

Does CBT work in routine clinical care?

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Collaborators in the meta-analysis work

• MA on adults

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A big thanks to all of them!

Research questions

1. Does CBT work in routine clinical care?

and if so

2. Are the results maintained at follow-up?

Efficacy vs. effectiveness

Efficacy

- The results achieved by a therapy method in a university-based research study.

Effectiveness

- The results for the therapy method in routine clinical care, e.g., at a community mental health service.

Some critique of CBT-research

- By applying many *exclusion criteria* efficacy studies have samples of patients that don't look like the clinical reality:
 - Homogeneous patients and problems
 - Little or no comorbidity
 - Easier to treat
- The therapists are *specifically trained* in a certain therapy method, and work only with this method and the patient group in question.

Meta-analyses 1: Data base search

- PsycINFO, MEDLINE and EMBASE were searched from the start to July, 2022.
- Search terms:
 - behavior* therapy OR cognitive therapy OR cognitive behavior* therapy
 - AND effectiveness study OR routine care/treatment
 - AND (the respective disorder)

Meta-analyses 2: Procedure

1. Duplicates were deleted from the list of hits in the searches.
2. Titles and abstracts were read independently by two researchers.
3. Studies, which tentatively were possible to include, were read and evaluated on the inclusion criteria independently by two researchers. Discussion to reach consensus.
4. Data from the included studies were independently extracted by two researchers. Discussion to reach consensus.
5. Effect sizes were calculated in *Comprehensive Meta-analysis* (CMA).
6. Statistical outliers ($> M \pm 2 SD$) were replaced by the exact value.
7. Hedges' g was calculated from Cohen's d to correct for small sample sizes and were used in the statistical meta-analyses.

Inclusion criteria

1. *Published* in an English-language journal.
2. Has patients *diagnosed* according to DSM or ICD.
3. Tests *a form of* CBT, CT or BT (at level 1 or 2).
4. Has patients *referred* through ordinary clinical routes.
5. Is an *effectiveness* study, i.e., done in a non-university setting.
6. Has therapists who are *practicing clinicians*.
7. Has a treated sample comprising *at least 10* patients.
8. Sample age: *-17* (children/adolescents) and *18+* (adults).
9. Has a continuous or dichotomous *measure* of the disorder.

Inclusion criterion # 3

- *American Psychological Association*, Division 12, Society of Clinical Psychology, shows on its website* which therapy methods have strong (level 1) or modest (level 2) research support.
- It is *only* studies of these methods (irrespective of format) which are included both among effectiveness and efficacy studies since it is important to have the same methods in both categories.
- APA Divison 53 has a corresponding website** for Evidence-based practice for children and adolescents.

*<https://div12.org/psychological-treatments> **<https://effectivechildtherapy.org/>

What do patients want to know?

- Patients applying for treatment at clinics in the community are usually less interested in whether the treatment is superior to a *control* condition of some kind.
- They are mainly interested in the *degree of improvement* that can be expected and the chance of achieving *remission* following the treatment offered.
- Thus, we don't restrict the meta-analyses to RCTs, but also include uncontrolled open trials.

Focus of the meta-analyses

Primary question

- Is there a difference in degree of *improvement* after treatment with evidence-based CBT in routine clinical care vs. university settings?

Type of studies included

- Both RCTs and open trials.

Assessment methods

- A *continuous* measure, e.g., rating scale, or a *dichotomous* measure, e.g., percent achieving remission of the disorder.
- The article must have data for the measure that enables calculation of *effect size* pre-post, and possibly pre-follow-up.

Number of studies and patients: children

Disorder	# of studies	RCTs	Open trials	CBT-conditions	# of patients in CBT-conditions
Depression	8	6	2	8	1002
Mixed anxiety	22	13	9	29	1790
OCD	10	4	6	11	580
PTSD	18	13	5	21	1266
ADHD	21	11	10	25	1572
ODD/CD	28	20	8	39	2016
Autism spectrum	31	4	27	34	1448
Total	138	71	67	167	9674

Number of studies and patients: adults 1

Disorder	# of studies	RCTs	Open trials	CBT-conditions	# of patients in CBT-conditions
Agoraphobia	20	6	14	27	1652
Panic disorder	10	2	8	12	1044
Social anxiety	21	5	16	26	2174
GAD	11	5	6	17	932
OCD	29	8	21	38	1669
PTSD	37	16	21	43	5514
Health anxiety	8	5	3	10	441
Total	136	47	89	173	13426

Number of studies and patients: adults 2*

Disorder	# of studies	RCTs	Open trials	CBT-conditions	# of patients in CBT-conditions
Depression	28	20	8	35	3734
Schizophrenia	17	12	5	17	1187
Insomnia	10	3	7	10	761
Eating disorders	7	2	5	10	544
Alcohol abuse	8	5	3	11	1083
BPD	19	2	17	19	715
Total	89	44	45	102	8024

*Not yet updated.

Summary

	# of studies	RCTs	Open trials	CBT-conditions	# of patients in CBT-conditions
Children	138	71 (51%)	67	167	9674
Adults	225	91 (40%)	134	275	21450
Total	363	160	203	442	31124

$p < 0.005$

Comparison with efficacy studies

- The most recently published meta-analysis of CBT for the respective disorders was retrieved.
- The included RCTs in these MAs were downloaded and read.
- RCTs included among effectiveness studies were deleted.
- From the remaining RCTs the same background- and effect data, as for the effectiveness studies, were extracted.
- Direct comparisons between effectiveness- and efficacy-studies were done in *CMA*, v. 3 and *SPSS*, v. 25.
- This is a very *stringent form of benchmarking*.

Stewart & Chambless (2009)

- They culled all appropriate efficacy studies from *the most recent meta-analysis* of CBT for adult anxiety disorders (Norton & Price, 2007).
- For each disorder they selected the *three studies* with the largest samples and calculated the pretest–posttest effect sizes for completer analyses.
- For each disorder, this yielded *a range of effect sizes* from randomized controlled studies against which to benchmark their results.

Results (Stewart & Chambless, 2009)

Disorder	Efficacy studies range	Effectiveness studies	
		Mean	# of studies
PD±AGO	1.23-1.53	1.02	17
SAD	0.89-1.75	1.04	11
GAD	0.84-2.26	0.92	11
OCD	1.15-1.88	1.45	11
PTSD	1.90-2.50	2.59	6

Number of studies (compared to Öst, 2022)

Disorder	Efficacy studies		Effectiveness studies	
	range	Öst	Mean	# of studies
PD	1.23-1.53	53	1.02	17 39
SAD	0.89-1.75	50	1.04	11 26
GAD	0.84-2.26	28	0.92	11 17
OCD	1.15-1.88	53	1.45	11 38
PTSD	1.90-2.50	51	2.59	6 43
		Total 235		56 163

Power analysis for our meta-analyses: Youth

Disorder	Treatment conditions Effectiveness studies	Treatment conditions Efficacy studies	M # of patients per condition	Power* ES 0.20
Depression	7	31	40	78.5%
Mixed anxiety	28	60	32	96.3%
OCD	11	33	23	61.2%
PTSD	21	31	43	91.6%
ADHD	25	47	44	97.8%
ODD/CD	39	94	41	99.9%
ASD	35	19	25	73.6%
			Mean:	86.6%

* Assuming high heterogeneity

Power analysis for our meta-analyses: Adults

Disorder	Treatment conditions Effectiveness studies	Treatment conditions Efficacy studies	M # of patients per condition	Power* ES 0.20
PD	12	23	40	75.2%
Agoraphobia	27	63	34	97.4%
SAD	26	89	43	99.9%
GAD	16	40	26	76.8%
OCD	38	54	30	96.0%
PTSD	43	51	78	100%
Health anxiety	10	18	47	72.5%
			Mean:	88.3%

* Assuming high heterogeneity

Background variables and effect data

k = total number of treatment groups in the included studies.

Sex (% females), Mean age of the subgroup.

Severity = the group's mean in % of the maximum score on the scale for the primary outcome measure.

Medicine = % that has psychotropic drugs for the disorder in question.

Comorbidity = % that has at least one other mental disorder at inclusion.

Treatment time = number of sessions calculated as 60 min. units.

Attrition = % of those started treatment that dropped out.

g-value = effect size (d) corrected for sample size (Hedges' g).

Remission = % of the participants fulfilling a pre-specified criterion, e.g., clinically significant change, loss of primary diagnosis, panic-free status.


Children and adolescents



Review
Cognitive behavior therapy for internalizing disorders in children and adolescents in routine clinical care: A systematic review and meta-analysis
Gro Janne H. Wergeland^{1,2,3,4}, Elin N. Riise^{5,6}, Lars-Göran Öst^{6,7}



REV
Cognitive behavior therapy for externalizing disorders in children and adolescents in routine clinical care: A systematic review and meta-analysis
Elin N. Riise^{1,2}, Gro Janne H. Wergeland^{3,4}, Urdur Njardvik⁵, Lars-Göran Öst^{6,7}



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Early Behavioral Interventions for Children and Adolescents With Autism Spectrum Disorder in Routine Clinical Care: A Systematic Review and Meta-Analysis

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 Urdur Njardvik⁴, and Lars-Göran Öst^{5, 6}

Background- and effect data: Depression

Category	k	Girls %	Age M	Severity %	Medicine %	Comorbidity %	Treatment time (hours)	Attrition %
Effectiveness	8	67.6	15.0	52.2	—	—	15.4	5.1
Efficacy	24	57.2	14.0	36.6	—	—	19.7	15.4
<i>p-value:</i>		0.10	0.35	0.08			0.30	0.001

Time	k	<i>g</i> -value	<i>p</i> -value	Remission	<i>p</i> -value	F-up mon.
Post	Effectiveness	7	1.24^a	0.81	51.7%	0.70
	Efficacy	19	1.31^a		55.5%	
F-up	Effectiveness	3	1.69^a	0.74	53.5%	0.38
	Efficacy	12	1.54^a		66.7%	
<i>a</i> = <i>p</i> < 0.0001						

Background- and effect data: Mixed anxiety*

Category	k	Girls %	Age M	Severity %	Medicine %	Comorbidity %	Treatment time (hours)	Attrition %
Effectiveness	29	49.9	9.9	57.8	—	—	12.0	10.1
Efficacy	59	48.7	9.9	58.0	—	—	15.1	10.0
<i>p-value:</i>		0.72	0.87	0.95				0.01

Time	k	<i>g</i> -value	<i>p</i> -value	Remission	<i>p</i> -value	F-up mon.
Post	Effectiveness	28	1.32^a	0.97	50.6%	0.006
	Efficacy	60	1.32^a		60.3%	
F-up	Effectiveness	22	1.91^a	0.81	69.3%	0.83
	Efficacy	47	1.84^a		70.0%	
<i>a</i> = <i>p</i> < 0.0001						

* GAD, Social phobia, and Separation anxiety disorder.

Background- and effect data: OCD

Category	k	Girls %	Age M	Severity %	Medicine %	Comorbidity %	Treatment time (hours)	Attrition %
Effectiveness	11	49.2	13.3	59.4	—	—	14.0	8.5
Efficacy	27	46.1	12.0	62.0	—	—	15.4	6.1
<i>p-value:</i>		0.40	0.12	0.21			0.37	0.39

Time	k	<i>g</i> -value	<i>p</i> -value	Remission	<i>p</i> -value	F-up mon.
Post	Effectiveness	11	2.29^a	0.35	56.7%	0.48
	Efficacy	33	2.50^a		50.7%	
F-up	Effectiveness	7	3.51^a	0.08	72.6%	0.24
	Efficacy	20	2.70^a		65.5%	
<i>a</i> = <i>p</i> < 0.0001						

Background- and effect data: PTSD

Category	k	Girls %	Age M	Severity %	Medicine %	Comorbidity %	Treatment time (hours)	Attrition %
Effectiveness	21	63.8	11.2	52.7	—	—	12.5	15.5
Efficacy	33	68.3	10.8	56.0	—	—	14.8	14.9
<i>p-value:</i>		0.46	0.64	0.57			0.24	0.81

Time	k	<i>g</i> -value	<i>p</i> -value	Remission	<i>p</i> -value	F-up mon.
Post	Effectiveness	20	1.44^a	0.17	77.4%	0.24
	Efficacy	31	1.18^a		72.1%	
F-up	Effectiveness	16	2.02^a	0.004	83.5%	0.52
	Efficacy	26	1.42^a		78.7%	
<i>a</i> = <i>p</i> < 0.0001						

Background- and effect data: ADHD

Category	k	Boys %	Age M	Severity %	Medicine %	Comorbidity %	Treatment time (hours)	Attrition %	
ADHD	Effectiveness	25	77.7	8.9	60.3	42.4	41.1	18.2	14.3
	Efficacy	43	73.0	8.9	58.5	42.0	49.6	23.5	10.2
<i>p-value:</i>		0.05	0.95	0.62	0.96	0.26	0.03	0.28	

Time	k	<i>g</i> -value	<i>p</i> -value	Remission	<i>p</i> -value	F-up mon.
Post	Effectiveness	26	0.80^a	0.53	37.7%	0.81
	Efficacy	40	0.74^a		33.4%	
F-up	Effectiveness	14	0.88^a	0.22	38.2%	0.57
	Efficacy	19	1.06^a		44.3%	
<i>a</i> = <i>p</i> < 0.0001						

Background- and effect data: ODD/CD

	Category	k	Boys %	Age M	Severity %	Medicine %	Comorbidity %	Treatment time (hours)	Attrition %
CD/ODD	Effectiveness	39	76.9	7.6	65.0	21.1	62.3	24.4	15.4
	Efficacy	62	70.2	7.5	60.6	11.7	18.0	23.7	11.4
	<i>p-value:</i>		0.03	0.82	0.04	0.10	0.001	0.87	0.15
Time		k	<i>g-value</i>	<i>p-value</i>		Remission	<i>p-value</i>		F-up mon.
Post	Effectiveness	38	0.98^a	0.42		47.6%	0.23		
	Efficacy	58	1.07^a			54.8%			
F-up	Effectiveness	30	1.06^a	0.77		56.8%	0.77		11.3
	Efficacy	38	1.10^a			54.9%			
<i>a = p<0.0001</i>									

Background and effect data: ASD

	Category	k	Boys %	Age M	Severity %	Treatment months	Treatment time (hours/week)	Attrition %	
	Effectiveness	32	84.5	38.7	57.4	18.6	24.1	6.1	
	Efficacy	18	85.7	43.0	56.4	7.2	8.6	5.7	
	<i>p-value:</i>		0.60	0.09	0.80	0.0004*	0.0001*	0.83	
Time		k	<i>g-value</i>	<i>p-value</i>				F-up mon.	
Post	Effectiveness	33	0.94^a	0.076					
	Efficacy	18	0.69^a						
F-up	Effectiveness	4	1.08^a	0.42				58	
	Efficacy	6	1.54^a						
<i>* 91% of effectiveness vs. 6% of efficacy studies were comprehensive (p < 0.0001). a = p<0.0001.</i>									

Adults

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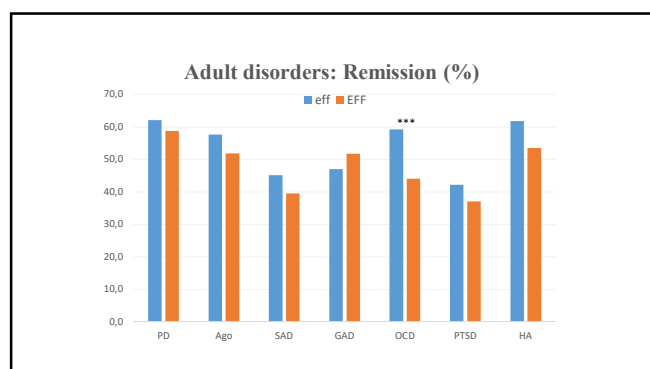
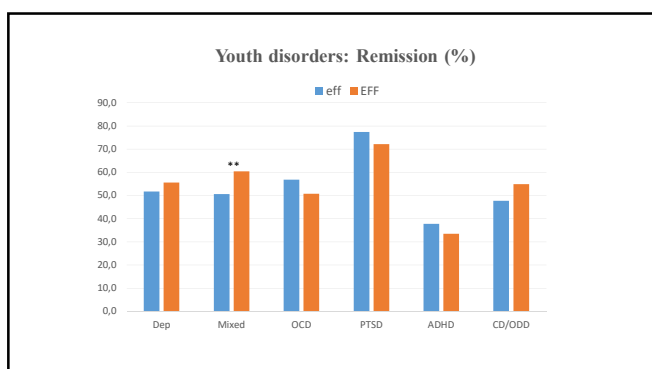
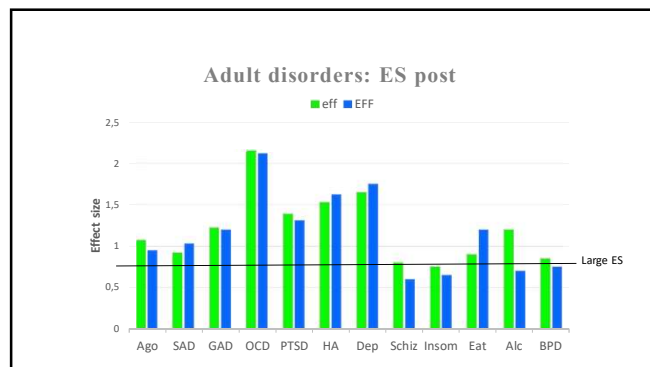
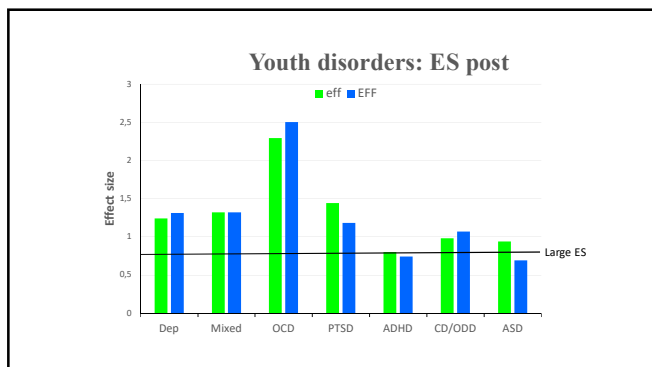
Cognitive behavior therapy for obsessive-compulsive disorder in routine clinical care: A systematic review and meta-analysis

Lars-Göran Öst^{a,b,c,e}, Pia Enebrink^d, Anna Finnes^{e,d}, Ata Ghaderi^e, Audun Havnen^{e,f}, Gerd Kvale^{g,h}, Sigrid Salomonsson^h, Gro Janne Wergeland^h

Background- and effect data: OCD

	Category	k	Women %	Age M	Severity %	Medicine %	Comorbidity %	Treatment time (hours)	Attrition %
	Effectiveness	38	59.6	33.7	61.0	57.9	55.1	19.6	15.1
	Efficacy	53	57.5	34.1	63.2	51.8	58.0	20.7	14.3
	<i>p-value:</i>		0.47	0.64	0.15	0.36	0.45	0.63	0.73
Time		k	<i>g-value</i>	<i>p-value</i>		Remission	<i>p-value</i>		F-up mon.
Post	Effectiveness	38	2.12^a	0.98		59.2%	0.001		
	Efficacy	54	2.13^a			44.0%			
F-up	Effectiveness	28	2.30^a	0.39		57.0%	0.024		15.0
	Efficacy	42	2.11^a			43.9%			
<i>a = p<0.0001</i>									

- ### Rules-of-thumb for ES
- Cohen (1988)
 - Small 0.20-0.49
 - Moderate 0.50-0.79
 - Large ≥ 0.80
 - Sawilowsky (2009)
 - Very large 1.20-1.99
 - Huge ≥ 2.00
 - Lipsey (1990) described empirically derived rules:
 - Small ≤ 0.32
 - Moderate 0.33-0.55
 - Large ≥ 0.56



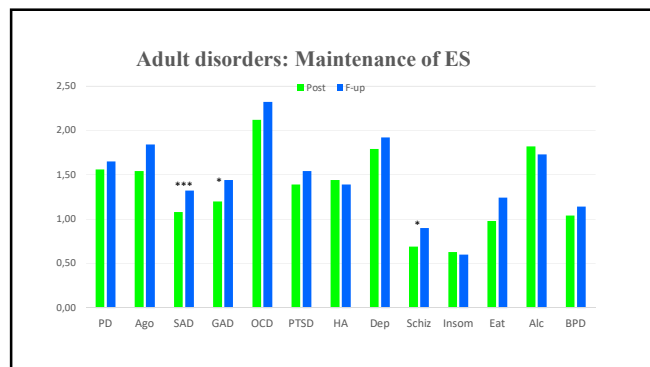
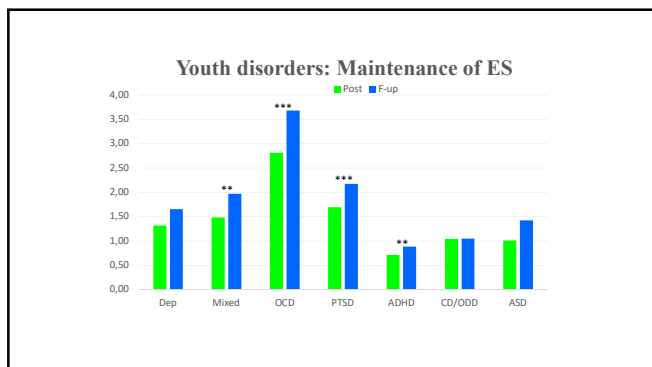
Benchmarking: percent remission

Disorder	Efficacy CBT	95% CI	Efficacy Contr.	95% CI	Effective-ness	Comp. CBT	Comp. contr.
GAD	58.0	47.0-67.6	26.3	-	47.1	=	>
SAD	44.0	38.4-49.7	12.8	8.0-19.8	45.1	=	>
PD ± Ago.	59.1	50.7-67.1	38.6	28.0-50.4	59.3	=	>
OCD	50.9	43.0-58.8	19.3	12.8-28.0	59.2	>	>
PTSD	62.7	46.1-76.7	3.8	0.5-22.4	-		
Depression	48.9	45.6-52.2	24.3	20.0-29.2	44.0	<	>

Data for efficacy studies are retrieved from Smout et al. (2019), who reported Clinically Significant Change according to the Jacobson & Truax (1991) criteria. Contr. = waitlist control group.

Is the effect of CBT in routine care maintained?

- Some studies present only *post-assessment data*, but a few of these have separate articles with follow-up data.
- Some studies present only *follow-up data*. For these it is not possible to assess change from post to follow-up.
- To get a true result for the comparison of post- and follow-up assessment *only studies having both* post- and follow-up data are included.



Summary maintenance

- Out of 7 disorders in children the ES at follow-up is:
 - Significantly higher than post for 4 (mixed anxiety, OCD, PTSD, ADHD)
 - Not significantly different from post for 3 (nominally higher 3)
- Out of 13 disorders in adults the ES at follow-up is:
 - Significantly higher than post for 3 (SAD, GAD, schizophrenia)
 - Not significantly different from post for 10 (nominally higher 7, nominally lower 3)
- **The effect of CBT is maintained** on average 12.7 months after the end of treatment (youth 15.0, adults 11.5).

von Brachel et al. (2019) Long-term follow-up

- 263 patients who had received CBT in routine care.
- Their most common diagnoses were:
 - MDD 27%, PD 17%, SAD 16%, SPE 9%, and OCD 5%.
- They were followed-up 5-20 years post-treatment; mean 8.1 years, using a structured diagnostic interview.
 - 56% met criteria for at least one disorder.
- Assessment was done with
 - Beck Depression Inventory (BDI)
 - Brief Symptom Inventory (BSI)

von Brachel et al. (2019) Clinical effects

Category	BDI (ES)	BDI (ES)	BSI (ES)	BSI (ES)
	Pre-post (0.75)	Pre-fup (0.92)	Pre-post (0.63)	Pre-fup (0.80)
CSC	29%	42%	17%	24%
RCI	5%	5%	7%	9%
No change	62%	52%	72%	65%
Deteriorated	3%	3%	4%	3%

ES = Cohen's d.
 CSC = patient who reliably improved and had post scores below the cutoff point.
 RCI = patients who reliably improved but had post score above the cutoff point.
 No change = patients who neither fulfilled RCI for improvement nor for deterioration.
 Deteriorated = patients who reliably deteriorated.

Conclusions 1

- There are **363** studies and **31124** patients in the meta-analyses.
- Effectiveness studies are done in *non-university settings*, e.g., psychiatric outpatient clinics, community centres, schools.
- Patients in the studies are *referred* through ordinary channels, or “self-referred”; they are only selected on diagnosis. They have different types of comorbidity and medication. Thus, they are *clinically representative*.
- The therapists have different training and experience; both general and specifically of the therapy method and/or disorder. They are *clinically representative*.

Conclusions 2

- When *evidence-based CBT-methods* are used in routine clinical care by *therapists who are trained* in the methods the effect sizes are *as good* as in university setting studies:
 - For 7/7 child/adolescent disorders and 13/13 adult disorders
- This *cannot be explained* by differences in background variables or lack of statistical power to detect a difference.
- The effects *are maintained* or become significantly better at follow-up on average 12.7 (6-58) months later.

CBT works in routine clinical care!