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Abstract	Despite growing evidence for the effectiveness of psychodynamic psychotherapy in general, the place of long-term psychodynamic psychotherapy (LTPP) remains controversial. Outcome studies of LTPP have been lacking for a long time. This chapter reports on the first meta-analysis of the effectiveness of LTPP, defined as lasting at least 1 year or 50 sessions. Findings suggest that LTPP yielded large and stable effects across various diagnoses and particularly in complex mental disorders (i.e., personality disorders, chronic mental disorders, and multiple mental disorders). For overall outcome, the effect sizes did even increase significantly after termination of treatment. The comparison of RCTs versus observational studies revealed no significant differences in outcome. If compared to other methods of psychotherapy that were predominantly less intensive or shorter term, LTPP proved to be significantly superior with regard to overall outcome, target problems, and personality functioning. As could be expected, discussion of findings was contentious but none of the raised concerns identified an issue that would have affected the overall conclusions of the meta-analysis. Nevertheless, further studies are particularly required to confirm the results and to allow for more refined analyses addressing the effects of LTPP both in specific disorders and in comparison to specific forms of therapies.

Keywords (separated by '-')	Effectiveness - efficacy - mental disorders - meta-analysis - personality disorders - psychoanalysis - psychodynamic psychotherapy

Chapter 2
Effectiveness of Long-Term Psychodynamic Psychotherapy: First Meta-Analytic Evidence and Its Discussion

Sven Rabung and Falk Leichsenring

Keywords Effectiveness • Efficacy • Mental disorders • Meta-analysis • Personality disorders • Psychoanalysis • Psychodynamic psychotherapy

Introduction

The evidence base of psychodynamic psychotherapy is heterogeneous [1, 2]. For short-term psychodynamic psychotherapy (STPP) there is some evidence available supporting its efficacy for specific disorders [3–7]. For long-term psychodynamic psychotherapy (LTPP), however, evidentiary outcome research has been scarce for a long time [1, 2, 8].

According to existing evidence, it generally applies that shorter-term psychotherapy is sufficient for most subjects suffering from acute mental distress [9]. On the other hand, evidence also shows that short-term treatments are not sufficiently effective for a considerable proportion of patients with chronic mental disorders or personality disorders [9–11]. Some studies imply that longer-term psychotherapy may be helpful for these patients [9, 10, 12–16]. This should not only be true of (long-term) psychodynamic therapy, but also of other psychotherapeutic approaches that are usually short term (e.g., for CBT) [15, 16].

Evidence-based treatments for patients suffering from complex mental disorders are exceptionally important. Personality disorders, for example, are quite common in general and clinical populations and are significantly associated with functional impairment [17–19]. In addition, many patients in clinical populations suffer from not just a single, but multiple mental disorders. Again, this is significantly related to greater impairment in social and occupational functioning [20, 21]. Not least, the chronicity of a mental disorder can be expected to be another important factor influencing both impairment and prognosis.

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Some studies suggested that LTPP may be helpful for these groups of patients. Strong evidence-based support, however, has been lacking for a long time. Until the year 2008, no meta-analysis addressing the outcome of LTPP had been published, although preliminary data have been reported by Lamb [22]. This chapter reports about the first meta-analysis on the effectiveness of LTPP, published in the *Journal of the American Medical Association* in 2008 [23]. In addition, we will include an overview of the discussion raised after release of that paper (e.g. [24]).

First Meta-Analysis on the Effectiveness of LTPP

Most meta-analyses usually address narrow research questions and, accordingly, use restricted inclusion criteria. Nevertheless, we attempted to meta-analytically and comprehensively compile all the existing evidence for LTPP for the first time. Thus, we decided to include as many studies as possible addressing the outcome of LTPP without a priori limiting our data collection on any specific form of LTPP, any specific patient group, or any specific control condition. A broad perspective on meta-analysis increases the power and generalizability and, consequently, the usefulness of results [25]. If results are not homogeneous, subgroup analysis can be carried out to examine the reasons. In line with the findings on dose–effect relationships described earlier, however, our meta-analysis placed special emphasis on complex mental disorders (i.e., personality disorders, chronic mental disorders, or multiple mental disorders). In order to maximize generalizability of results, this meta-analysis sought to include both studies with high internal validity (RCTs) and studies with high clinical representativeness (effectiveness studies) provided that they fulfilled predefined inclusion criteria.

Against this background, our meta-analysis addressed the following research questions:

1. How effective is LTPP, especially in complex mental disorders?
2. Is LTPP superior to shorter or less intensive forms of psychotherapeutic treatments?
3. Which patient, treatment, or study characteristics are related to the outcome of LTPP?

Methods

The meta-analysis has been carried out in accordance with recent guidelines for the reporting of meta-analyses [26, 27].

Definition of Long-Term Psychodynamic Psychotherapy

Psychodynamic psychotherapy serves as an umbrella concept encompassing treatments that operate on a continuum of supportive–interpretive psychotherapeutic interventions. An emphasis is placed on more interpretive or supportive interventions depending on the patient's needs [8, 28]. Gunderson and Gabbard defined LTPP as "… a therapy that involves careful attention to the therapist–patient interaction, with thoughtfully timed interpretation of transference and resistance embedded in a sophisticated appreciation of the therapist's contribution to the two-person field" ([8], p. 685). Regarding duration, there is no generally accepted "standard" for LTPP. In accordance with the definition given by Crits-Christoph and Barber ([29], p. 456) and other experts in the field, in our meta-analysis, we defined LTPP as lasting at least 1 year or 50 sessions.

Inclusion Criteria and Selection of Studies

We applied the following inclusion criteria (a) studies of LTPP meeting the definition given earlier, i.e., psychodynamic therapy lasting for at least 1 year or at least 50 sessions; (b) individual therapy; (c) clearly described samples of patients with mental disorders; (d) adult patients (at least 18 years of age); (e) prospective studies including pre- and post- or follow-up assessments (no retrospective studies, therapies must have been terminated); (f) reliable and valid outcome measures; (g) data to allow calculation of effect sizes; (h) concomitant (e.g., psychopharmacological) treatments were tolerable, but relevant studies were evaluated separately in order to control for effects of combined treatment versus LTPP alone; and (i) both efficacy and quasi-experimental effectiveness studies. These criteria are consistent with other recent meta-analyses of psychotherapy [5, 10].

We performed a computerized search using MEDLINE, PsycINFO, and Current Contents in order to collect studies of LTPP published between 1960 and May 2008. In addition, we performed manual searches in articles and textbooks and communicated with authors and experts in the field.

Data Extraction

The two authors independently extracted the following information from the papers included: author names, publication year, psychiatric disorder treated, age and sex of patients, duration of treatment, number of sessions, type of comparison group, sample sizes, use of treatment manuals, general clinical experience of therapists, specific experience with the patient group under study, specific training of therapists, study design, duration of follow-up period, and use of psychotropic medication. Disagreements between raters were resolved by consensus. Since evidence suggests that blinding is unnecessary for meta-analyses [30], the raters were not blinded with regard to treatment condition. Finally, effect sizes were independently assessed by the two raters. Inter-rater reliability was satisfactory ($r \geq 0.80$) for all outcome domains under study (discussed next).

Assessment of Effect Sizes and Statistical Analysis

We assessed effect sizes separately for target problems, general psychiatric symptoms, personality functioning, and social functioning. In addition, overall outcome was determined by averaging the effect sizes assessed in the four outcome domains in question. As outcome measures of target problems, we included both patient ratings of target problems [31] and measures referring to the symptoms specific to the patient group under study (e.g., a measure of impulsivity for studies examining borderline personality disorder). For general psychiatric symptoms, both broad measures of psychiatric symptoms such as the Symptom-Checklist SCL-90 [32] and specific measures that do not specifically refer to the disorder under study were included (e.g., an anxiety inventory applied in patients with personality disorders). For personality functioning, measures of personality characteristics (e.g., self-report inventories like the Defense Style Questionnaire) were included [33, 34]. Social functioning was assessed using the Social Adjustment Scale [35] and similar measures. If a study used more than one measure for one area of functioning (e.g., target problems), we assessed the effect size for each measure separately and calculated the mean effect size of these measures as the outcome in the respective area of functioning. If a study included more than one form of LTPP, each treatment condition was entered separately into the meta-analysis.

As the universal outcome measure, that can be determined for both controlled and uncontrolled trials, we calculated *within-group* effect sizes for all studies and treatment conditions using Cohen's *d* statistic as follows. For each measure, we subtracted the post-treatment mean from the pretreatment mean and divided the difference by the pretreatment standard deviation of the measure [36, 37].

If there was more than one treatment group, we calculated a pooled baseline standard deviation as suggested by Hedges and Rosenthal [37, 38]. If necessary, signs were reversed so that a positive effect size always indicated improvement. To examine the stability of psychotherapeutic effects, we assessed effect sizes separately for assessments at the termination of therapy and at follow-up. If there was more than one follow-up assessment, we included the one with the longest follow-up period. If data pertaining to completers and intent-to-treat samples were reported, we included the latter. To correct for bias related to small sample sizes, we calculated Hedges' *d* statistic, an unbiased measure of effect size in small samples ([39, p. 81], formula 10). As a measure of *between-group* effect size, we used the point biserial correlation r_p as suggested by Cohen and Rosenthal [36, 38]. The point biserial correlation also allowed us to test for differences between the within-group effect sizes of LTPP versus other forms of psychotherapy. As will be discussed later in more detail, this measure of a between-group effect size is not identical to that usually assessed in exclusively comparative meta-analyses since it considers treatment groups rather than patients as the unit of analysis. If the data necessary to calculate effect sizes were not published in an article, we asked the study authors for these data. We carried out tests for heterogeneity using the *Q* statistic [39]. The degree of heterogeneity was assessed by calculating the I^2 index [40]. In case of significant heterogeneity, we applied random-effect models [41, 42]. To control for publication bias, tests for asymmetry in funnel plots and file-drawer analyses were performed [42–44]. To test for differences between RCTs and effectiveness studies, we calculated point biserial correlations between type of study and effect size. Outcome data from RCTs and observational studies could only be combined if no significant differences exist. To analyze the effects of LTPP in complex mental disorders, we carried out subgroup analyses for (a) personality disorders, (b) chronic mental disorders, and (c) multiple mental disorders. Additional subgroup analyses were carried out to check for sensitivity. To test the impact of possible predictor or moderator variables on outcome (e.g., concomitant psychotropic medication, use of treatment manuals), we performed correlation analyses. To compare the effects of LTPP to those of other psychotherapeutic treatments, we performed comparative analyses for the subsample of studies providing a control group design. All statistical analyses were conducted using SPSS 15.0 [45] and MetaWin 2.0 [46]. Two-tailed tests of significance were carried out for all analyses. The significance level was defined to be $p = 0.05$ unless otherwise stated.

Assessment of Study Quality

According to the inclusion criteria, only studies meeting defined quality standards were considered in our meta-analysis (only prospective studies, reliable and valid outcome measures, clearly described patient samples, adequate data). In addition, we assessed the quality of studies by use of a scale proposed by Jadad et al. [47]. This scale takes into account if a study was described as randomized, if a study was described as double blind, and if withdrawals and dropouts were described. In psychotherapy research, however, double blind studies cannot be realized, because the patients know or can easily find out which treatment they receive. Thus, all studies of psychotherapy would inevitably have to be given a score of zero points on this item. Instead of blinding therapists and patients, the respective requirement in psychotherapy research is that in case of observer-rated outcome measures, the ratings were carried out by raters blind to the treatment condition. Complementary, the patient perspective is of particular importance in psychotherapy. For this reason, outcome is often assessed by self-report instruments. In line with these considerations, we decided to score this item if outcome was assessed by blinded raters or by reliable self-report instruments. With this modification, the three items of the Jadad scale were independently rated by the two authors for all studies included. For the total score of the scale, we achieved a satisfactory inter-rater reliability ($r = 0.84$, $p < 0.001$).

Results

Description of Studies Included

Twenty-three separate studies published between 1984 and 2008 met the inclusion criteria [12–14, 34, 48–73]. The results of six of the studies were reported in two journal articles each [12–14, 34, 50, 52, 56, 57, 60, 61, 65, 66]. For all of these studies, we included the data from both articles in our analysis. The studies are described in Table 2.1.

For eight of the studies, we received additional information from the authors [14, 53, 59, 60, 67, 69, 71, 73]. Five studies involved more than one LTPP treatment condition [49, 54, 56, 69, 72]. Each of these LTPP conditions was entered separately into our meta-analysis. For five studies, some control conditions had to be excluded from the meta-analysis for the following reasons [59, 60, 67–69]. The quasi-experimental comparison groups of the study by Rudolf et al. were not included in the meta-analysis because one comparison group could not be classified as either LTPP or STPP due to variability in treatment duration (5–200 sessions), the other condition represented inpatient treatment [68]. The CBT comparison group of the ongoing study by Huber et al. was not included because not enough data were available as yet [59]. For the Sandell et al. study, the low-dose therapy control group was not included, because data to calculate effect sizes were not available for this condition [69]. In the Knekt et al. study, assessments were made at predefined time points that did not exactly match end of therapy for the short-term treatment groups. Thus, the data of the short-term psychotherapy groups were not included [60]. Finally, only two of the four treatment conditions compared by Piper et al. could be considered (i.e., the individual long-term and short-term conditions); the group treatments were not included due to our inclusion criteria [67]. In the study by Wilczek et al., not all of the patients under study met the criteria for an Axis I or Axis II diagnosis [73]. Hence, we included data only from those patients diagnosed with character pathology at intake.

Study Design

Altogether, 11 RCTs [12, 14, 48, 53, 55, 56, 59, 60, 67, 71, 72] and 12 quasi-experimental studies could be included in the meta-analysis [34, 49, 51, 54, 62–65, 68–70, 73]. In all, eight controlled studies comparing LTPP to other methods of psychotherapy qualified to be included in the meta-analysis [12, 14, 48, 53, 55, 62, 67, 71].

Measures

The outcome measures used in these studies are specified in Table 2.1, each with an indication to which outcome area it was assigned. For references of the instruments, the reader is referred to the original studies.

Sample Size

The 23 studies involved 1,053 patients treated with LTPP. For the comparative treatments, $N = 257$.

Table 2.1 Studies of long-term psychodynamic psychotherapy (LTPP)

Study (authors)	Type	Disorder	Treatment		Dose/duration of treatment (follow-up interval)		Sample size (*N*)[a]		Outcome measures (domains)[b]
			LTPP	Non-LTPP comparison	LTPP	Non-LTPP comparison	LTPP	Non-LTPP comparison	
Bachar et al. [48]	RCT	Eating disorders	Self-psychological therapy	Cognitive therapy (CT); nutritional counseling (NC)	40 sessions, 12 months	CT: 12 months; NC: 6 months	17	CT: 17, NC: 10	DSM-SS (t), EAT 26 (t), SCL-90 (s), Selves Q (p)
Barber et al. [49]	OBS-C	Avoidant personality disorders	Supportive–expressive therapy	–	52 sessions	–	24	–	WISPI (t), BAI (s), BDI (s), HARS (s), HRSD (s), IIP (so), % Diagnosis
		Obsessive–compulsive personality disorders	Supportive–expressive therapy	–	52 sessions	–	14	–	
Bateman and Fonagy [12, 13][c]	RCT	Borderline personality disorders	Psychoanalytically oriented partial hospitalization	Psychiatric treatment as usual (TAU)	18 months	11.6 days inpatient treatment (90% of patients) plus 6 months partial hospitalization (72% of patients)	19	19	BDI (s), SCL-90-R (s), IIP (so), STAI-state (s), STAI-trait: (p)
Bond and Perry [49, 50][c]	OBS	Chronic depression, anxiety, and/or personality disorders	Dynamic psychotherapy	–	110 sessions, 3 years	–	53	–	SCL-90 (s), HRSD (s), GAF (so), DSQ (p)
Clarkin et al. [51][c]	OBS	Borderline personality disorders	Transference-focused psychotherapy	–	12 months	–	23	–	Parasuicide (t), services (so)
Clarkin et al.; Levy et al. [24, 52][c]	RCT	Borderline personality disorders	Transference-focused psychotherapy	Dialectical-behavioral therapy (DBT); dynamic supportive treatment (DST)	12 months	DBT: 12 months; DST: 12 months	30	DBT: 30, DST: 30	Aggression scale(t), anger scale(t), Barrett scale (t), BDI (s), BSI (s), GAD (so), SAS (so), RF, coherence, resolution (p)
Dare et al. [53]	RCT	Anorexia nervosa	Focal psychoanalytic psychotherapy	Cognitive-analytic therapy (CAT); family therapy (FT); routine treatment (TAU)	24.9 sessions, 1 year	CAT: 12.9 sessions, 7 months; FT: 13.6 sessions, 1 year; TAU: 10.9 sessions, 1 year	21	CAT: 22, FT: 22, TAU: 19	BMI (t), ABW% (t), Morgan Russel (t)
Grande et al. [54]	OBS-C	Depressive and anxiety disorders[d]	Psychoanalytic therapy	–	310 sessions, 44.2 months (1 year)	–	37	–	SCL-90-R (s), IIP (so)
			Psychodynamic focal therapy	–	71.1 sessions, 24.2 months (1 year)	–	31	–	
Gregory et al. [55]	RCT	Borderline personality disorders	Dynamic deconstructive psychotherapy	Treatment as usual (TAU)	57.5 sessions, 12–18 months	88.7 sessions, 12–18 months	15	15	BEST (t), BDI (s), DES (s), SPS (so),% parasuicide,alcohol misuse, institutional care[e]

Høglend et al. [42, 57]	RCT	Depressive, anxiety, and personality disorders[d]	Dynamic psychotherapy with transference interpretation	–	33 sessions, 1 year (1 year, 2 years)	–	52	–	Psychodn. F Sc (t), SCL-90-R (s), IIP (so), GAF (so)
			Dynamic psychotherapy with no transference interpretation	–	33 sessions, 1 year (1 year, 2 years)	–	48	–	
Huber and Klug [59]	RCT	Depressive disorders	Psychoanalytic therapy	Psychodynamic focal therapy[f]	229 sessions, 48.8 months	60.6 sessions, 19.4 months	35	8	BDI (t), SCL-90-R (s), IIP (so)
Leichsenring et al. [49, 61][c]	RCT	Depressive or anxiety disorders	Psychodynamic psychotherapy	Short-term psychodynamic psychotherapy (STPP)[f]; solution-focused therapy (SFT)[f]	232 sessions, up to 3 years	STPP: 18.5 sessions 5.7 months; SFT: 9.8 sessions over up to 7.5 months	128	STPP: 101, SFT: 97	BDI (t), HDRS (t), HARD (t), SCL-Anx (t), SCL-90-R (s), Work (so), SAS-W (so), perceived social (so)
Leichsenring et al. [62]	OBS	Borderline personality disorders	Psychotherapy using the conversational model	Treatment as usual (TAU)	12 months	12 months	29	31	DSM-III-R score (t), GAF (so)
Leichsenring et al. [63]	OBS	Depressive, anxiety, and personality disorders[d]	Psychoanalytic therapy	–	253 sessions, 37.4 months (1 year)	–	36	–	GAS (t), SCL-90-R (s), FLZ (p), IIP (so)
Leuzinger-Bohleber et al. [64]	OBS	Heterogeneous disorders	Psychoanalysis	–	> 50 sessions	–	17	–	GAF (so), HSRS (so)
Monsen et al. [65, 66]	OBS	Personality disorders	Psychodynamic psychotherapy	–	25.4 months (5 years)	–	25	–	Affect (t), MMPI (t), (D+Pt+Si) (s), (F+pa+sc) (p)
Poppe et al. [67]	RCT	Heterogeneous disorders; 30% personality disorders	Psychoanalytically oriented psychotherapy	Short-term psychodynamic psychotherapy (STPP)	76 sessions (6 months)	22 sessions (6 months)	30	27	TSP (t), TSPI (t), TSIA (t), TSIAI (t), TSTI (t), Cornell (s), DA (s), CATT (p), BSP (so), IBSD (so), SSIAM (so)
Rudolf et al. [68]	OBS	Depressive, anxiety, and personality disorders[d]	Psychoanalytic therapy	Psychodynamic focal therapy (PFT)[f]; Psychodynamically oriented inpatient treatment (POI)[f]	265 sessions	PFT: 5–200 sessions; POI: 2.6 months	44	PFT: 56, POI: 164	PSKB-SE 1(s), PSKB-SE 2 (p)
Taubdell et al. [69]	OBS-C	Heterogeneous disorders	Psychoanalysis	Lower-dose therapies[f]	54 months (1 year, 2 years)	21 months	24	27	SCL-90-R (s), SOCS (p), SAS (so)
			Psychodynamic psychotherapy	–	43 months (1 year, 2 years)	–	100	–	
Stevenson and Meares [70]	OBS	Borderline personality disorders	Self-psychological psychotherapy	–	12 months	–	30	–	DSM-III score (t), Cornell (s), behavior (so)
Svartberg et al. [71]	RCT	Cluster C personality disorders	Dynamic psychotherapy	Cognitive therapy (CT)	40 sessions, 16.9 months (6, 12, 24 months)	40 sessions, 18.3 months (6, 12, 24 months)	25	25	Millon (t), SCL-90-R (s), IIP (so)

(continued)

Table 2.1 (continued)

Study (authors)	Type	Disorder	Treatment		Dose/duration of treatment (follow-up interval)		Sample size (*N*)[a]		Outcome measures (domains)[b]
			LTPP	Non-LTPP comparison	LTPP	Non-LTPP comparison	LTPP	Non-LTPP comparison	
Winars et al. [72][c]	RCT	Personality disorders	Manualized psychodynamic therapy	–	≥1 year (1 year, 3 years)	–	80	–	DSM-IV score (t), SCL-90-T (s), GAF (so), change in diagnosis[e]
			Community-delivered psychodynamic therapy	–	≥1 year (1 year, 3 years)	–	76	–	
Wolczek et al. [73]	OBS	Heterogeneous disorders; only character pathology patients included	Psychoanalytic psychotherapy	–	159 sessions (6 months)	–	55	–	KAPP (t), CPR-S-A[e], GAF[e]

Type: *RCT* randomized controlled trial, *OBS* observational study, *OBS-C* observational study with control group

No. of patients for intention to treat samples stated, if data available

Outcome domains: *t* target problems, *s* symptoms, *p* personality, *so* social functioning. Measures: *ABW* average body weight, *BAI* Beck anxiety inventory, *BDI* Beck depression inventory, *BEST* borderline evaluation of severity over time, *BMI* body mass index, *BSI* brief symptom inventory, *CATT* Cattel's H scale, *CPR-S-A* self-rating scale for affective syndromes, *DA* depression–anxiety subscale of psychiatric status schedule, *DES* dissociative experiences scale, *D+Pt+Si* subjective discomfort, anxiety, social introversion subscales of MMPI, *DSM-III-R* diagnostic and statistical manual of mental disorders (third edition revised), *DSM-SS* DSM symptomatology scale for anorexia and bulimia, *DSQ* defense style questionnaire, *DST* dynamic supportive treatment, *EAT* eating attitudes test, *FLZ* life satisfaction questionnaire, *F+pa+sc* F, projection, withdrawal subscales of MMPI, *FT* focal therapy, *GAF* global assessment of functioning scale, *HARS* Hamilton anxiety rating scale, *HAMD* Hamilton rating scale for depression, *HSRS*, health sickness rating scale, *IBSO* interpersonal behavior scale (discrepancy between present and ideal functioning), *IBSP* international behavior scale (present functioning), *IIP* inventory of interpersonal problems, *KAPP* Karolinska psychodynamic profile, *MMPI* Minnesota multiphasic personality inventory; *NSLD* number of sick-leave days, *PFS* psychodynamic functioning scales, *PPFS* perceived psychological functioning scale, *PSKB-SE* psychological and social-communicative state – self-report, *RF* reflexive function, *SAS* social adjustment scale, *SAS-W* work subscale of the social adjustment scale, *SCL-90-R* Symptom-Checklist-90 revised, *SFT* solution-focused therapy, *SOCS* sense of coherence scale, *SPS* social provisions scale, *SSIAM* structured and scaled interview to assess maladjustment, *STAI* state-trait anxiety inventory, TSIA and TSIAI, severity for all target objectives and most important objective, TSP and TSPI, severity for all target objectives and most important objective, TST and TSTI, severity for all target objectives and most important objective; *WAI* work ability index, *WISPI* Wisconsin personality disorders inventory, % diagnosis, percentage of patients fulfilling criteria for diagnosis. For further information on the outcome instruments, see original studies

LTPP combined with psychotropic medication in some patients of the sample

Predominant diagnoses in sample

Effect size outcome measures not included (no data to calculate effect size *d* for the respective treatment or patient group)

Data of these comparison groups were not included in this meta-analysis

Mental Disorders

The studies included cover a wide range of mental disorders (Table 2.1). Ten studies evaluated the effects of LTPP for patients with personality disorders [12–14, 34, 49, 51, 55, 62, 65, 70–72]. Nine studies examined patients with chronic mental disorders (defined as mental disorders lasting 1 year or longer) [34, 48, 53, 54, 59, 60, 63, 68, 69]. Multiple mental disorders (defined as two or more diagnoses of mental disorders) were treated in 14 studies [12, 14, 34, 49, 51, 54–56, 59, 63, 65, 68, 71, 72]. It is of note that these groups of studies overlap in part.

Treatment Manuals

Treatment manuals or manual-like guidelines were applied in 12 studies [12, 14, 48, 49, 51, 53, 55, 56, 62, 70–72].

Therapy Duration

The mean number of sessions carried out in the 23 studies of LTPP was 151.38 (SD = 154.98; median: 73.50). The mean duration of therapy was 94.81 weeks (SD = 58.79; median: 69.00).

Duration of Follow-up

For LTPP, the mean follow-up period was 93.23 weeks (SD = 64.93).

Concomitant Psychotropic Medication

Outcome data for LTPP alone – that is without any concomitant psychotropic medication – were reported for 16 of the 23 studies [48, 49, 53, 54, 56, 59, 62–65, 67–71, 73]. In seven studies, some patients received concomitant psychotropic medication as needed [12, 14, 34, 51, 55, 60, 72].

Overall Outcome

To give a synopsis of the outcome achieved by LTPP in the 23 studies, Fig. 2.1 presents a forest plot listing the within-group, i.e., pre-treatment-to-post-treatment effect sizes of LTPP on overall outcome for each study. The effect sizes are displayed separately for RCTs and observational studies. A more detailed presentation of outcome data will be given later, following several paragraphs addressing the examination of possible sources of bias.

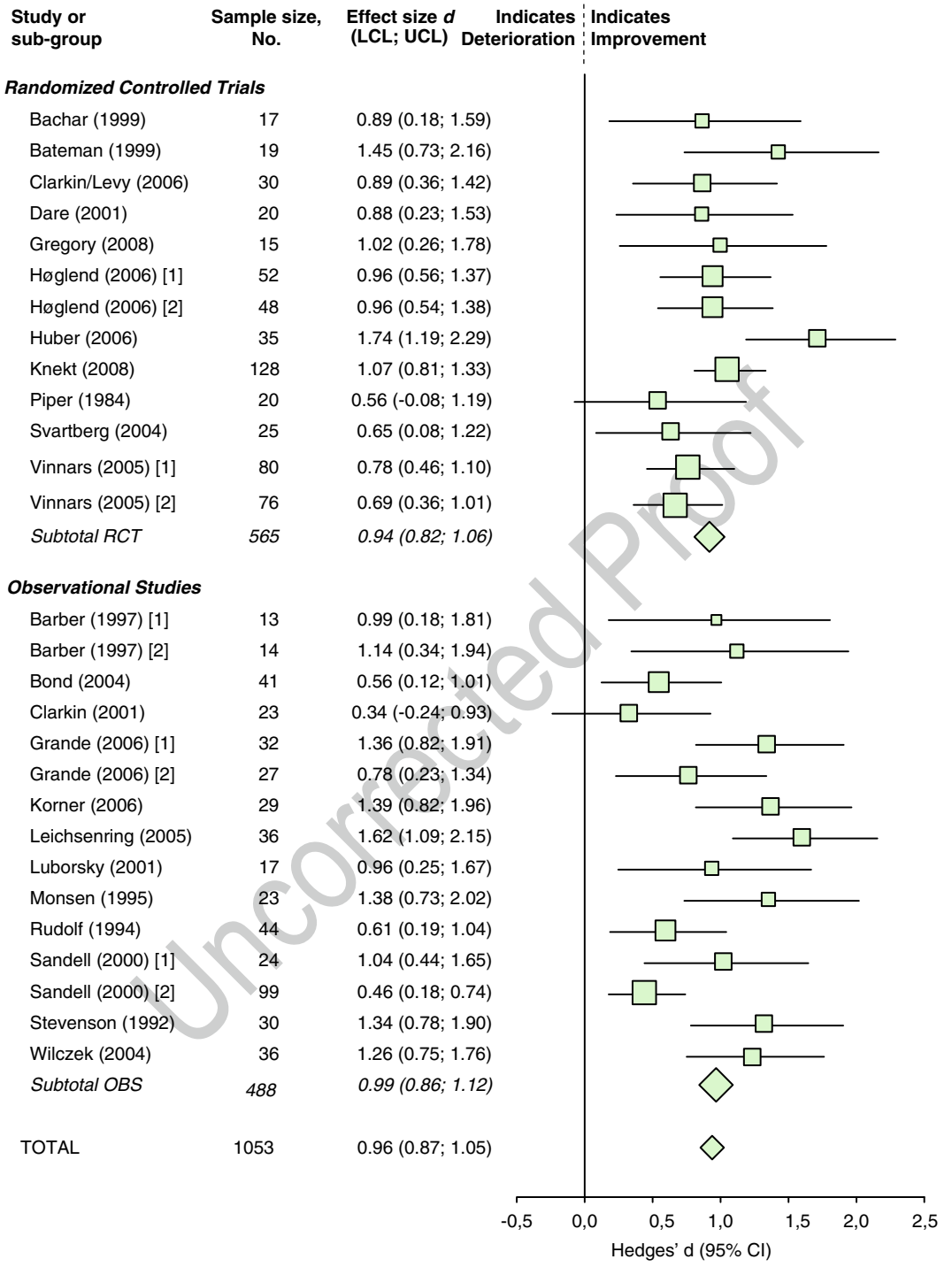

Fig. 2.1 Effects of long-term psychodynamic psychotherapy (LTPP) on overall outcome (Adapted with permission from [23]. Copyright c American Medical Association)

Control for Heterogeneity

The heterogeneity of the effects of LTPP was examined using the Q statistic [39, 46]. In addition, we assessed the degree of heterogeneity with the I^2 index [40]. For some outcome domains, the Q statistic was significant, thus indicating heterogeneity in some cases. This applied, for example, for overall outcome at post-treatment assessment in the total sample of 23 studies ($Q=53.71$, $p=0.002$; $I^2=49\%$). In the controlled studies of LTPP, however, Q was only significant for two follow-up measures based on only two of the eight comparative studies (target problems: $Q=11.92$, $p=0.001$; $I^2=92\%$; social functioning: $Q=4.53$, $p=0.03$; $I^2=78\%$). At the time of post-treatment assessment, here, the I^2 index for overall outcome, target problems, general psychiatric symptoms, personality functioning, and social functioning was 0%, 45%, 46%, 60%, and 51%, respectively, indicating low to medium heterogeneity [74]. For follow-up, the number of studies providing data was too limited to calculate meaningful I^2 statistics. To account for any existing heterogeneity between studies, however, we used the random-effects model throughout all summary analyses.

Control for Publication Bias

In the first instance, we tried to identify unpublished studies via the Internet and by contacting researchers in order to reduce the file-drawer effect. In addition, we tested for asymmetry in funnel plots by calculating Pearson correlations between effect size and sample size across studies. A significant correlation may indicate that larger effect sizes were more likely to be published [75]. Given the small number of studies with follow-up assessments, we confined this procedure to the post-treatment effect sizes. All correlations were insignificant ($p>0.30$). As another test for publication bias, we assessed the fail-safe N for the post-treatment effect sizes [43]. A fail-safe number is the number of nonsignificant, unpublished or missing studies that would need to be added to a meta-analysis in order to change the results of the meta-analysis from significance to nonsignificance. For the 16 studies examining LTPP alone, for example, the fail-safe Ns were 921, 535, 623, and 358 for overall outcome, target problems, general symptoms, and social functioning, respectively. Only seven studies of LTPP alone provided data for outcome measures of personality functioning. The respective fail-safe N, here, was 42. Even this number is almost twice the number of studies we included in total. Summing up, we did not find any cogent indication of publication bias.

Control for Quality-Related Bias

The relationship between study quality and outcome of LTPP was analyzed by calculating Pearson correlations between the total score of the Jadad scale and the within-group effect sizes for the different outcome domains. Again, only post-treatment effect sizes could be examined due to the small number of studies providing follow-up data. All correlations were nonsignificant ($p>0.28$).

Control for Influence of Design Factors

To test for possible differences between efficacy studies (RCTs) and effectiveness (observational) studies, we calculated point biserial correlations between type of study design (RCT = 1, effectiveness studies = 0) and the within-group effect size of LTPP at post-test. All correlations were nonsignificant ($p>0.36$). Observational studies, thus, did not yield effect sizes significantly different from those of RCTs. This was the same for the comparison of controlled (including RCTs and studies using quasi-experimental control groups, cp. Table 2.1) and uncontrolled studies ($p>0.22$).

t2.1 **Table 2.2** Effect sizes (*d*) of long-term psychodynamic psychotherapy (LTPP) alone across various mental disorders
t2.2 (16 studies)

t2.3 t2.4 Outcome domain	Number of LTPP conditions (*k*)[a]	Within-group effect size *d* (95% CI)	Significance (two-tailed test)
t2.5 *Pre-therapy to post-therapy changes*			
t2.6 Overall effectiveness	20	1.03 (0.84–1.22)	<0.001
t2.7 Target problems	14	1.54 (1.20–1.87)	<0.001
t2.8 Psychiatric symptoms	17	0.91 (0.72–1.11)	<0.001
t2.9 Personality functioning	7	0.78 (0.30–1.26)	0.005
t2.10 Social functioning	14	0.81 (0.60–1.03)	<0.001
t2.11 *Pre-therapy to follow-up changes*			
t2.12 Overall effectiveness	8	1.25 (1.00–1.49)	<0.001
t2.13 Target problems	6	1.98 (1.37–2.59)	<0.001
t2.14 Psychiatric symptoms	6	1.06 (0.64–1.47)	0.001
t2.15 Personality functioning	3	1.02 (–0.99–3.03)	[b]
t2.16 Social functioning	7	0.91 (0.49–1.34)	0.003

t2.17 *d*: Hedges' *d* (within-group effect size)
t2.18 95% CI: 95% confidence interval
t2.19 [a]As some studies included more than one form of LTTP, the number of treatment conditions in some cases differs from
t2.20 the number of studies
t2.21 [b]No tests of significance were performed due to the small number of studies providing data

252 Based on these findings, data from RCTs and observational studies could be combined in the
253 further analyses of effect sizes of LTPP (see total score in Fig. 2.1).

254 Control for Effects of Concomitant Medication

255 In seven out of the 23 studies, some patients received concomitant psychotropic medication on an
256 individual basis. To control for possible distortion related to medication, we compared the effect
257 sizes of LTPP alone, i.e., without any concomitant medication (16 studies [48, 49, 53, 54, 56, 59,
258 62–65, 67–71, 73]), and LTPP combined with psychotropic medication (seven studies [12, 14, 34,
259 51, 55, 60, 72]) by calculating the point biserial correlation between effect size and treatment condi-
260 tion (LTPP alone vs. LTPP combined with psychotropic medication, 0/1). For target problems, the
261 correlation was significant ($r_p = -0.45$, $p = 0.05$). This means that studies where concomitant psycho-
262 tropic medication was allowed as needed yielded significantly smaller pre–post effect sizes for LTPP
263 than studies where the LTPP alone was examined. Therefore, to avoid bias in estimates of the effects
264 of LTPP, we decided to include only studies of LTPP alone without concomitant psychotropic medi-
265 cation in the following subgroup analyses.

266 Effects of LTPP in Patients with Various Mental Disorders

267 In the first instance, we assessed the outcome of LTPP alone, i.e., without concomitant psychotropic
268 medication, by examining the effect sizes across all mental disorders treated in the 16 studies of LTPP
269 alone [48, 49, 53, 54, 56, 59, 62–65, 67–71, 73]. Four studies included two treatment conditions of
270 LTTP [49, 54, 56, 69]. In all, 20 treatment conditions of LTTP encompassing 641 patients could be
271 evaluated. The within-group effect sizes of LTPP are presented in Table 2.2. The results show that
272 LTPP yielded significant pre–post effects that were stable at follow-up for all outcome areas. Except
273 for the pre–post outcome in personality functioning ($d = 0.78$), all effect sizes both at termination
274 and follow-up exceeded 0.80 indicating large effects. For overall outcome, the comparison of the

Table 2.3 Effect sizes (*d*) of long-term psychodynamic psychotherapy (LTPP) alone in patients with personality disorders (five studies)

Outcome domain	Number of LTPP conditions (*k*)[a]	Within-group effect size *d* (95% CI)	Significance (two-tailed test)
Pre-therapy to post-therapy changes			
Overall effectiveness	6	1.16 (0.82–1.50)	<0.001
Target problems	6	1.58 (0.80–2.35)	0.004
Psychiatric symptoms	5	0.89 (0.49–1.29)	0.002
Personality functioning	1	0.95 (–)	[b]
Social functioning	5	0.82 (0.39–1.25)	0.007
Pre-therapy to follow-up changes			
Overall effectiveness	2	1.21 (−1.62–4.03)	[b]
Target problems	2	1.65 (−5.90–9.19)	[b]
Psychiatric symptoms	2	0.92 (−1.81–3.65)	[b]
Personality functioning	1	1.04 (–)	[b]
Social functioning	1	1.13 (–)	[b]

d: Hedges' *d* (within-group effect size)
95% CI: 95% confidence interval
[a]As some studies included more than one form of LTTP, the number of treatment conditions in some cases differs from the number of studies
[b]No tests of significance were performed due to the small number of studies providing data

post-treatment effect sizes with those at follow-up revealed a significant increase until follow-up ($t=3.76$, $p=0.007$, $k=8$).

Effects of LTPP in Patients with Personality Disorders

Patients with personality disorders were included in ten studies [12, 14, 49, 51, 55, 62, 65, 70–72]. Five of these studies examined the effects of LTPP alone [49, 62, 65, 70, 71]. One study included two different groups of personality disorders (avoidant and obsessive–compulsive personality disorder) treated with LTPP [49]. In all, six treatment conditions of LTPP encompassing 134 patients with personality disorders were evaluated. Results showed that LTPP alone yielded significant and large effect sizes ($d>0.80$) for overall outcome, target problems, general psychiatric symptoms, and social functioning at post-treatment assessment (Table 2.3). Large effect sizes were also observed for personality functioning at post-test and for all outcome areas at follow-up. However, as the number of studies was too small ($k<5$), we did not perform tests of significance for these findings. For the same reason, we did not perform any tests of significance for follow-up data in all of the following analyses.

Effects of LTPP in Patients with Chronic Mental Disorders

Patients with chronic mental disorders (defined as lasting at least a year) were treated with LTPP alone in seven studies [48, 53, 54, 59, 63, 68, 69]. Two studies included two different treatment conditions of LTPP [54, 69]. Thus, we could consider the data from nine LTPP treatment conditions encompassing 334 patients suffering from chronic mental disorders in our meta-analysis. According to the results, LTPP alone yielded significant and large effect sizes for overall outcome, general psychiatric symptoms, personality functioning, and social functioning at post-treatment assessment (Table 2.4). Irrespective of statistical significance, all effect sizes both at termination and follow-up were exceeding 0.80 indicating large effects in all outcome areas again.

t4.1 **Table 2.4** Effect sizes (*d*) of long-term psychodynamic psychotherapy (LTPP) alone in patients with chronic mental
t4.2 disorders (seven studies)

t4.3 t4.4 Outcome domain	Number of LTPP conditions (*k*)[a]	Within-group effect size *d* (95% CI)	Significance (two-tailed test)
t4.5 *Pre-therapy to post-therapy changes*			
t4.6 Overall effectiveness	9	1.05 (0.61–1.48)	<0.001
t4.7 Target problems	4	1.70 (0.40–3.00)	[b]
t4.8 Psychiatric symptoms	8	1.05 (0.69–1.41)	<0.001
t4.9 Personality functioning	5	0.87 (0.18–1.56)	0.02
t4.10 Social functioning	6	0.88 (0.40–1.37)	0.004
t4.11 *Pre-therapy to follow-up changes*			
t4.12 Overall effectiveness	3	1.36 (0.21–2.51)	[b]
t4.13 Target problems	1	2.45 (–)	[b]
t4.14 Psychiatric symptoms	3	1.32 (0.63–2.01)	[b]
t4.15 Personality functioning	1	1.79 (–)	[b]
t4.16 Social functioning	3	1.23 (–0.06–2.52)	[b]

t4.17 *d*: Hedges' *d* (within-group effect size)
t4.18 95% CI: 95% confidence interval
t4.19 [a]As some studies included more than one form of LTTP, the number of treatment conditions in some cases differs from
t4.20 the number of studies
t4.21 [b]No tests of significance were performed due to the small number of studies providing data

t5.1 **Table 2.5** Effect sizes (*d*) of long-term psychodynamic psychotherapy (LTPP) alone in patients with multiple mental
t5.2 disorders (eight studies)

t5.3 t5.4 Outcome domain	Number of LTPP conditions (*k*)[a]	Within-group effect size *d* (95% CI)	Significance (two-tailed test)
t5.5 *Pre-therapy to post-therapy changes*			
t5.6 Overall effectiveness	11	1.09 (0.83–1.36)	<0.001
t5.7 Target problems	8	1.62 (1.07–2.18)	<0.001
t5.8 Psychiatric symptoms	11	0.98 (0.76–1.21)	<0.001
t5.9 Personality functioning	3	0.96 (–0.52–2.44)	[b]
t5.10 Social functioning	9	0.94 (0.70–1.17)	<0.001
t5.11 *Pre-therapy to follow-up changes*			
t5.12 Overall effectiveness	7	1.28 (1.01–1.54)	<0.001
t5.13 Target problems	5	1.84 (1.22–2.45)	0.002
t5.14 Psychiatric symptoms	5	1.18 (0.81–1.55)	0.001
t5.15 Personality functioning	2	1.43 (–3.32–6.18)	[b]
t5.16 Social functioning	6	1.01 (0.57–1.45)	0.002

t5.17 *d*: Hedges' *d* (within-group effect size)
t5.18 95% CI: 95% confidence interval
t5.19 [a]As some studies included more than one form of LTTP, the number of treatment conditions in some cases differs from
t5.20 the number of studies
t5.21 [b]No tests of significance were performed due to the small number of studies providing data

297 ## Effects of LTPP in Patients with Multiple Mental Disorders

298 The outcome of LTPP alone in patients with multiple mental disorders was evaluated on the basis of
299 those studies in which two or more diagnoses of mental disorders were given to at least 50% of the
300 patient sample. These requirements were met by eight studies [49, 54, 56, 59, 63, 65, 68, 71]. Three
301 of these studies included two different treatment conditions of LTPP [49, 54, 56]. In all, 11 LTPP
302 treatment conditions encompassing 349 patients could be considered in the analysis. Except for
303 personality functioning, LTPP yielded significant pre–post effect sizes for all outcome domains.
304 Again, all effect sizes including those at follow-up were exceeding 0.80 (Table 2.5).

Table 2.6 Effect sizes of long-term psychodynamic psychotherapy (LTPP) versus other methods of psychotherapy across various mental disorders (eight studies)

Outcome domain *(pre-therapy to post-therapy changes)*	Number of treatment conditions (LTPP/others)[a]	Within-group effect sizes *d* (95% CI)		Between-group effect size r_p	Significance (two-tailed test)
		LTPP	Others		
Overall effectiveness	8/12	0.95 (0.68–1.22)	0.49 (0.28–0.71)	0.60	0.005
Target problems	7/11	1.11 (0.67–1.52)	0.59 (0.27–0.90)	0.49	0.04
Psychiatric symptoms	6/8	0.74 (0.28–1.21)	0.54 (0.16–0.92)	0.29	0.30
Personality functioning	4/5	0.90 0.08–1.72	0.18–0.18–0.55	0.76	0.02
Social functioning	6/7	0.86 (0.38–1.33)	0.43 (–0.15–1.02)	0.39	0.19

d: Hedges' *d* (within-group effect size)
95% CI: 95% confidence interval
r_p is the point biserial correlation between type of treatment (LTPP vs. other psychotherapies, 1/0) and the within-group effect sizes (*d*)
[a]As some studies included more than one form of LTTP, the number of treatment conditions in some cases differs from the number of studies

Effects of LTPP in Comparison to Those of Other Methods of Psychotherapy

Eight studies provided data for comparative analyses of LTPP versus other forms of psychotherapy [12, 14, 48, 53, 55, 62, 67, 71]. These studies examined the treatment of personality disorders (five studies), eating disorders (two studies), and heterogeneous disorders (one study; cp. Table 2.1). The psychotherapeutic treatments applied in the comparison groups included cognitive-analytic therapy (CAT; one study), cognitive therapy (CT; two studies), dialectical-behavioral therapy (DBT; one study), dynamic supportive therapy (DST; one study), family therapy (FT; one study), nutritional counseling (one study); short-term psychodynamic therapy (STPP; one study), and psychiatric treatment as usual (TAU; 4 studies, cp. Table 2.1).

In the eight studies included, the mean duration of LTPP was 53.41 weeks (SD = 30.92, median: 52). The mean number of LTPP sessions was 102.57 (SD = 135.58, median: 49). In the comparison groups, the mean treatment duration was 39.02 weeks (SD = 22.77, median: 52) and the mean number of sessions was 32.58 (SD = 27.65, median: 22). It is of note that it was *on average* that the duration was higher in the LTPP conditions. In the majority of comparative studies, however, treatment duration in the comparison groups was just as long as for LTPP (reflected by the identical median duration in both conditions). To examine the possible additional benefit of LTPP, we compared the within-group effects of LTPP with those of the comparison groups. Due to the small number of studies providing data for follow-up assessments, tests of significance were carried out only for the post-therapy data. As described in the methods section, we calculated point biserial correlations (r_p) between type of treatment (LTPP vs. other psychotherapies, 1/0) and the within-group effect sizes for the different outcome domains across all comparative treatment conditions as the between-group effect measure [36, 38]. According to Cohen, a point biserial correlation of 0.371 indicates a large effect size ([36, p. 82]).

In the first instance, we calculated the point biserial correlations across all the various mental disorders treated in the eight studies listed previously. This comparison included eight treatment conditions of LTPP (encompassing 175 patients) and 12 treatment conditions of other psychotherapeutic methods (257 patients). The point biserial correlations were significant for overall outcome, target problems, and personality functioning (Table 2.6). This means that LTPP yielded significantly larger pre–post effect sizes in the respective outcome domains than other forms of psychotherapy applied in the comparison groups. The significant between-group effect sizes were clearly above the value of 0.371 and could therefore be considered a large effect [36]. The between-group effect size for social functioning, though being large as well, did not reach significance due to the small number of studies.

t7.1 **Table 2.7** Effect sizes of long-term psychodynamic psychotherapy (LTPP) versus other methods of psychotherapy in
t7.2 complex mental disorders (seven studies)

t7.3 Outcome domain *(pre-therapy to post-therapy changes)*	Number of treatment conditions (LTPP/others)[a]	Within-group effect sizes *d* (95% CI)		Between-group effect size r_p	Significance (two-tailed test)
t7.4 t7.5		LTPP	Others		
t7.6 Overall effectiveness	7/11	1.00 (0.71–1.30)	0.46 (0.24–0.69)	0.68	0.002
t7.7 Target problems	6/10	1.05 (0.58–1.51)	0.46 (0.24–0.68)	0.69	0.003
t7.8 Psychiatric symptoms	5/7	0.84 (0.31–1.36)	0.52 (0.06–0.97)	0.40	0.20
t7.9 Personality functioning	¾	1.16 (0.35–1.97)	0.13 (–0.33–0.59)	0.96	<0.0001
t7.10 Social functioning	5/6	0.97 (0.48–1.46)	0.46 (–0.25–1.17)	0.45	0.17

t7.11 *d*: Hedges' *d* (within-group effect size)
t7.12 95% CI: 95% confidence interval
t7.13 r_p is the point biserial correlation between type of treatment (LTPP vs. other psychotherapies, 1/0) and the within-
t7.14 group effect sizes (*d*)
t7.15 [a]As some studies included more than one form of LTTP, the number of treatment conditions in some cases differs from
t7.16 the number of studies

In a second step, we repeated the comparative analyses focusing on those studies only that included complex mental disorders (i.e., personality disorders, chronic mental disorders, or multiple mental disorders). For this purpose, one study had to be excluded [67]. In the remaining seven studies, seven treatment conditions of LTPP (encompassing 155 patients) and 11 treatment conditions of other psychotherapeutic methods (236 patients) were included. Again, the point biserial correlation between treatment condition (LTPP vs. other psychotherapies) and within-group effect sizes was significant for overall outcome, target problems, and personality functioning (Table 2.7). For both psychiatric symptoms and social functioning, the between-group effect sizes were large as well, but did not reach significance. To specify the extent of differences in outcome of LTPP versus other psychotherapeutic methods, we transformed the point biserial correlations into between-group effect sizes in the form of a *d* statistic ([36], p. 22). The between-group effect sizes of $r_p = 0.68$, 0.69, and 0.96, which we identified for overall outcome, target problems, and personality functioning, are equivalent to $d = 1.8$, 1.9, and 6.9, respectively. It is of note, however, that our comparison of LTPP versus the other treatments considered treatment groups as the unit of analysis. Thus, our between-group effect sizes are not comparable to between-group effect sizes assessed by calculating the difference in outcome between two treatments for each single study since they refer to different units (i.e., groups of patients vs. individual patients). A between-group effect size of 1.8, in our case, indicates that in the studies of LTPP, the mean within-group effect size for overall outcome differed from the mean within-group effect size of the control groups by 1.8 standard deviations (referring to the distribution of outcomes across treatment conditions). Since effect sizes can be transformed into percentiles [36, 76], this implies that, on average, LTPP showed higher treatment effects than 96% of the comparison treatments. The respective between-group effect size assessed in the more conventional way will be reported later when discussing the responses to our meta-analysis.

Impact of Treatment Dose and Duration on Outcome of LTPP

In the studies of LTPP alone (i.e., without concomitant psychotropic medication), the number of sessions was significantly correlated with pre–post effect sizes in target problems and general psychiatric symptoms (Spearman $r_s = 0.62$, $p = 0.03$, $k = 12$; $r_s = 0.54$, $p = 0.04$, $k = 15$, respectively). The correlations with overall outcome, changes in personality, and social functioning were not significant ($r_s = 0.29$, $p = 0.25$, $k = 17$; $r_s = 0.43$, $p = 0.40$, $k = 6$; $r_s = 0.11$, $p = 0.73$, $k = 12$). Regarding

duration of treatment, none of the correlations with outcome of LTPP alone reached significance ($p > 0.07$). Again, no correlations were calculated for follow-up due to the small number of studies providing follow-up data.

Impact of Patient and Therapist Variables on Outcome of LTPP

In supplemental sensitivity analyses, we checked the following variables for a possible impact on post-test outcomes of LTPP: age, sex, diagnoses (personality disorders, chronic or multiple mental disorders, depressive and anxiety disorders), global and specific clinical experience of therapists, use of treatment manuals, and specific training in the treatment model under study. To compensate for type I error inflation related to multiple testing (i.e., calculation of a total of 100 correlations), we adjusted the significance level for these analyses ($p = 0.05/100$ tests). All correlations with the outcome of LTPP were insignificant ($p > 0.04$).

Conclusions

Evidence suggests that many patients suffering from complex mental disorders (e.g., personality disorders) do not sufficiently benefit from short-term psychotherapy [9, 10]. Long-term psychotherapy may be helpful for these groups of patients but is associated with higher direct costs than short-term psychotherapy. Against this background, our meta-analysis aimed at examining the effectiveness of LTPP, both per se and in comparison to other methods of psychotherapy.

According to the results, LTPP yielded large and stable effects both across various mental disorders and in patients with complex mental disorders (defined as personality disorders, multiple mental disorders, and chronic mental disorders). For overall outcome, the effect sizes did even increase significantly after termination of treatment.

The comparison of RCTs versus observational studies revealed no significant differences in outcome, suggesting that the outcome data of the RCTs included in this meta-analysis are representative for clinical practice. On the other hand, the results also show that the data of the observational studies did not systematically over- or underestimate the effects of LTPP.

If compared to other methods of psychotherapy, which were predominantly less intensive or shorter term, LTPP proved to be significantly superior with regard to overall outcome, target problems, and personality functioning.

With regard to potential confounders, in this meta-analysis, the number of LTPP sessions was the only variable that was significantly correlated with improvements in both target problems and general psychiatric symptoms. Neither for the duration of LTPP nor for any other patient, therapist, or treatment variables, significant correlations with outcome could be identified.

The major limitations of this first meta-analysis on the effectiveness of LTPP may be seen in the number and diversity of studies included.

Regarding the limited number of outcome studies on LTPP in general and of efficacy studies in particular, additional studies would be desirable without any doubt. Further studies are particularly required to confirm the results and to allow for more refined analyses addressing the effects of LTPP both in specific disorders and in comparison to specific forms of therapies. To date, however, not enough studies are available. With a relatively small number of studies, it is of particular importance to test for possible sources of bias. In our analysis, we accounted for potential flaws due to heterogeneity of results, publication bias, study quality, design factors, and concomitant medication. In addition, according to the results of sensitivity analyses, the results presented in this meta-analysis showed to be robust across various patient, therapist, or treatment characteristics. In sum, we did not find any cogent indications for bias related to the variety of studies included.

Response to Meta-Analytic Evidence

Publication of the meta-analysis in the Journal of the American Medical Association (JAMA) was accompanied by a comprehensive editorial comment [77]. Besides discussing crucial aspects of the meta-analysis in particular and psychotherapy research in general, this editorial concluded that our meta-analysis "provides evidence about the effectiveness of long-term dynamic psychotherapy for patients with complex mental disorders who often do not respond adequately to short-term interventions" ([77], p. 1,589). Media coverage of our findings was predominantly complaisant (e.g. [78]). In the scientific community, however, response to the meta-analytic evidence was controversial. While in the camp of psychodynamic research and practice, the atmosphere was characterized both by enthusiasm and an open debate about the various aspects addressed by the meta-analysis, more critical voices could be heard from representatives of other psychotherapeutic orientations (mainly advocates of CBT). A collection of frequent critical comments has been published in several letters to the editors in the *Journal of the American Medical Association* [79–82].

First of all, some letters criticized our meta-analysis for having addressed an "unconventionally broad research question" ([80], p. 930) by including heterogeneous treatments, patient populations, measures, outcomes, and comparison conditions, but failed to articulate exactly how and why heterogeneity would affect the research results [79–81]. As we reported in the article, results were robust across diagnostic groups, outcome domains, and research design [23]. On the contrary, a broad perspective on meta-analysis may increase the generalizability and usefulness of results: both patients and therapists are better served by a reliable answer on whether there is any convincing evidence that LTPP as a therapeutic principle, or a class of treatments, is effective in general, than by any unreliable assertion that a particular form of LTPP may or may be not effective for a particular disorder if compared to a particular therapy [25].

Furthermore, all letters raised concerns about possible publication or study selection bias [79–82]. However, these concerns were purely speculative and not supported by evidence. We applied several methods to test for publication bias, but did not find any indication. In addition, two letters criticized the exclusion of one particular study [83]. However, this study, amongst others [84, 85], did not meet the inclusion criteria because the majority of patients was still in treatment at the time points when effect sizes were assessed by the authors of the original studies. In the respective study by Giesen-Bloo, for example, 19 of 42 patients (45%) were still in treatment (LTTP) when outcome was assessed, and only two patients had completed LTPP. In the comparison group 27 of 44 patients (61%) were still in treatment, and only six patients had completed the treatment [83]. Data from ongoing treatments, however, do not provide reliable estimates for treatment outcome at termination or follow-up, e.g., if patients received only half of the "dose" of treatment when outcome is assessed. By analogy, if one runner starts for a 100-m race and another one for a 1,000-m race, the time taken after 100 m will not be representative for the short-distance speed of the second runner. The runners will adapt their speed to the short versus long distance they are going to face. This is true for patients in psychotherapy as well [60]. Psychotherapy is not a drug that works equally under different conditions, but a psychosocial process.

Another crucial criticism addressed the methods applied to calculate effect sizes, particularly with regard to comparative analyses [80, 82]. As the number of controlled trials of LTPP was relatively small, we assessed within-group effect sizes as a universal outcome measure, which can be determined for both controlled and uncontrolled trials, throughout all studies. In the controlled studies, we found significantly larger within-group effect sizes in the LTPP conditions than in the control conditions. In order to quantify the extent of this difference, we transformed the point biserial correlations used for tests of significance into between-group effect sizes in form of *d* [36]. Since these effect sizes consider outcomes of treatment groups as the entity of analysis, they certainly are not identical to between-group effect sizes as they are usually assessed in individual studies based on

outcome of individual patients. Obviously, this specific characteristic of the between-group effect measures we used was ambiguous, something that we did not intend. In order to clarify this issue, we reported the corresponding between-group effect size assessed in the conventional way by calculating the difference between two competing treatments for each study in our reply [86]. For overall outcome, this between-group effect size (Hedges' d) was 0.65 ($p = 0.026$). This effect size of 0.65 implies that, on average, patients treated by LTPP were better off than 75% of the patients in the control groups (with the distribution of individual patient outcomes as the reference base). As has correctly been pointed out in one letter, considering treatment groups rather than studies as the unit of analysis can reduce the effect of randomization [80]. This *may* weaken internal validity, but does *not necessarily* imply serious bias. There is considerable evidence that observational studies do not systematically overestimate the effects of psychotherapy [87]. Actually, the conventionally assessed between-group effect size of 0.65 reported previously confirms the superiority of LTPP in the controlled studies.

Some letters criticized the methodological quality of the controlled studies, e.g., missing data on treatment integrity [79]. However, all of the controlled studies of complex mental disorders used treatment manuals and ensured treatment integrity by supervision, video-recordings of sessions, and ratings of adherence and competence. Although we carried out comprehensive tests for sources of quality-related bias, we did not find any indications.

In addition, several allegations have been made concerning attributes of the comparison conditions [79, 81]. While it is not accurate that we did include wait list groups in the control conditions, it is true, however, that the control conditions included several treatment as usual (TAU) conditions, thus reducing the mean effect size of the alternative treatments. It is also true, however, that the control conditions included specific long-term psychotherapy (e.g., DBT) in turn increasing the mean effect of the alternative treatments. As noted earlier, it was on average that the duration of therapy was longer and the dose was more intensive in the LTPP conditions. Thus, we used the alternative treatments as an unspecific (mixed) control group including TAU and different established treatments. Consequently, we did not claim that LTPP is superior to any specific forms of established psychotherapy (e.g., DBT) in complex mental disorders, but to predominantly less intensive or shorter forms of psychotherapeutic interventions in general. We expect this to be true for other higher dose or long-term approaches of formal psychotherapy as well, e.g., of CBT. With regard to the hierarchy of evidence, our comparison of LTPP with a mixed group including TAU and specific psychotherapy is stricter than a comparison with wait list groups, placebo therapy, or TAU, but less strict than a comparison with established treatments [1, 88]. Controlling for the common factors of psychotherapy (e.g., attention, expectation for improvement, empathy), our comparison of LTPP with other treatments is "specific" as defined by Chambless and Hollon, allowing to conclude that the superiority of LTPP is due to specific factors of LTPP [88].

Eventually, apart from some comments that obviously arose from misconceptions of our analyses, one letter listed selective results of individual studies in which the effect sizes of the control groups, at least for some measures, were larger than those of LTPP [79]. The role of meta-analyses, however, is to synthesize results across individual studies to arrive at more general conclusions. This is why meta-analysis was developed, and why it is superior to narrative (nonquantitative) literature reviews where it is also too easy to emphasize cherry picked studies that support one's preferred outcomes and to downplay those that do not. The results of a meta-analysis may differ from that of individual studies.

Although we cannot respond to every single concern addressed in the letters, it can be stated that none identified an issue that would have affected the overall conclusions of the meta-analysis. Certainly, the existing literature on LTPP is incomplete and further research is needed. However, our study answered the questions it was designed to address, and its main conclusion stands: *Based on the scientific evidence available to date*, LTPP is effective and appears superior to less intensive or shorter-term therapies for complex mental disorders.

Résumé

As findings emerged from our meta-analysis on long-term psychodynamic psychotherapy (LTPP), we were aware that not all people would like them. The field of psychotherapy is rife with ideological bias, and it is an unfortunate but common practice to celebrate empirical evidence when it supports one's preferred treatment model and to attack the research methodology when it does not. Methodological criticism is always possible because there is no single correct way to conduct a meta-analysis, each approach has advantages and disadvantages, and not all methods can be applied simultaneously.

Nonetheless, we took all the critics seriously and tried to adapt our methodology wherever reasonable. In a first update of our meta-analysis, we take several points of criticism put forward against our 2008 meta-analysis into account, e.g., regarding the calculation of between-group effect sizes or of ITT analyses, alternative methods to control for possible publication bias, or the inclusion of insufficiently active control conditions [89]. According to the results, the original findings are thoroughly confirmed. Nonetheless, additional studies are required to further validate the results and to allow for more refined analyses.

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