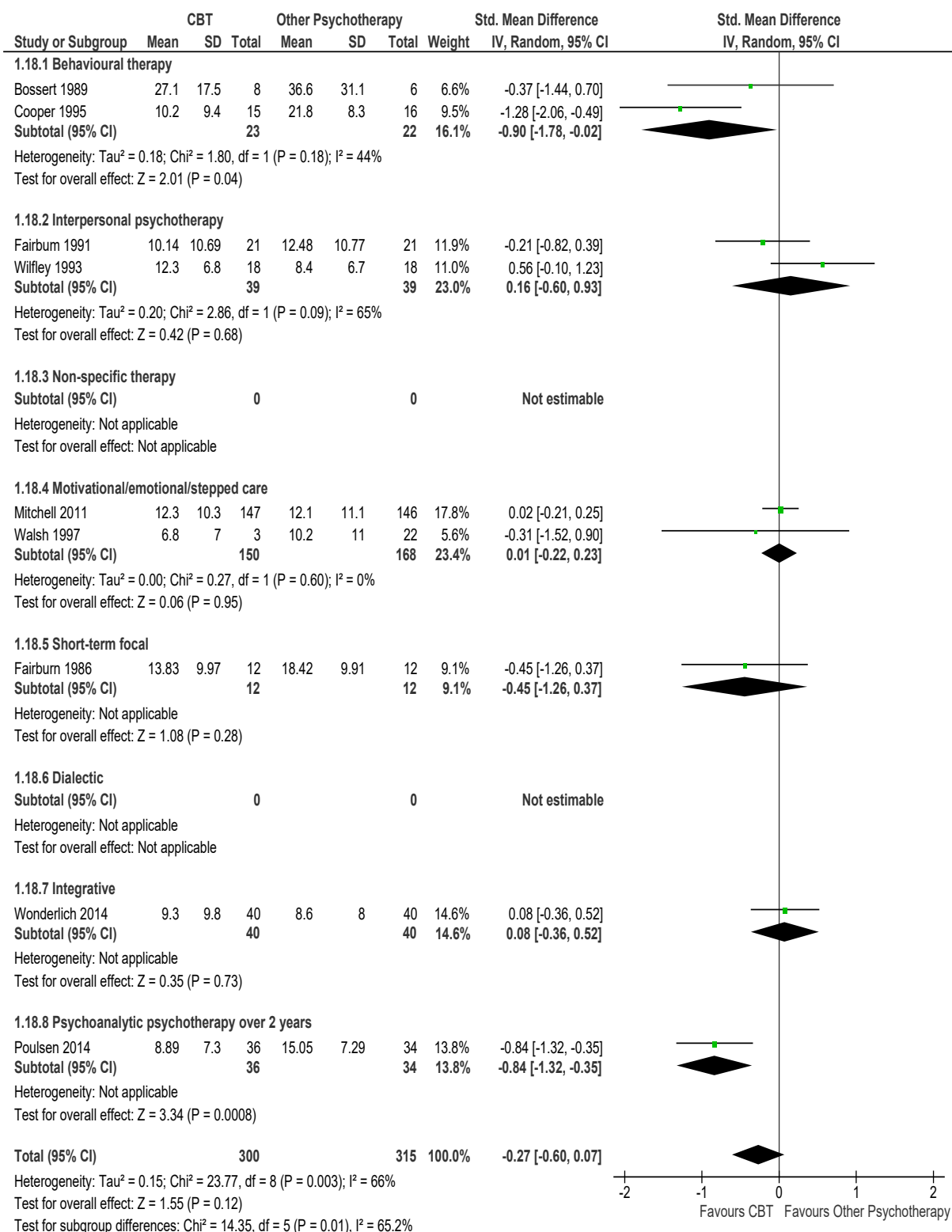


3. Subgroup analysis according to psychotherapy

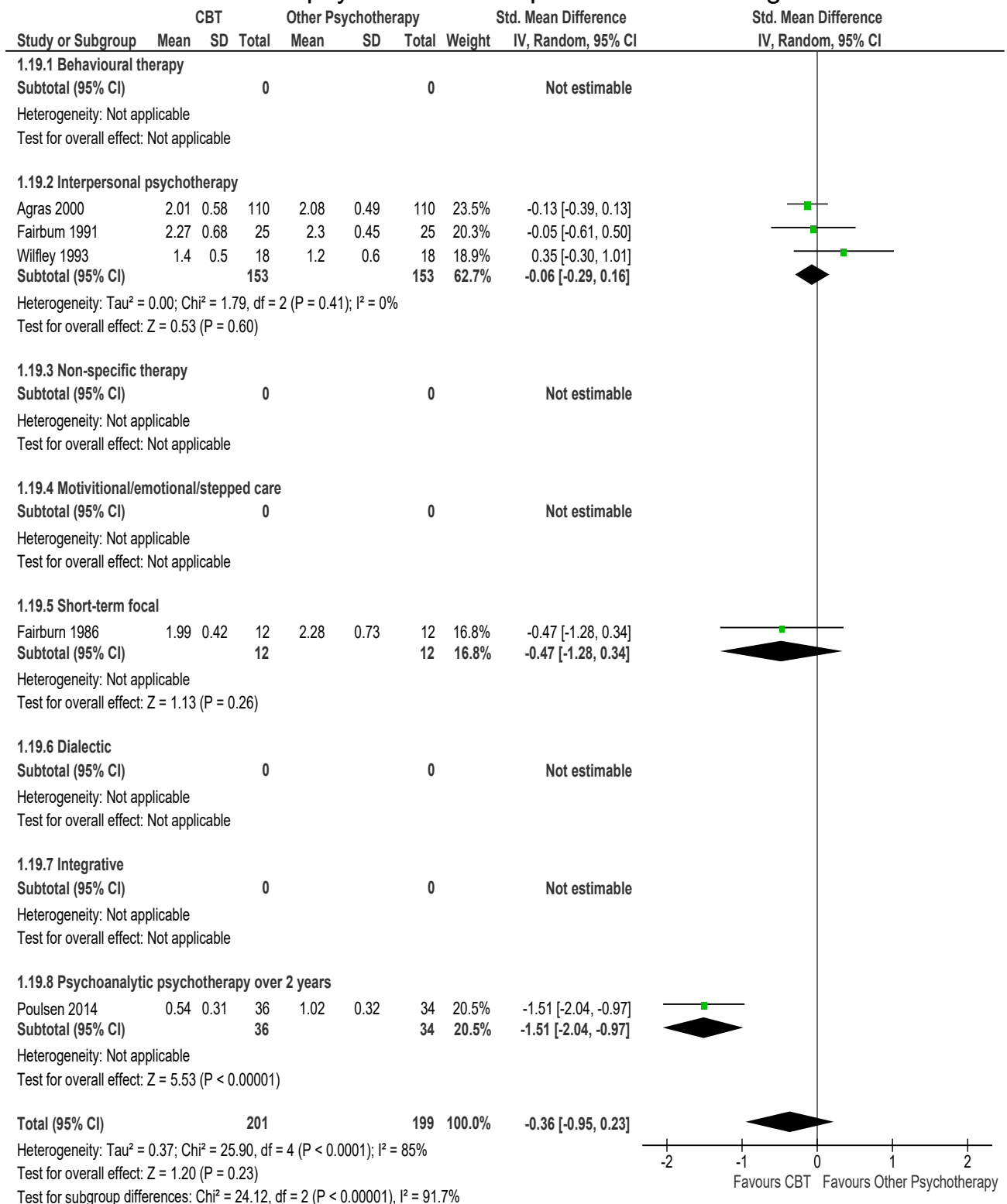
3.1 Mean bulimic symptom scores at end of treatment



3.2 Mean depression scores at end of treatment



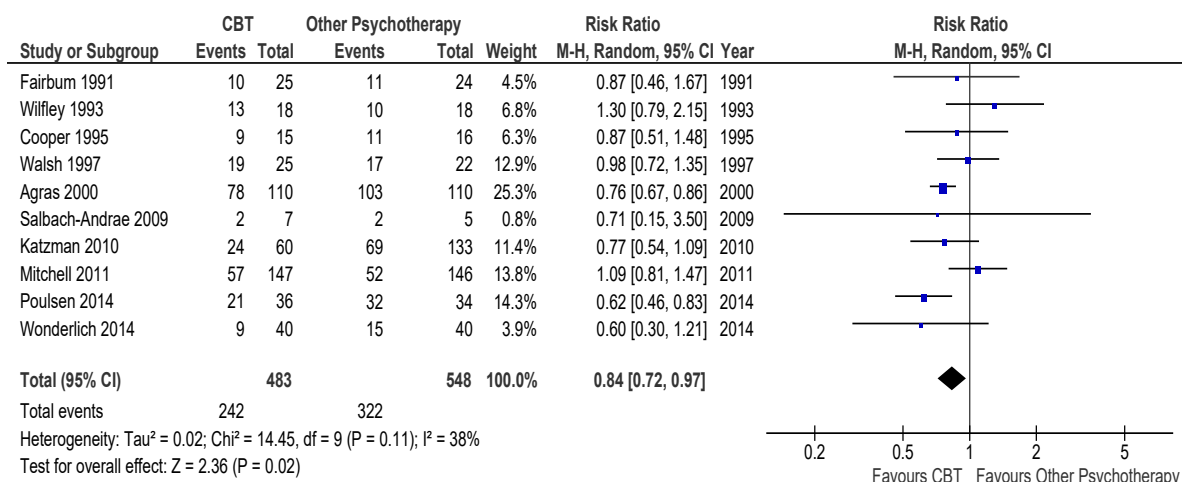
3.3 Mean differences in psychosocial/interpersonal functioning at end of treatment



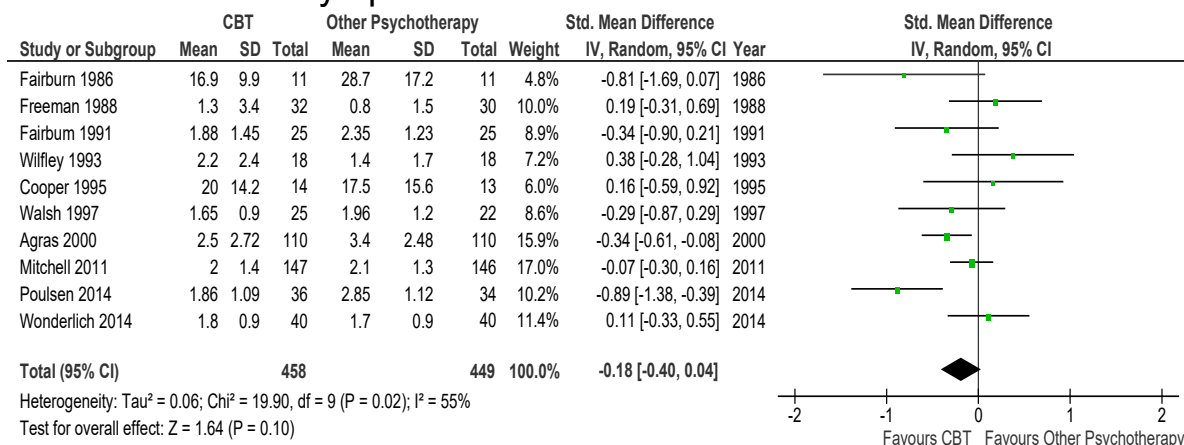
4. Sort by publication date

5.

4.1 Number of people who did not show remission at end of treatment

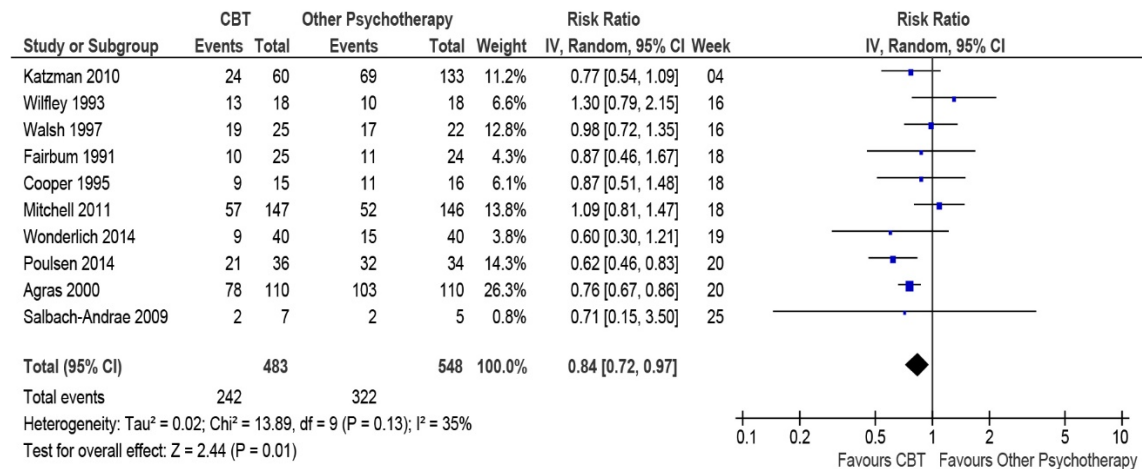


4.2 Mean bulimic symptom scores at end of treatment

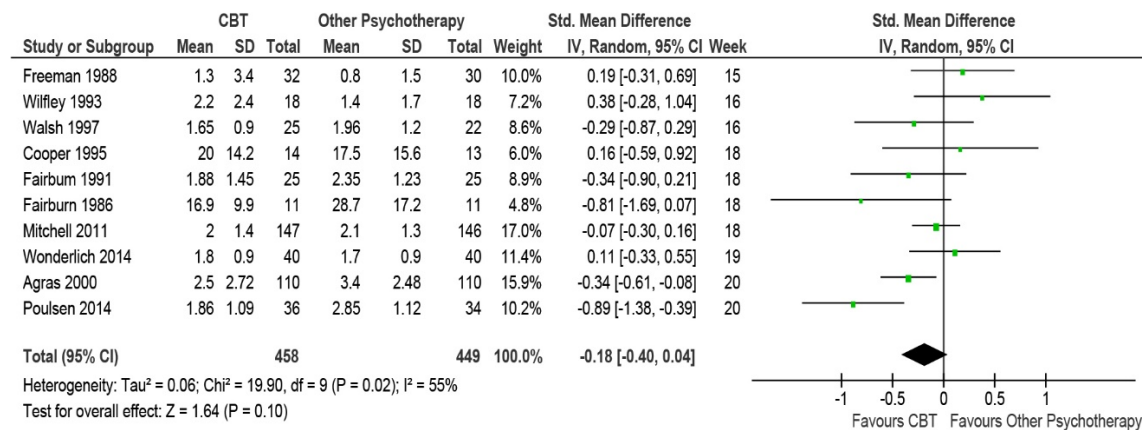


6. Sort by intensity duration (Unit: week)

5.1 Number of people who did not show remission at end of treatment



5.2 Mean bulimic symptom scores at end of treatment



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