# Dose-Response Studies in Psychotherapy

**Howard, K. I., Kopta, S. M., Krause, M. S., & Orlinsky, D. E. (1986). The dose-effect relationship in psychotherapy. *The American Psychologist, 41*, 159–164.**

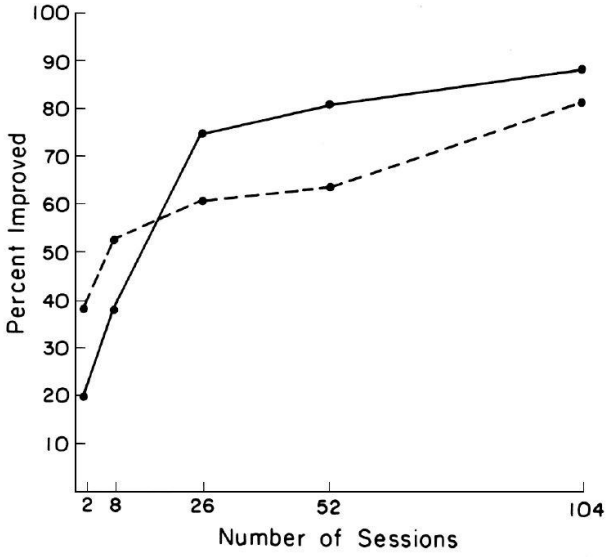
Investigated the proportion of *improved* patient cases over the number of sessions provided. Figure 1 displays objective ratings (solid line) and subjective ratings (broken line) of improvement over sessions.

A meta-analytic review of the research calculated that "50% of the patients improved in about 8 to 13 sessions of treatment for anxiety and depression".

The authors noted from this review that "About 75% of patients should have shown measurable improvement by the end of 6 months of once-weekly psychotherapy (26 sessions) and about 85% by the end of a year of treatment."

NOTE: *Improvement* doesn't imply recovery.

**Figure 1**
*Relation of Number of Sessions of Psychotherapy and Percentage of Patients Improved*




*Note.* Objective ratings at termination are shown by the solid line; subjective ratings during therapy are shown by the broken line.

**Kopta, S., Howard, K., Lowry, J., & Beutler, L. (1994). Patterns of symptomatic recovery in psychotherapy. *Journal of Consulting and Clinical Psychology, 62 (5)*, 1009–1016.**

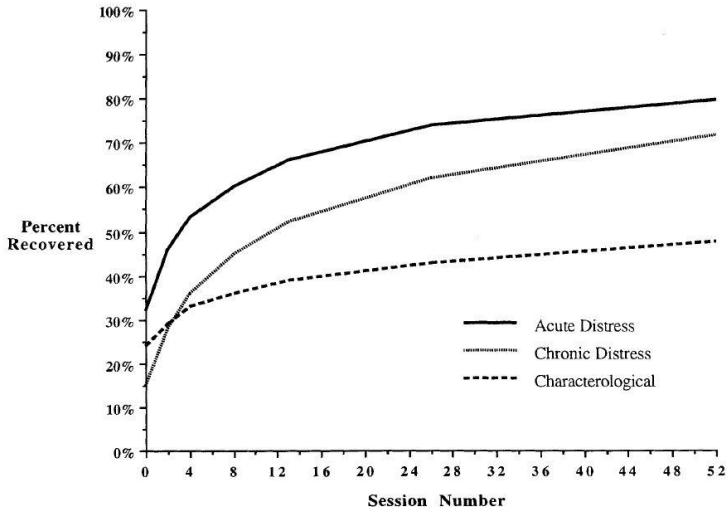



*Figure 2.* Dose–effect relations, averaged across symptoms, for acute, chronic, and characterological symptom classes ($N = 854$).

The authors calculated 'median effective dose' calculating the point where 75% of patients responded to treatment (referred to as ED75).

ED75 rate for depression was at least 22 sessions and 56 sessions for anxiety, inclusive of both acute and chronic cases. The average ED75 for all conditions was 58.

NOTE: Critiques of the study show over-representation of psychoanalytic treatments, inconsistent outcome criteria, a pre-post measurement design, and patient classification by diagnostic categories.

**Kadera, S., Lambert, M., & Andrews, A. (1996). How much therapy is really enough? A session-by-session analysis of the psychotherapy dose-effect relationship. *Journal of Psychotherapy: Practice and Research, 5*, 132-151.**

In this study, the authors obtained ratings of symptom severity at every session. Jacobson and Traux's clinically significant change criteria were applied to investigate how many sessions are required to bring symptom severity closer to the mean for a normal population than a dysfunctional population. The sample used in this study included people who began therapy in the functional range.

FIGURE 1. Relation of percentage recovered to number of sessions received for 21 previously dysfunctional patients receiving psychotherapy.

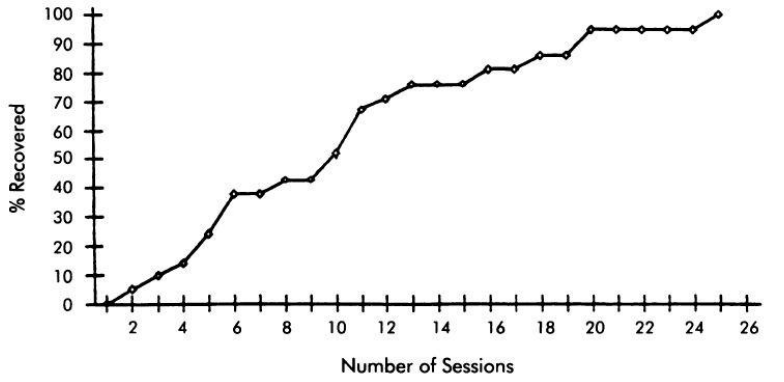
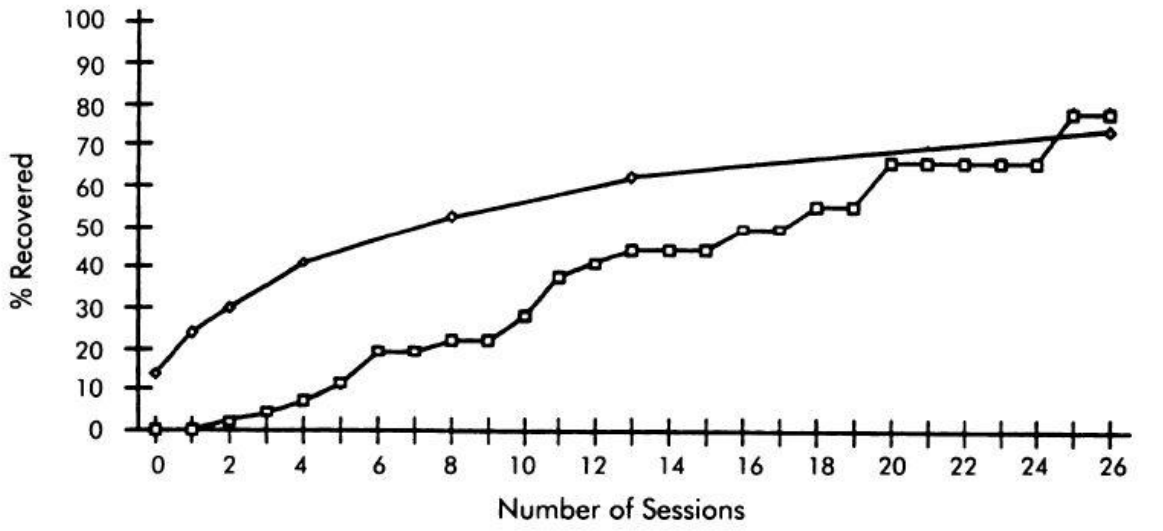



Figure 1 shows that around 50% of cases recovered by 10 sessions inclusive of all cases. However, the rate of recovery for patients in the dysfunctional range at the beginning of treatment were quite different (Figure 2). A summary for cases in the dysfunctional range is as follows, "The number of patients expected to be recovered at 4 sessions is 7%; at 8 sessions, 22%; and at 13 sessions, 44%". For 50% of cases to recover 16 sessions were needed. For 75% of cases to recover, 26 sessions of therapy were needed.

FIGURE 2. Dose-effect estimates calculated from 45 dysfunctional patients receiving psychotherapy (squares) compared with dose-effect estimates of Howard et al.[8] (diamonds).




Functional cases showed some degree of improvement within a mean of 7 sessions with optimal improvement at 13 sessions. Cases beginning treatment closer to the dysfunctional range showed signs of improvement after 11 sessions, with optimal levels of improvement at 25 sessions. In both groups, the proportion of improved cases remained low in these early stages of therapy.

**Anderson, E., & Lambert, M. (2001). A survival analysis of clinically significant change in outpatient psychotherapy. *Journal of Clinical Psychology, 57*, 875–888.**

Participants completed the OQ every session to track progress. Rates of deterioration, improvement and recovery were assessed. Results are summarised below, comparing to prior (Kadera et al.) study.

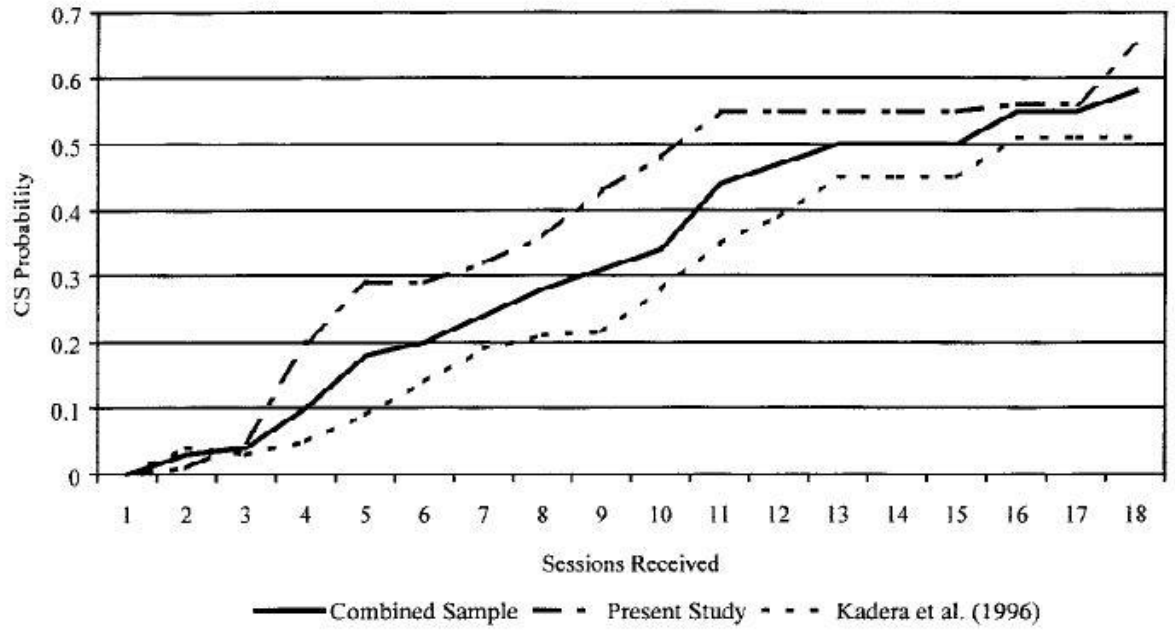



*Figure 1.* Cumulative probability of attaining clinically significant change by sessions received, for the full samples of the present study, Kadera et al. (1996), and the combined sample.

The researchers summarise their results as follows:

"Our estimate suggests that somewhere in the vicinity of 11 to 16 sessions are required for 50% of clients to attain CS [clinically significant] change... Of course, a standard of 75% of patients having a CS response would be more compassionate and reasonable from the point of view of patients and their families. The combined data from this study and Kadera et al. suggest a standard of 25 sessions to be more reasonable."

**Hansen,N., Lambert, M., & Forman, E. (2002). The psychotherapy dose-response effect and its implications for treatment delivery services. *Clinical Psychology: Science and Practice, 9*, 329–343.**

Opens with general consensus at the time in the field that 13-18 sessions are required for 50% of patients to improve. Provided a review of the studies showing 50% patient improvement rate:

**Table 1.** Summary of dose-response study findings on number of sessions required to reach a 50% patient improvement rate

| Reference | Number of Sessions | Comments |
|---|---|---|
| Howard et al. (1986) | 8 | Did not use clinical significance, only pre-post comparisons |
| Kopta et al. (1994) | 5, 14, 104 | Session numbers refer to 50% response in acute, chronic, and characterological symptoms, respectively |
| Maling, Gurtman, & Howard (1995) | 10, 38 | Session numbers refer to 50% response in problems with control and social detachment, respectively |
| Barkham et al. (1996) | 8, 16+ | Eight sessions for 50% symptom improvement, 16 sessions for 40% interpersonal problem improvement |
| Kadera, Lambert, & Andrews (1996) | 16 | Followed patients session by session, found flatter rate of improvement than the previous pre-post designs |
| Anderson & Lambert (2001) | 13 | Used survival analysis on patient data collected from each session |
| Hansen & Lambert (in press) | 18 | Average survival time computed from treatment sites in study |

The authors summarise that "there is a surprising consensus across a number of these studies, and it can be argued, in the broadest sense, that some number of sessions greater than 10 but fewer than 20 is typically required before 50% of patients meet criteria of recovery. A realistic summary of this literature suggests that between 13 and 18 sessions of therapy are needed for psychiatric symptom alleviation, across various types of treatment and patient diagnosis."

**Table 5.** Percentage of patients, by site, who achieve clinically meaningful improvement within median treatment length

| Site | Sample Size | Median # Sess. | % Who Recover | % Who Improve |
|---|---|---|---|---|
| Employee Assistance Program | 3,269 | 3 | 7.4% | 18.3% |
| University Counseling Center | 1,188 | 4 | 5.9% | 15.2% |
| Local HMO | 595 | 2 | 5.7% | 14.3% |
| National HMO | 536 | 4 | 9.1% | 24.4% |
| Training CMH | 123 | 8 | 6.5% | 20.3% |
| State CMH | 361 | 4 | 5.8% | 17.7% |
| Total | 6,072 | 3 | 6.5% | 16.6% |

The article contains a representative sample of RCT studies showing rate of recovery at various sessions (Table 2). Treatments for depression under 12 sessions long had a 52.6% mean recovery rate. By comparison, the rate of patient recovery increased above 65% for treatments ranging from 12 to 20 sessions.

The figures on Table 5 (left) show that the median number of sessions people access leaves very few people in a state of recovery.

The author concludes "combining conclusions gleaned from Tables 1 and 5, we can see that half of the patients receiving psychotherapy receive only about a quarter of the length of treatment that the literature has noted as necessary to observe a 50% response rate."

**Hansen, N., & Lambert, M. J. (2003). An evaluation of the dose-response relationship in naturalistic treatment settings using survival analysis. *Mental Health Services Research, 5*(1), 1-12.**

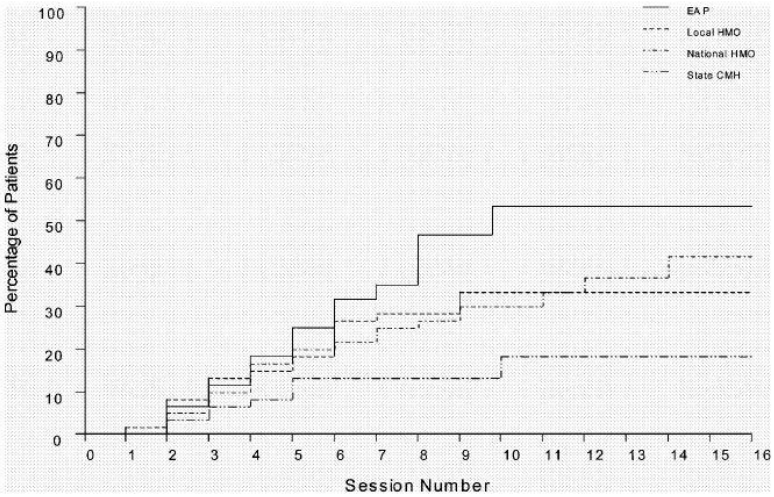



**Fig. 1.** Kaplan–Meier survival plots for patients who recover in therapy by treatment site.

Researchers used a very large sample or 4,761 people drawn from a variety of treatment settings to investigate rates of improvement across sessions of psychological therapy. As with prior studies, all participants completed the OQ-45 every session to track outcomes.

Data showed higher levels of symptom severity at baseline for people accessing care at local and national HMOs, which would be comparable to the Medicare treatment setting. The highest level of severity was found in community mental health centres. In Australia, some of those patients would also access care via the Medicare system.

The results show that between 15 - 19 sessions are required to achieve at least a 50% recovery rate. The researchers calculated that at 8.5 sessions some level of improvement has been detected for 50% of cases, however that figure includes cases where a person does not indicate significant levels of dysfunction at the beginning of treatment. Patients referred via the Better Access initiative are eligible when there is a diagnosis and treatment is deemed by the GP or psychiatrist to be needed. These patients who are referred for treatment in a state of dysfunction were found to require 16 sessions or more in at least 50% of cases to show clinically meaningful levels of improvement.

The key finding of this study is that naturalistic studies mirror the results found by other researchers in settings that follow similar referral and treatment protocols to Medicare in Australia.

**Harnett, P., O'Donovan, A., & Lambert, M. J. (2010). The dose response relationship in psychotherapy: Implications for social policy. *Clinical Psychologist, 14*(2), 39-44.**

In this study, researchers investigated whether the same trends found in prior samples from the US would also apply to the Australian population. Session-by-session progress was measured with the OQ-45 to identify functional/dysfunctional cases and calculate deterioration, improvement, and recovery.

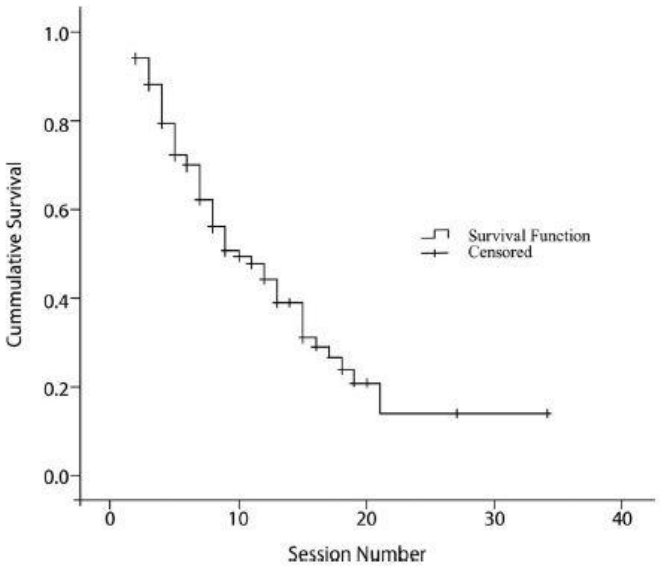



Figure 1. Kaplan-Meier survival plot for clients of whole sample who reach reliable change.

The Kaplan-Meier (Kaplan & Meier, 1958) procedure for survival analysis was applied to the data from this study to estimate the proportion of the population who will attain CS (or RC) at session one, session two, and so on, based on the data from the sample. The results displayed in Figure 2 (right) show that 50.6% of people show reliable change (either improvement or recovery) at 10 sessions. Conversely this implies that 49.4% of patients show no change after receiving 10 sessions. After 18 sessions of therapy 76.1% of people showed a reliable change.

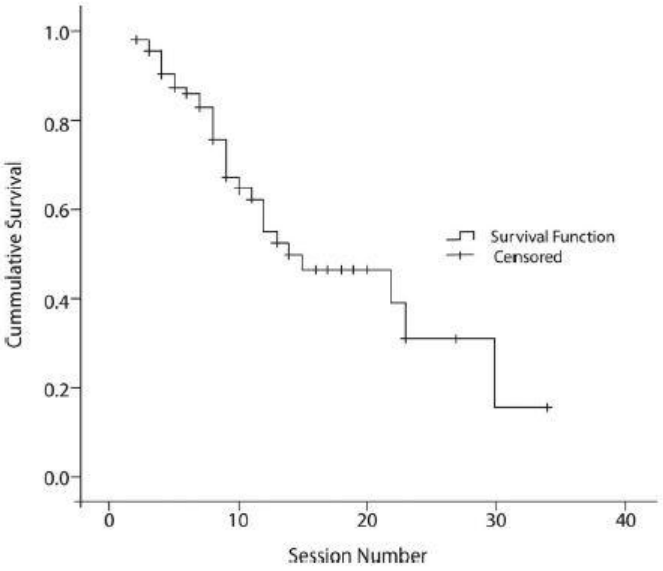



Figure 3. Kaplan-Meier survival plot of dysfunctional clients who reach clinical significance.

The same procedure was then carried out with those people in the sample who identified as being in the dysfunctional range of symptom severity. These cases best reflect the population who are referred for psychological treatment by a GP via Medicare for a diagnosed mental health disorder. The results displayed in Figure 3 (left) show that only 34.7% of patients show clinically significant change after 10 sessions. Consistent with studies in the US these results show that for 70% of patients with at least moderate levels of distress will require 23 sessions to improve.

The researchers summarise:

"Obviously, the recent Medicare initiative in Australia where GP-referred clients can get six sessions and then another six (within a calendar year after review and approval) falls far short of the amount of treatment necessary for most clients to receive a substantial benefit. It should be noted here that many organisations claim to be delivering ‘‘evidence-based’’ services while ignoring the fact that most outcome studies that supply the evidence (clinical trials) are based on treatment lengths that hover around 14 weeks (Hansen & Lambert, 2003)...Such guidelines leave at least half the clients whose services are reimbursed 50% underserved. This is an especially problematic when one considers the burden of illness carried by those who have mental health problems and the financial costs (in the form of lost productivity and absenteeism) of such illnesses to society."

# Other Studies

**Cuijpers, P., van Straten, A., Schuurmans, J., van Oppen, P., Hollon, S.D., Andersson, G., (2010). Psychotherapy for chronic major depression and dysthymia: a meta-analysis. Clinical Psychology Review 30, 51–62.**

The researchers conducted a meta-analytic review of all significant research trials for the treatment of chronic depression and dysthymia, including 16 randomised clinical trials (RCTs) including 2116 patients. The authors point out that current estimates are that 47% of depressed individuals who seek mental health care suffer from chronic depression (i.e, for 2 years or longer). This meta-analytic review indicated that the effect size for psychological treatment increases with each session at an optimum level of 18 sessions of treatment.

The authors note a large number of reviews showing that psychotherapy has a lower drop-out rate by comparison to pharmacotherapy (i.e., medication) with depressed patients (Cuijpers, van Straten, Andersson, et al., 2008; Cuijpers, van Straten, van Oppen, et al., 2008; Cuijpers, van Straten, Warmerdam, & Andersson, 2008; Cuijpers, van Straten, Warmerdam, & Smits, 2008; Cuijpers et al., 2009). In this review of chronic depression however, no differences in drop-out rate were found. This has implications for the majority of depressed individuals accessing treatment via Medicare. That is, if we want to increase treatment rates for depression then patients need to be supported in accessing enough treatment to recover.

**Wright, T., Simpson-Young, V., & Lennings, C. (2012). Therapeutic process in the context of third party determined time limits. *Clinical Psychologist, 16*, 82–92.**

This study is a qualitative study investigating the views of 27 Australian psychologists about the impact of third-party session limits on their therapeutic work. Interviews explored the impact of brief session caps (5 sessions versus open-ended) on various therapeutic practices.

Psychologists indicated that when sessions are restricted to brief contact with a patient they would restrict their use of therapy approaches, using a wider range of therapies in longer work. Therapists preferred to use CBT less often for complex cases and for time-limited therapy.

In time restricted therapy, therapists indicated that they would explore less content, at less depth, gathering less history, and provide less assessment. When their time with a patient was restricted to brief contact, therapists stated that their work became increasingly symptom-focused and problem-focused, with a greater need to refer people on to other services. By comparison, with longer contact with a client, therapists indicated that they would be able to provide a more person-centred approach.

Therapeutic conduct was also affected by time-constraints. Therapists said that in brief work, they tend to direct rather than explore issues with clients. Concerns were raised about not wanting to open up issues that they would be unable to contain and process within a brief period of time. This was perceived as a superficial therapy approach where some issues would simply not be discussed.

**David A. Shapiro, D. A., Barkham, M., Stiles, W. B., Hardy, G. E., Rees, A., Reynolds, S., & Startup, M. (2003). Time is of the essence: A selective review of the fall and rise of brief therapy research.** ***Psychology and Psychotherapy: Theory, Research and Practice, 76*****, 211–235.**

Consistent with other studies, the *Sheffield Psychotherapy Projects* demonstrate that there is a recovery rate approaches a 50% improvement approaching the 16 session mark. Note that the higher growth rate found when only 8 sessions was provided reached only a 30% improvement rate, leaving significant ongoing room for further improvement when additional sessions are made accessible.

This research identified a more linear relationship of improved outcomes across sessions confirming the general finding that (quote) "longer therapy confers benefit on a higher proportion of clients."

The authors also note the need to match therapy to the specific needs of each patient, consistent with the conclusions of prior dose-response research that "different types of problem respond to psychotherapy at different rates as well as to different extents."

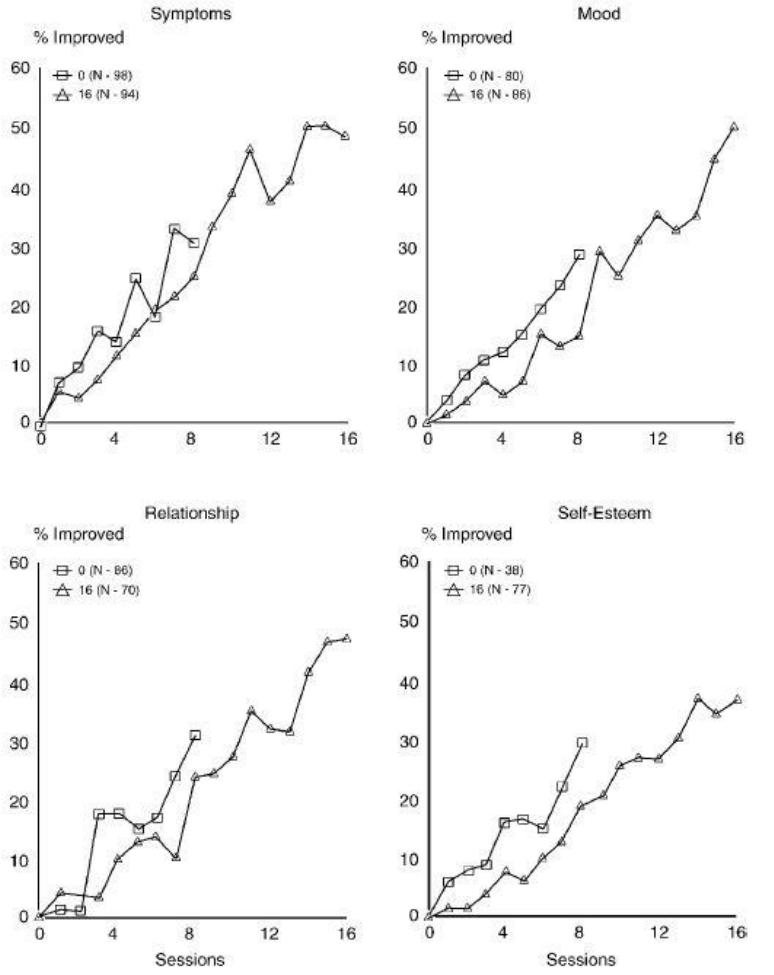



**Figure 6.** Percentage of clients meeting criteria for clinically significant change in four Personal Questionnaire problem domains: symptom, mood, relationship, and self-esteem. Clients were held to have shown a clinically significant change in a problem domain if, on a 7-point scale, their score fell from an initial level above 3.0 to a score of 3 or below, having fallen by a reliable change index specific to each domain (mood = 2.47; self-esteem = 2.22; relationship = 2.42; symptom = 1.89). 8 = eight sessions; 16 = 16 sessions. From Barkham, Rees, Stiles *et al.* (1996). © American Psychological Association.

This *Sheffield Psychotherapy Projects* show that some gains after 8 sessions of therapy are short-lived and that the perceived credibility of ultra-brief treatments by patients negatively affects outcomes. The authors conclude that "Taken together, these findings suggest that 16-session treatment may be more widely applicable than eight-session treatment."

They further conclude, "Although pointing the way to optimizing the efficiency of resource allocation in psychotherapy, current research does not begin, however, to warrant any rigid prescription of a universal time limit for psychological treatment."

## Examples of Specific Treatment Manuals: Eating Disorders

**National Eating Disorders Collaboration (http://www.nedc.com.au/treatment)**

"A person centred approach tailored to the needs of the person with the eating disorder has been proven to be the most effective type of treatment.

"A person centred approach recognises that recovery takes time, both during and after the treatment process"

**Hay, P. J., & Claudino, A. de M. (2010) Evidence-based treatment for the eating disorders. In W. S. Agras (Ed.), The Oxford handbook of eating disorders (pp. 452–479). New York: Oxford University Press.**

Identifies CBT interventions for a duration of 12 - 20 sessions across 4 - 5 months, and IPT interventions for a duration of 20 sessions over a 6 month period.

**Cooper, M., Todd, G., & Wells, A. (2009). Treating bulimia nervosa and binge eating. An integrated metacognitive and cognitive therapy manual. London: Routledge, Taylor & Francis Group.**

Intervention is described as 'brief' covering 16 sessions across a 5 month period.

**Fairburn, C. G. (2008). Cognitive behavior therapy and eating disorders. New York: Guilford Press.**

For patients with a BMI over 17.5, intervention covers 20 sessions across 20 weeks (5 months).

For patients with a BMI between 15 to 17.5, intervention covers 40 sessions across approximately 40 weeks, with the first 20 sessions occurring twice per week and the remainder spaced out as needed.

**Grilo, C. M., & Mitchell, J. E. (2010). The treatment of eating disorders. A clinical handbook. New York: Guilford Press.**

Describes a range of brief interventions covering 20 sessions delivered across a 6 month period.

**Waller, G., Cordery, H., Corstorphine, E., Hinrichsen, H., Lawson, R., Mountford, V., & Russell, K. (2007). Cognitive behavioural therapy for eating disorders. A comprehensive treatment guide. Cambridge: Cambridge University Press.**

Identifies a structured treatment approach covering 20 - 40 sessions over a 6 - 12 month period.