
A Meta-Analysis of the Effectiveness of Internet-Based Psychotherapeutic Interventions

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Meta-Analysis

- ❖ An advanced statistical procedure to review empirical studies that have a common purpose
 - ❖ In principle, meta-analysis is based on calculation of **Effect Size** (*ES*) that corresponds to magnitude of differences (treatments) within or between relevant comparisons, or to magnitude of relationships
 - ❖ *ES* can be averaged and compared across studies so **overall** as well as **moderated** effects may be revealed
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Meta-Analysis (2)

- ❖ In contrast to conventional hypothesis testing, meta-analysis attempts to examine **size** of effect, not only its significance
 - ❖ $ES = 0.0$ to 0.2 **Small effect**
 $ES = 0.3$ to 0.5 **Medium effect**
 $ES = 0.6$ to 0.8 **Large effect**
 - ❖ Enables generalization of effects among studies that use various populations, measures, and manipulations
 - ❖ With a large number of studies, it enables the examination of possible moderators that interact with effects
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The Current Research: Inclusion Criteria

- Study published in a **refereed journal in English** at any time until March 2006 (inclusive)
 - Study empirically examined the effectiveness of **psychological treatments** conducted through Internet-delivered therapy
 - The intervention was based on the actual implementation of a **psychological intervention** (rather than just the provision of online support or an online assessment)
 - The study contained **more than five participants** receiving online treatment
 - Treatment effectiveness was based on at least **pre-post quantitative comparisons**
 - Effectiveness of treatment was based on at least **one actual outcome measure**
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The Current Research: Preparing the Data Set

- The 64 articles report of **92** independent studies, on a total number of **9,764** patients who received some kind of online therapy (**11,922** participants in total – including controls)
 - 69** research articles met the inclusion criteria. Of those, **5** articles duplicated findings reported in another article (already in the data set), making the final articles included in the meta-analysis to be **64**
 - 47** studies were excluded from the data base (mostly qualitative analyses, cases studies, and literature reviews) as they did not meet the inclusion criteria. Generally, all of those excluded reported successful online interventions
 - In total - **116** articles pertained directly to effectiveness of online therapy were identified
 - Searches conducted through *PsycInfo, MEDLINE, Google Scholar, Scopus*
 - In addition we used articles' bibliographies and personal contacts to find relevant articles
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Results: Distribution of Effect Size

- ❖ 92 studies
 - ❖ 9,764 patients
 - ❖ 746 effects on numerous outcome measures for effectiveness
 - ❖ Mean Weighted $ES = 0.53$ (medium-large effect)
 - ❖ Range of ES for the 746 outcome measures:
from -2.90 to 5.10
75 zero and negative (10%)
 - ❖ Range of ES for the 92 studies:
from -0.10 to 1.68
5 negative (5.4%)
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Coding and Analyses of Moderators

The following information refers to the main findings of factors moderating (or not) effectiveness of **Internet-delivered therapy**

Approximately **15** variables were coded for possible moderation of effects

3 independent coders

Meaningful moderators that had sufficient data were analyzed in examining possible interaction with *ES*

Type of Outcome Measure

$Q_B = 226.42; p < .0001$

Type of Measure	<i>ES</i>	<i>n</i>	<i>N</i>
Evaluation by Expert	0.93	3	140
Behavior	0.61	26	6272
Self-Report	0.43	62	4518
Physical	0.19	26	1892
Other	1.54	8	222

Durability of Therapeutic Effects: Post-Therapy vs. Follow-up

$Q_B = 2.46; ns$

Time	<i>ES</i>	<i>n</i>	<i>N</i>
Post	0.52	85	11,327
Follow-up	0.59	33	1,724

Comment: no signs for diminishing effects with time were noticed

Type of Problem

$Q_B = 197.98; p < .0001$

Type	ES	n	N
Anxiety & Panic	0.80	23	498
PTSD	0.88	3	148
Other	0.55	8	1,427
Smoking Cessation	0.62	8	5,460
Problem Drinking	0.48	6	351
Body Image	0.45	5	221
Depression	0.32	16	2,500
Medical Conditions	0.27	7	212
Eating Disorders & Weight Control	0.17	16	1,604

Psychotherapeutic Approach

$$Q_B = 190.22; p < .001$$

Type	<i>ES</i>	<i>n</i>	<i>N</i>
CBT	0.83	51	3,960
Psycho-Educational	0.46	25	6,796
Behavioral	0.23	14	1,136
Other	0.65	2	30

Age of Patients

$$Q_B = 181.23; p < .001$$

Age Group	<i>ES</i>	<i>n</i>	<i>N</i>
Less than 18	0.15	6	287
19-24	0.48	14	840
25-39	0.62	27	6,941
40 and over	0.20	31	3,172
Age not reported	0.63	14	682

eTherapy vs. Web Therapy

$Q_B = 2.49; ns$

Type	<i>ES</i>	<i>n</i>	<i>N</i>
eTherapy	0.46	27	1,399
Web Therapy	0.54	65	10,523

Intervention Mode

$Q_B = 7.34; p < .05$ (Individual vs. Group)

$Q_B = 7.12; p < .01$ (eTherapy, Individual vs. Group)

Type	<i>d</i>	<i>n</i>	<i>N</i>
Individual – Web Therapy	0.54	65	10,523
Individual – eTherapy	0.57	9	490
Group – eTherapy	0.36	18	909

Web Therapy: Interactive vs. Static Site

$$Q_B = 32.07; p < .001$$

Type	<i>ES</i>	<i>n</i>	<i>N</i>
Static	0.52	14	6,323
Interactive	0.65	51	4,200

Web Therapy: Open vs. Closed Site

$$Q_B = 50.40; p < .001$$

Type	<i>ES</i>	<i>n</i>	<i>N</i>
Open	0.48	14	6,003
Closed	0.68	51	4,520

eTherapy: Synchronicity of Communication

$Q_B = 0.20; ns$

Type	<i>ES</i>	<i>n</i>	<i>N</i>
Synchronous	0.49	12	493
Asynchronous	0.44	15	906

eTherapy: Type of Modality

$$Q_B = 55.16; p < .001$$

Type	ES	n	N
Audio	0.91	1	54
Chat	0.53	9	231
Email	0.51	7	383
Forum	0.34	8	523
Webcam	0.31	2	208

Use of online Supplements

Supplements of various online tools are frequently used to enhance treatment:

In Web therapy

- **Email reminders**
- **Discussion/
support forum**

In eTherapy:

- **A website**
 - **Discussion/
support forum**
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Use of Email Reminders

$Q_B = 0.02; ns$

Email Reminders	<i>ES</i>	<i>n</i>	<i>N</i>
Without	0.53	52	4,701
With	0.53	40	7,221

Similar findings for use of email reminders in web therapy alone

Use of Audio as Supplement

$$Q_B = 7.65; p < .05$$

Audio	ES	n	N
Yes	0.32	8	680
No	0.54	84	11,242

Use of Chat as Supplement

$$Q_B = 25.32; p < .001$$

Chat	<i>ES</i>	<i>n</i>	<i>N</i>
Yes	0.15	6	572
No	0.54	86	11,350

Use of Webcam as Supplement

$$Q_B = 3.74; p < .05$$

Webcam	<i>ES</i>	<i>n</i>	<i>N</i>
Yes	0.35	6	466
No	0.54	86	11,456

Effectiveness of Internet vs. Traditional Therapy

14 studies directly compared Internet therapy to f2f therapy in random assignments (RCT) of patients to either condition

$$Q_B = 0.32; ns$$

Type of Intervention	<i>ES</i>	<i>n</i>	<i>N</i>
Internet	0.39	14	940
Face-to-face	0.34	14	593

Effectiveness of Internet vs. Traditional Therapy (2)

Quite a few meta-analyses on effectiveness of **traditional** (f2f) psychological interventions have been conducted to date

Generally, across reviews and meta-analytic methods, average ES for traditional interventions has been found **between 0.5 and 0.6** – similar to the average ES found in the current meta-analysis

As in the current meta-analysis, effect sizes tremendously vary, especially along therapeutic approach and problem area

Limitations

- ❖ Studies were not screened for quality
 - ❖ Publication and “fail-safe” biasing effects
 - ❖ Possible errors in publications
 - ❖ Statistical assumptions and debates
(e.g., what statistical model should be used?)
 - ❖ Possible confounding effects
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General Conclusions

On average, online therapy is effective to a medium-large degree. This is similar to traditional offline, f2f therapy

Internet therapy is differentially effective in terms of therapeutic approach used, treating various problems, and changing certain outcomes. In certain combinations it can reach very highly effective results

Specific online applications and procedures seem to enhance effectiveness while others seem to hinder it

thank you for listening...

