KING'S College LONDON

INSTITUTE OF PSYCHIATRY,
PSYCHOLOGY & NEUROSCIENCE

Module:

Psychological Foundations of Mental Health

Week 5:

Psychological therapies: From behaviour modification to behaviour therapy

Professor Richard Brown

Topic 4

Evaluating the efficacy of cognitive therapy

Part 2 of 3

1

In this topic

- Introduction to the design and evaluation of clinical trials for psychotherapy research
- ***Systematic review***
- The efficacy of CBT for adult depression

Click **Next** to continue

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Systematic Review

Purpose

- **collate** and **summarise** evidence
- permit **evidence-based recommendations** about useful treatments
- identify **gaps** and **shortcomings** in our evidence
- generate **new hypotheses** that can be explored

Clearly stated set of objectives (question)	E.g. How effective is CBT for depression in adults compared to antidepressant medication?
Pre-defined eligibility criteria for studies	E.g. Just conventional face-to-face CBT? Include all adults or only those under the age of 65?
Systematic literature search strategy	Identify relevant papers for review and analysis
Explicit, reproducible methodology	This increases the reliability of the review process itself and minimizes bias on the part of the reviewer
Assessment of the quality of the study	Greater importance or weight attached to higher quality studies
Systematic presentation and synthesis of studies and findings	Tables summarising details, or presented graphically

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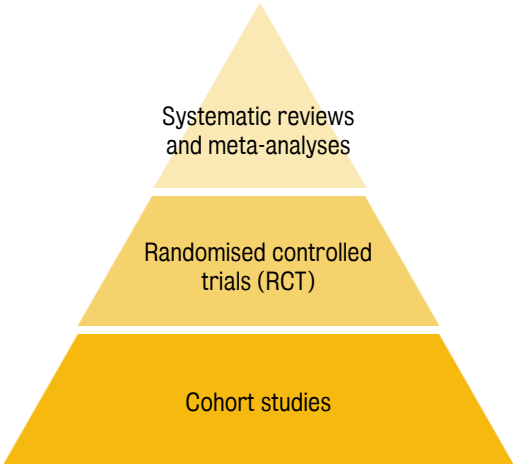
Evidence Hierarchy



RCTs and observational studies can vary in quality

Methodological shortcoming in RCTs can result in quality being downgraded

Always assess the quality of the evidence before drawing conclusions

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Grading of Recommendations, Assessment, Development & Evaluation (GRADE)

4	High	Randomised trial Double upgraded observational study
3	Moderate	Downgraded randomised trial Upgraded observational study
2	Low	Double downgraded randomised trial Observational study
1	Very low	Triple downgraded randomised trial Downgraded observational study Case series / case report
0	*Study should be disregarded completely*	

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GRADE Quality Assessment

Limitations that can reduce quality (downgraded)

- lack of blinding
- randomization problems
- small sample size, very variable results
- poor participant retention
- missing or incomplete data
- subjective outcomes, selective reporting of results

Factors that can increase quality (upgraded)

- designed to minimize bias
- large effect sizes
- systematic relationships between 'dose' and response

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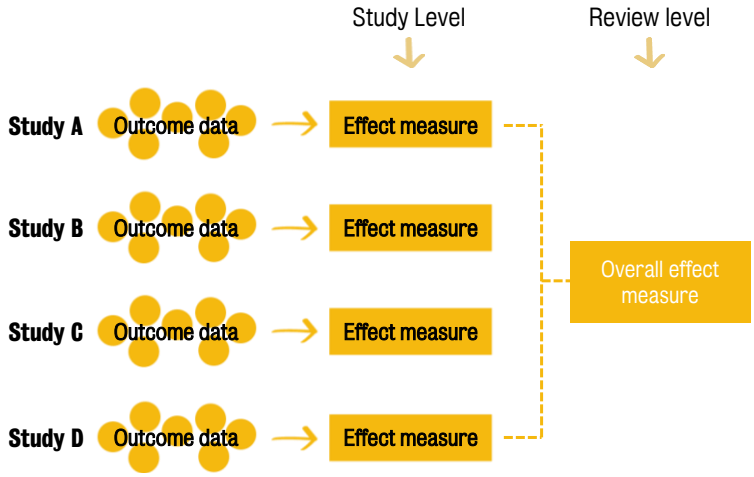
Meta-analysis

- formal statistical approach
- combine findings to draw an overall conclusion about a treatments efficacy
- together they can provide a clearer picture
- overall estimate of the size of the treatment effect
- 269 published between 2000 and 2011 for CBT for depression



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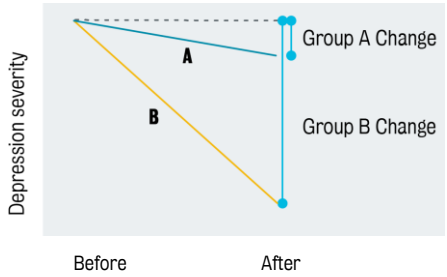
Standardising effect sizes (1)

Standardised effect size allow us to compare the results across studies using different outcomes

For continuous variables: E.g. Scores on the BDI

We're interested in the size of the change in average symptoms

Active treatment – v – Control treatment



Formulas

- Group B Change – Group A Change = **Raw mean difference**
- Mean difference/Standard deviation at baseline = **Standardised mean difference**

Results (in this example)

- **Zero** = No difference following treatment
- **Positive (+)** = Treatment favours group B
- **Negative (-)** = Treatment favours group A

Statistic calculations (Standardized Mean Difference (SMD))

- Cohen's d index
- Hedges g index
  - 0.8 = large
  - 0.5 = moderate
  - 0.2 = small

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Standardising effect sizes (2)

For discrete variables
Recovery
Relapse

Relative Risk (Risk Ratio)

Is the outcome defined in a positive way? (recovery)

Effective treatment = **Higher** relative risk

Is the outcome defined in a negative way? (relapse)

Effective treatment = **Lower** relative risk

Group A (**active** treatment) = 30%
Group B (**control** group) = 10%
Risk-Ratio (RR) = 3.0

No differential risk, RR = 1.0

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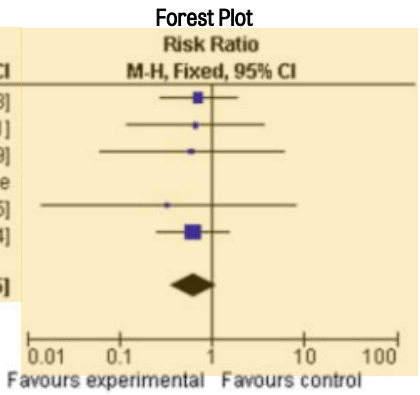
How to read a meta-analysis table

Study or Subgroup	Intervention Events	Intervention Total	Control Events	Control Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Study1	5	20	7	20	28.2%	0.71 [0.27, 1.88]
Study2	2	30	3	30	12.1%	0.67 [0.12, 3.71]
Study3	1	15	2	18	7.3%	0.60 [0.06, 5.99]
Study4	0	20	0	30		Not estimable
Study5	0	40	1	40	6.0%	0.33 [0.01, 7.95]
Study6	7	102	12	110	46.4%	0.63 [0.26, 1.54]
Total (95% CI)		227		248	**100.0%**	**0.64 [0.36, 1.15]**
Total events	15		25			

Heterogeneity: Chi² = 0.22, df = 4 (P = 0.99); I² = 0%
Test for overall effect: Z = 1.51 (P = 0.13)

Forest Plot



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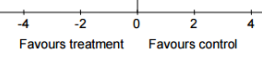
Meta-analysis: CBT- versus antidepressants

Review: CBT23
Comparison: 06 Sub 04: cognitive behavioural therapies versus antidepressants by severity
Outcome: 03 Depression scores: continous measures post-treatment – HRSD

Study or sub-category	N	Treatment Mean (SD)	N	Control Mean (SD)	SMD (fixed) 95% CI	Weight %	SMD (fixed) 95% CI
01 Moderate and moderate/severe							
Murphy1984 (US)	24	7.75(6.50)	24	10.92(8.22)		5.20	-0.42 [-0.99, 0.15]
Jarrett1999 (US)	36	10.25(8.10)	36	8.64(6.42)		7.94	0.22 [-0.25, 0.68]
Keller2000 (US)	216	16.00(9.26)	220	15.80(9.49)		48.37	0.02 [-0.17, 0.21]
Thompson2001 (US)	31	12.50(7.00)	33	15.00(6.20)		6.96	-0.37 [-0.87, 0.12]
Miranda2003 (US)	90	11.51(7.28)	88	9.84(6.57)		19.60	0.24 [-0.06, 0.53]
DIMIDJIAN2006	17	10.41(4.05)	28	11.57(5.32)		4.66	-0.23 [-0.84, 0.37]
MARSHALL2008	37	6.30(4.81)	30	4.70(5.32)		7.26	0.31 [-0.17, 0.80]
Subtotal (95% CI)	451		459			100.00	0.04 [-0.09, 0.17]
Test for heterogeneity: Chi² = 9.55, df = 6 (P = 0.14), I² = 37.2%							
Test for overall effect: Z = 0.58 (P = 0.56)							
02 Severe							
Elkin1989 (US)	59	10.70(7.90)	57	9.80(7.80)		35.22	0.11 [-0.25, 0.48]
Blackburn1997 (UK)	24	10.70(7.60)	23	11.40(7.30)		14.28	-0.09 [-0.66, 0.48]
Scott1997 (UK)	18	13.50(5.30)	16	16.50(6.80)		9.98	-0.48 [-1.17, 0.20]
DERUBEIS2005	50	9.92(6.95)	100	9.23(6.86)		40.52	0.10 [-0.24, 0.44]
Subtotal (95% CI)	151		196			100.00	0.02 [-0.20, 0.24]
Test for heterogeneity: Chi² = 2.70, df = 3 (P = 0.44), I² = 0%							
Test for overall effect: Z = 0.17 (P = 0.86)							
03 Severe and severe/very severe							
Hautzinger (in-pats)	22	10.00(8.10)	22	11.30(7.60)		28.56	-0.16 [-0.75, 0.43]
Hautzinger1996 (Ge)	33	8.50(5.80)	24	8.80(6.80)		36.20	-0.05 [-0.57, 0.48]
DIMIDJIAN2006	21	12.67(6.96)	38	13.13(7.74)		35.23	-0.06 [-0.59, 0.47]
Subtotal (95% CI)	76		84			100.00	-0.09 [-0.40, 0.23]
Test for heterogeneity: Chi² = 0.09, df = 2 (P = 0.95), I² = 0%							
Test for overall effect: Z = 0.53 (P = 0.60)							



NICE guidelines (2009)

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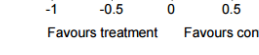
Meta-analysis: CBT+ antidepressants v antidepressant

Review: CBT34
Comparison: 07 Cognitive behavioural therapies + antidepressants versus antidepressants (with clinical management or GP care)
Outcome: 04 Depression scores: continuous measures post-treatment

Study or sub-category	N	Treatment Mean (SD)	N	Control Mean (SD)	SMD (fixed) 95% CI	Weight %	SMD (fixed) 95% CI
02 HRSD scores post-treatment							
Hautzinger (in-pats)	20	9.30(7.50)	22	11.30(7.60)		5.92	-0.26 [-0.87, 0.35]
Murphy1984 (US)	22	8.23(7.00)	24	10.92(8.22)		6.44	-0.35 [-0.93, 0.24]
Miller1989 (US)	14	15.30(13.84)	17	23.80(14.84)		4.18	-0.57 [-1.30, 0.15]
Hautzinger1996 (Ge)	32	8.00(5.50)	24	8.80(6.80)		7.80	-0.13 [-0.66, 0.40]
Scott1997 (UK)	18	13.50(5.30)	16	16.50(6.80)		4.68	-0.48 [-1.17, 0.20]
Keller2000 (US)	226	10.80(9.47)	220	15.80(9.49)		61.42	-0.53 [-0.72, -0.34]
Thompson2001 (US)	36	12.00(6.90)	33	15.00(6.20)		9.56	-0.45 [-0.93, 0.03]
Subtotal (95% CI)	368		356			100.00	-0.46 [-0.61, -0.31]
Test for heterogeneity: Chi² = 2.64, df = 6 (P = 0.85), I² = 0%							
Test for overall effect: Z = 6.10 (P <0.00001)							
Total (95% CI)	368		356			100.00	-0.46 [-0.61, -0.31]
Test for heterogeneity: Chi² = 2.64, df = 6 (P = 0.85), I² = 0%							
Test for overall effect: Z = 6.10 (P <0.00001)							



NICE guidelines (2009)

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Hollon et al. (2014)

Cognitive therapy with antidepressant medications vs antidepressants alone on the rate of recovery in major depressive disorder

- N = 452
- 3 centres
- goal of treatment was long term recovery
- chronic or recurrent depression
- naturalistic treatment (up to 42 months)

This was defined by:

Outcome criteria

- **remission** (HDRS < 9 for 4 consecutive weeks)
- **recovery** (6 months following remission without relapse)

Methods

- divided into low and high severity depression
- randomised to medication alone or CBT + medication
- blind assessment

Hollon et al. (2014)

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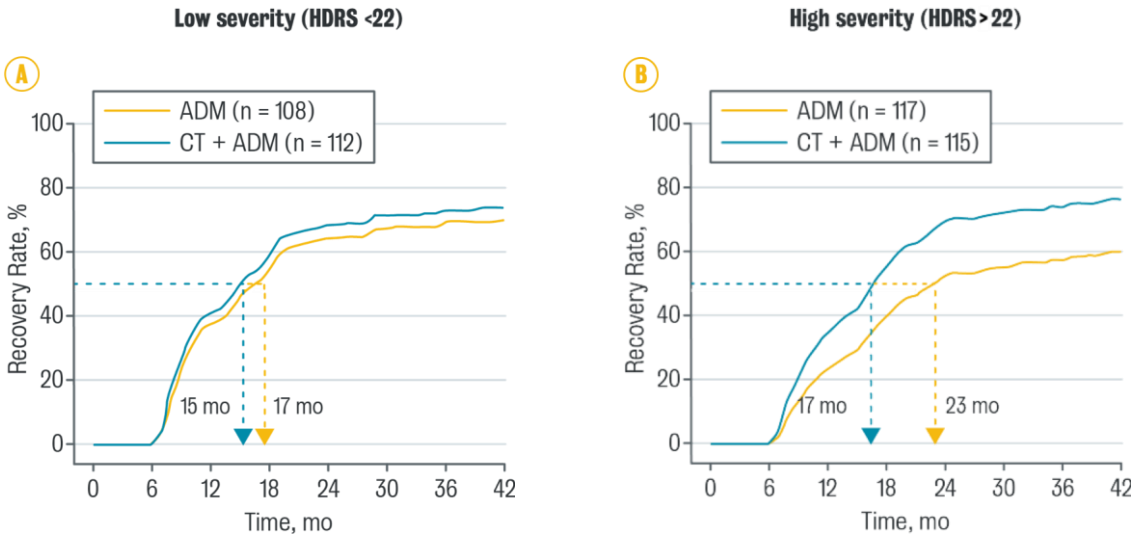
Time to recovery as a function of severity



Hollon et al. (2014)

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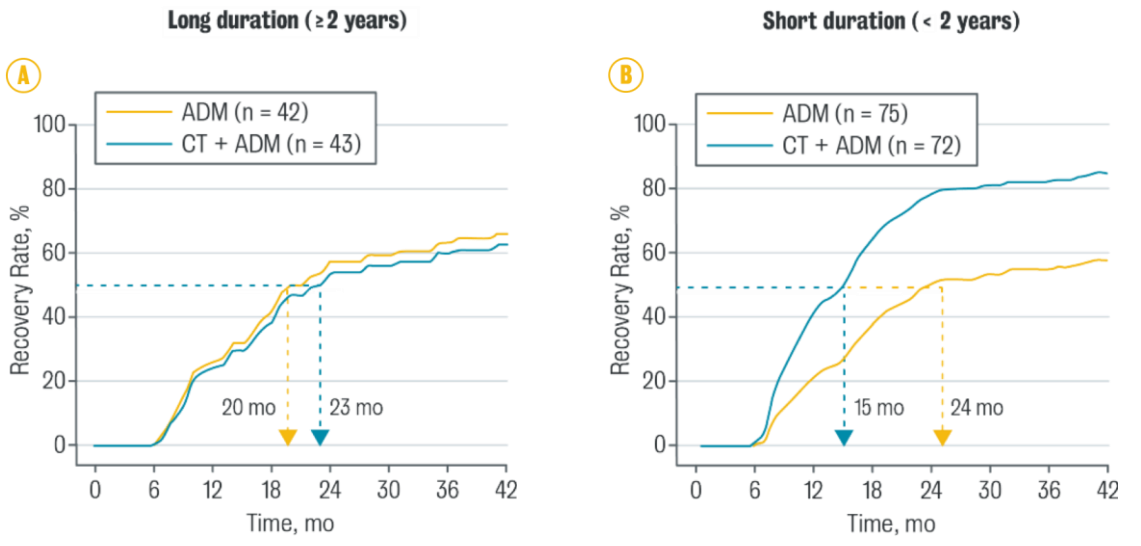
Time to recovery as a function of duration of depression (high severity group)



Hollon et al. (2014)

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Is CBT more effective than other psychotherapies? (1)

CBT can be an effective treatment!

If CBT is an effective treatment for depression, is there something special about the approach?

Is it more effective than psychotherapies not based on the cognitive model?

What would a meta-analysis show?

Cuijpers et al. (2013)

Analysis of trials between 1966 and 2011

N = 46 studies comparing CBT and other psychotherapy

List of therapies

- Non-directive supportive therapy (N = 16)
- Behavioural Activation therapy (N = 8)
- Psychodynamic psychotherapy (N = 5)
- Interpersonal therapy (N = 5)
- Problem Solving Therapy (N = 3)
- Other psychotherapies (N = 9)

Cuijpers et al. (2013)

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Is CBT more effective than other psychotherapies? (2)

Variable	n_{comp}	*g*	95% CI	*z*
CBT, compared with other psychotherapies				
Supportive therapy	16	0.1	–0.06 to 0.25	1.22 ns
BA	8	–0.02	–0.25 to 0.21	–0.17 ns
Psychodynamic psychotherapy	5	0.25	–0.07 to 0.58	1.52 ns
IPT	5	–0.09	–0.39 to 0.20	–0.61 ns
PST	3	–0.13	–0.39 to 0.13	–0.99 ns
Other psychotherapies	9	–0.09	–0.29 to 0.12	–0.85 ns

Positive g favours CBT, negative g favours alternative treatment

What does this mean for CBT?

- does not mean that CBT does not 'work' or not different to placebo (supportive therapy)
- indicates that CBT based on cognitive model may not be the only useful approach
- alternatively, all psychotherapies may share common (non-specific) factors that drives improvement

Cuijpers et al. (2013)