

Psychological treatment of late-life depression: a meta-analysis of randomized controlled trials

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SUMMARY

Background Older meta-analyses of the effects of psychological treatments for depression in older adults have found that these treatments have large effects. However, these earlier meta-analyses also included non-randomized studies, and did not include newer high-quality randomized controlled trials.

Methods We conducted a meta-analysis of randomized studies on psychological treatments for depression in older adults.

Results Twenty-five studies were included, of which 17 compared a psychological intervention to a control condition (mainly waiting list and care-as-usual control groups). The quality of the included studies varied. Psychological treatments have moderate to large effects on depression in older adults (standardized mean effect size $d = 0.72$). Heterogeneity was very low. No differences were found between individual, group or bibliotherapy format, or between cognitive behavioral therapy and other types of psychological treatment. The effects were comparable in studies where depression was defined according to diagnostic criteria, and those in which depression was measured with self-rating questionnaires.

Conclusion Although the quality of many studies was not optimal, the results of this meta-analysis support the results of earlier meta-analyses, which also included non-randomized studies. Psychological treatments are effective in the treatment of depression in older adults. Copyright © 2006 John Wiley & Sons, Ltd.

KEY WORDS — meta-analysis; depression; major depressive disorder; psychological treatment; older adults

INTRODUCTION

Depression in late life is a highly prevalent condition (Beekman *et al.*, 1999), has an unfavorable prognosis (Beekman *et al.*, 2002), has a considerable impact on the quality of life of patients (Doraiswamy *et al.*, 2002) and their relatives (Hinrichsen *et al.*, 1992; Leinonen *et al.*, 2001), is associated with a significantly increased mortality rate (Cuijpers and Schoevers, 2004), and incurs considerable economic costs (Katon *et al.*, 2003). It is not surprising, therefore, that in the past decades a considerable number of studies have focused on the epidemiology,

course, etiology, and treatment of depression in older adults (Blazer, 2003).

One line of research has examined the effects of psychological treatments for depression in late life, which started in the late 1970s and early 1980s with small trials (Gallagher, 1981; Gallagher and Thompson, 1982), and is still continuing with larger, high-quality randomized controlled trials (Williams *et al.*, 2000; Ciechanowski *et al.*, 2004). During this period, dozens of controlled studies of varying methodological quality have been conducted. With a growing number of studies, it can be useful to conduct a meta-analysis. In a meta-analysis, the outcomes of the individual studies are integrated statistically, which results in a better estimate of the effects of a type of intervention (Higgins and Green, 2005).

In the past years, several meta-analyses of psychological treatments in older adults have been conducted. In a systematic review of meta-analyses of psychological treatments for depression in all age

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groups (Cuijpers and Dekker, 2005), we identified six meta-analyses of psychological treatments for depression in late life (Scogin and McElreath, 1994; Koder *et al.*, 1996; Engels and Vermey, 1997; Cuijpers, 1998; McCusker *et al.*, 1998; Gerson *et al.*, 1999). None of these meta-analyses, however, has focused on randomized controlled trials only, and all also included studies in which the respondents were not allocated randomly to conditions, while this is known to be the most crucial element of being sure that a treatment effect can actually be attributed to the treatment (Higgins and Green, 2005). Furthermore, the last of these meta-analyses was conducted several years ago, thus not including important, more recent, high-quality trials.

We decided, therefore, to conduct a new comprehensive meta-analysis of randomized controlled trials. Earlier reviews and meta-analyses have consistently concluded that psychological treatment of depression is effective in older adults. We wanted to examine whether this result remains unchanged when only randomized controlled studies are examined, and when more recent (high-quality) studies are included.

METHOD

Identification and selection of studies

Studies were traced by means of several methods. First, we conducted several searches in computerized literature databases (Medline, 1966–2005; Psycinfo, 1960–2005). Here we combined terms indicative of the intervention (psychotherapy, psychological treatment, cognitive therapy, behavior therapy, interpersonal therapy, reminiscence, life review) and depression (both MeSH-terms and text words), and limited the search to randomized controlled trials. Unpublished studies were searched through a search of Dissertation Abstracts. Second, we examined the references of the six meta-analyses described above and four systematic reviews (Schneider and Olin, 1995; Cole *et al.*, 2000; Arean and Cook, 2002; Blazer, 2003), which were identified in a systematic review of meta-analyses of psychological treatments for depression (Cuijpers and Dekker, 2005). And third, we examined the references of retrieved papers.

We included (-) randomized controlled trials, (-) comparing a psychological treatment to a control group or to another treatment (psychological or not), (-) in subjects aged 50 years or older with clinically relevant depressive symptoms (defined as: scoring above a cut-off score on a self-rating depression questionnaire; scoring above a cut-off score on a

clinician-rated instrument; or defined as a depressive disorder according to diagnostic criteria, as described in the DSM, ICD, or Research Diagnostic Criteria). No language restrictions were applied. Studies for which insufficient data were available to calculate effect sizes (continuous or dichotomous) directly (with means and standard deviations) or indirectly (with other statistics, such as *t*-value or *p*-value), were excluded. We also excluded studies in which the effects of the psychological treatment could not be distinguished from the total intervention.

Quality assessment

The methodological quality of the studies was assessed using four basic criteria (Higgins and Green, 2005): allocation to conditions is done by an independent (third) party; adequacy of random allocation concealment to respondents; blinding of assessors of outcomes; and completeness of follow-up data.

Meta-analysis

We calculated effect sizes (*d*) by subtracting (at post-test) the average score of the control group (M_c) from the average score of the experimental group (M_e) and dividing the result by the pooled standard deviations of the experimental and control group (SD_{ec}). An effect size of 0.5 thus indicates that the mean of the experimental group is half a standard deviation larger than the mean of the control group. Effect sizes of 0.56 to 1.2 can be assumed to be large, while effect sizes of 0.33 to 0.55 are moderate, and effect sizes of 0 to 0.32 are small (Lipsey and Wilson, 1993).

In the calculations of effect sizes we only used those instruments that explicitly measure depression (Table 1). When means and standard deviations were not reported, we used other statistics (*t*-value, *p*-value) to calculate effect sizes. If more than one depression measure was used, the mean of the effect sizes was calculated, so that each study (or contrast group) only had one effect size. In some studies, more than one experimental condition was compared to a control condition. In these cases, the number of subjects in the control condition was evenly divided over the experimental conditions so that each subject was used only once in the meta-analyses.

To calculate pooled mean effect sizes, we used the computer program Comprehensive Meta-analysis (version 2.2.021), developed for support in meta-analysis. As heterogeneity was found to be low, we

Table 1. Randomized controlled studies examining the effects of psychological treatments for depression in the elderly

Study	Population	Age	Definition of depression	Conditions	N	Measurements	Instr	Sessions	Format
Alexopoulos, 2003	CLIN	≥65	MDD (SCID) + HRSD ≥18	1. Problem solving therapy 2. CTR (Support. therapy)	12 13	Pre, Post	HRSD SCID	12 (wk)	IND
Arcan, 1993	COMM	55-80	MDD (RDC) + BDI + ≥GDS ≥10 + HRSD ≥18	1. Problem solving therapy 2. Reminiscence 3. Waiting list	28 27 20	Pre, Post, 3 mth (1vs2)	HRSD BDI GDS	12 (wk)	GRP
Ciechanowski, 2004	COMM + PC	≥60	MinD or DYSTH (DSM/SCID)	1. PST + behav. activation + med. advise 2. Usual care	72 66	Pre, 6, 12 mmonth	HSCIL-20	8 (19 wks)	IND
Floyd, 1998	COMM	≥60	MDD, MinD or DYSTH (DSM-IV) + HRDS ≥10	1. MCP 2. Individual CBT 3. Waiting list control	16 16 16	Pre Post 12 weeks	HRDS GDS	1.4 ^T 2.12-20	BIBL IND
Fry, 1983	NR	≥65	High score on BDI	1. Structured REM ther 2. Unstructured REM ther 3. No treatment	54 54 54	Pre Post	BDI	5	IND
Fry, 1984	Res. homes	≥67	MMPI-D	1. CBT 2. WL	20 15	Pre Post	MMPI-d	12	IND
Gallagher, 1981	CLIN	≥65	NR	1. BT 2. Supportive therapy	14 14	Pre Post	MMPI-d, Zung, BDI	10	GRP
Gallagher and Thompson, 1982	COMM	≥55	MDD (SADS / RDC) + HRSD ≥14 + BDI ≥17	1. CBT 2. WL	10 10	Pre, Post, 1½, 3, 6, 12 mmonth	HRSD BDI Zung	16 (12 wk)	IND
Haringmsa <i>et al.</i> , 2005	COMM	≥55	Self-defined depression	1. CBT 2. WL	61 58	Pre Post	CES-D HADS-D		GRP
Hautzinger and Welz, 2004	COMM + PC	≥60	Depr dis (DSM-IV / SCID)	1. CBT 2. Waiting list	65 35	Pre Post	GDS, IDS, SCL90d	12	GRP
Klausner <i>et al.</i> , 1998	CLIN	≥55	MDD (SADS)	1. Goal-focused group psychotherapy 2. REM	7 7	Pre Post	HDRS, Mont-A, BDI	11	GRP
Landreville and Bissonette, 1997	COMM	≥55	GDS ≥11	1. Cognitive MCP 2. Waiting list control	10 13	Pre Post	BDI, GDS, IDD	4 ^T	BIBL
Latour and Cappeliez, 1994	COMM	≥65	MDD (IDS) or BDI ≥14 or GDS ≥14	1. CBT + pretherapy training 2. CBT + attention placebo	15 15	Pre Post	HRSD, BDI, GDS	4 + 12 CBT	GRP

(Continues)

Table 1. (Continued)

Study	Population	Age	Definition of depression	Conditions	N	Measurements	Instr	Sessions	Format
Mossey <i>et al.</i> , 1996	CLIN	≥60	GDS > 11, no MDD	1. IPT 2. CAU	35 41	Pre Post	GDS	10	IND
Reynolds <i>et al.</i> , 1999	COMM (bereav. related MDD)	≥50	MDD (RDC/SADS)	1. IPT + AD 2. IPT + placebo 3. AD 4. Placebo	16 17 25 22	Pre Post 2 years	HDRS BDI	Nr	IND
Scogin <i>et al.</i> , 1987	COMM	≥60	HRSD ≥ 10; no severe depression	1. Cognitive MCP 2. Waiting list control 3. Control	10 11 8	Pre Post	HRSD BDI GDS	4 ^T	BIBL
Scogin <i>et al.</i> , 1989	COMM	≥60	HRSD ≥ 10;	1. Behavioral MCP 2. Cognitive MCP 3. Waiting list control	23 22 23	Pre Post	HRSD GDS	4 ^T	BIBL
Serrano <i>et al.</i> , 2004	COMM (soc ser clients)	≥65	CES-D ≥ 16	1. Life review 2. CAU	25 25	Pre Post	CES-D	4 (wk)	IND
Sirey <i>et al.</i> , 2005	CLIN	≥65	MDD (DSM/SCID)	1. AD + TIP 2. AD	26 26	Pre Post	HRSD	3 + 2 ^T	IND
Sloane <i>et al.</i> , 1985	NR	NR	MDD (RDC) + HRSD ≥ 17	1. IPT 2. AD 3. Placebo	18 18 18	Pre Post	HRSD	16	IND
Thompson, 1984	NR	≥60	MDD; HRSD ≥ 14; BDI ≥ 16	1. BT 2. CBT 3. PD 4. WL (6-weeks)	17 11 14 10	Pre Post, 1½, 3, 6, 12, 24 mnth	HRSD BDI	16–20	IND
Thompson <i>et al.</i> , 1987	COMM	≥60	MDD (RDC); BDI ≥ 17; HRSD ≥ 14	1. CT 2. BT 3. PD 4. WL (6-weeks)	27 25 24 19	Pre Post	BDI HRSD BSI-D	16–20	IND
Thompson <i>et al.</i> , 2001	COMM	≥60	MDD (SADS / RDC) + HRSD ≥ 14 + BDI ≥ 16	1. CBT 2. AD 3. CBT + AD	31 33 36	Pre Post	BDI HRSD	16–20	IND
Watt and Cappeliez, 2000	COMM	≥60	GDS ≥ 14	1. Integrative reminiscence 2. Instr. reminiscence 3. socialization control	13 13 13	Pre Post 3 mnth	GDS HRSD	6 (wk)	GRP

Williams <i>et al.</i> , 2000	COMM	DYSTH or minD + HRSD \geq 10	1. PST 2. AD 3. Placebo	138 137 140	Pre post	HSCL-D-20
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Abbreviations: CLIN = clinical sample; COMM = community recruited sample; PC = sample recruited through primary care; NR = not reported; Res. Homes = residential homes; bereav = bereavement; MDD = major depressive disorder; HRSD = Hamilton Rating Scale of Depression; SCID = Structured Clinical Interview for DSM-IV; RDC = Research Diagnostic Criteria; GDS = Geriatric Depression Scale; MinD = minor depression; DYSTH = dysthymia; MMPLD = Minnesota Multiphasic Personality Inventory - Depression scale; SADS = Schedule of Affective Disorders; Depr dis = depressive disorder; CES-D = Center for Epidemiological Studies - Depression scale; CTR = control condition; PST = problem solving therapy; MCP = minimal contact psychotherapy; CBT = cognitive behavior therapy; REM = reminiscence; WL = waiting list; BT = behavior therapy; PD = psychodynamic therapy; CAU = care-as-usual; IPT = interpersonal psychotherapy; AD = antidepressive medication; TIP = Treatment Initiation Program; PST = problem solving therapy; Instr = instrumental; HSCL = Hopkins Symptoms Checklist; HADS = Hospital Anxiety and Depression Scale; IDS = Inventory of Depressive Symptomatology; SCL90d = Symptom Checklist 90 Depression scale; Mont-A = Montgomery-Asberg Depression Scale; IDD = Inventory to Diagnose Depression; BSI-D = Brief Symptom Inventory - Depression scale; IND = individual therapy; GRP = group therapy; BIBL = bibliotherapy; support = supportive therapy.
[†]intervention period in minimal contact psychotherapy.

decided to calculate mean effect sizes with the fixed effects model in all analyses. As indicator of homogeneity, we calculated the Q-statistic. We also calculated the I^2 -statistic which is also an indicator of heterogeneity in percentages. A value of 0% indicates no observed heterogeneity, and larger values show increasing heterogeneity, with 25% as low, 50% as moderate, and 75% as high heterogeneity.

Several studies also reported dichotomous outcomes, indicating the proportion of subjects who scored below a certain score on a questionnaire or who recovered from a depressive episode. For these outcomes we calculated the odds ratio of improvement in the experimental condition compared to the control condition (using the Mantel-Haenszel method). For these analyses, we also calculated Q and I^2 as indicators of heterogeneity.

We examined whether the effect sizes of specific subgroups differed from each other, with the regression analyses as implemented in Comprehensive Meta-analysis version 2.2.021.

RESULTS

Description of studies

We examined a total of 2,355 abstracts from the Cochrane database (1,273), Pubmed (866) and Psychinfo (216). We retrieved a total of 129 papers, of which 95 were excluded. Eleven papers were excluded because assignment-to-conditions was not random; 28 were excluded because the interventions were not psychological treatments or because the effects of the psychological treatment could not be distinguished (e.g. comprehensive treatment programs including adequate treatment with antidepressive medication); a further 19 studies appeared not to have included a control or comparison group; in another 19 studies depression was not an inclusion criterion (or the intervention was aimed not only at subjects with depression); eight were not aimed exclusively at elderly, and ten papers were excluded for other reasons. A total of 34 papers, describing 25 controlled and comparative studies were included. Selected characteristics of these 25 studies are described in Table 1.

In 17 of the 25 studies, a psychological treatment was compared to a control condition. The control conditions included waiting lists (eight studies), care-as-usual (four studies), placebo (three studies), and other control groups (three studies; some studies used more than one type of control group). In the remaining

eight studies, different types of treatments were compared to each other.

In 16 studies, subjects were recruited from the community, five used clinical samples, and four used other samples or did not report the recruitment method. In 15 studies, only subjects were included who met diagnostic criteria for a mood disorder (major depression, dysthymia, minor depression), nine of which included only subjects with major depression. The psychological interventions studied included cognitive behavioral therapies (12 studies), behavior therapies (six studies), reminiscence and life-review therapies (five studies), interpersonal psychotherapy (three studies), problem-solving therapy (four studies), and other therapies (five studies). In five studies, psychological treatments were compared to anti-depressive medication.

The quality of the included studies was not optimal. Only two studies reported that randomisation was conducted by an independent (third) party. As in most studies on psychological interventions, concealment of random allocation to respondents was not possible, but in two studies a placebo-psychological treatment was used. Blinding of assessors of outcomes was reported in 13 of the 25 studies. As an indicator of the completeness of follow-up data, we examined the drop-out rate for each study, and found that the drop-out rate was below 20% in ten studies, 20–30% in eight studies, and higher than 30% in five studies (two studies did not report data on drop-out).

Effects of psychological interventions at post-test

We succeeded in comparing the effects of psychological treatments on depressive symptomatology at post-test to control conditions in 16 studies with 21 contrast groups (Table 2), with a total of 989 respondents (one of the 17 studies with a control condition did not give sufficient data to calculate an effect size with continuous outcomes; Reynolds *et al.*, 1999). The mean effect size was 0.72 [95% Confidence Interval (CI) 0.59~0.85]. We have plotted the effect sizes and 95% CIs of the individual contrast groups in Figure 1. There was considerable heterogeneity in this meta-analysis. Therefore, we decided to exclude one study with an exceptionally high effect size (Fry, 1983), and one with an exceptionally low effect size (Williams *et al.*, 2000) from the analyses because they were considered to be outliers. The remaining 18 contrast groups (number of subjects 927) had a mean effect size of 0.72 (95% CI: 0.57~0.87), which can be considered as moderate to

Table 2. Meta-analyses of studies examining the effects of psychological treatment compared to control conditions at post-test: overall results of continuous outcomes and subgroup analyses

Study	N _{comp}	d	95% CI	Q	I ² (%)
All studies	21	0.72	0.59~0.85	101.13 ^b	80.2
All studies minus 2 outliers	18	0.72	0.57~0.87	17.28	1.6
Inclusion criteria					
MDD ^a	7	0.84	0.56~1.11	8.27	27.4
Other	12	0.67	0.49~0.85	7.24	0
Format					
Individual	7	0.73	0.51~0.95	7.42	19.2
Group	6	0.70	0.46~0.95	5.51	9.3
Bibliotherapy	5	0.73	0.35~1.11	4.32	7.5
Recruitment					
Community	12	0.77	0.60~0.95	9.70	0
Other	6	0.58	0.29~0.86	6.30	20.6
Type of treatment					
CBT	9	0.70	0.48~0.92	10.33	22.5
Other treatments	9	0.74	0.53~0.94	6.88	0
Control group					
Waiting list	11	0.72	0.51~0.92	12.97	22.9
Care-as-usual	3	0.75	0.49~1.01	1.45	0
Other	4	0.64	0.19~1.09	2.70	0

^awith or without minor depressive disorder and/or dysthymia.

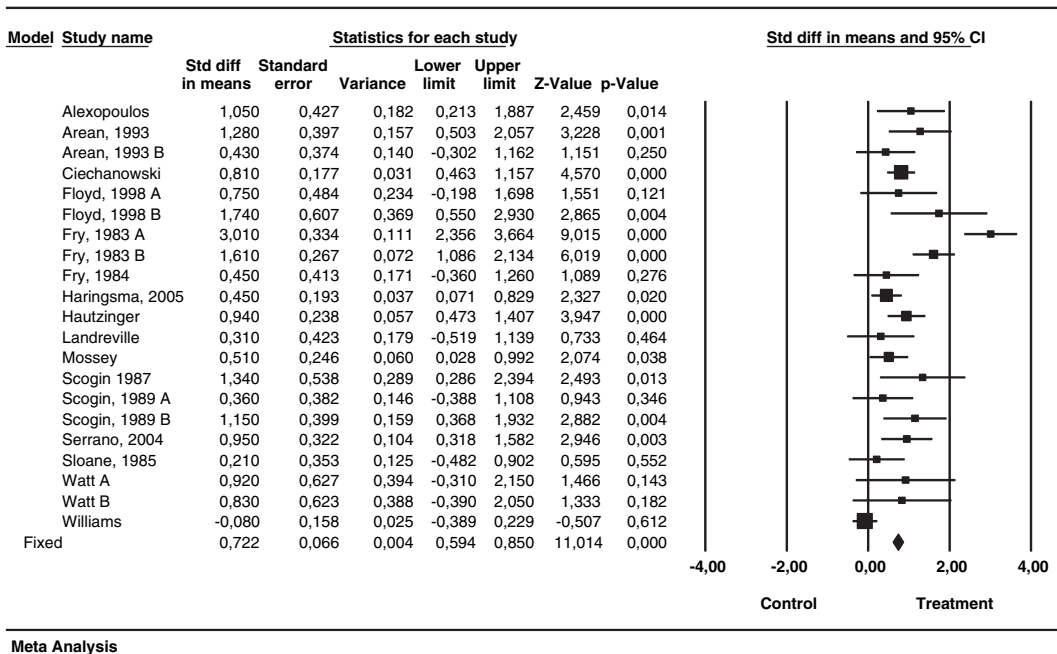
^bthis is the only Q value which was found to be significant ($p = 0.004$).

large, while the heterogeneity was very low ($I^2 = 1.6\%$).

Although the heterogeneity of the resulting set of studies was very low, we decided to conduct some more meta-analyses in a number of subgroups. We compared studies in which only subjects with MDD (with or without subjects with minor depression and/or dysthymia) were included and studies in which other inclusion criteria were used; the format of the intervention (individual, group, bibliotherapy); recruitment method (community recruitment versus other methods); cognitive behavior therapy (for which most comparisons were available) versus other therapies; and control group (waiting list, care-as-usual, and other). The results are presented in Table 2. None of the subgroups differed significantly from each other (as tested with the regression analyses module as implemented in Comprehensive Meta-analysis, version 2.2.021), and the analyses of all subsets resulted in low, non-significant heterogeneity.

Dichotomous outcomes

In 11 studies (14 comparisons), dichotomous outcomes of the psychological interventions were



Meta Analysis

Figure 1. Standardized effect sizes of psychological treatments compared to control conditions at post-test

reported. In most of these outcomes, the number of subjects who scored below a cut-off point on a depression measure at post-test were reported. The mean odds ratio of these outcomes was 2.63 (95% CI: 1.96 ~ 3.53), with considerable heterogeneity ($Q = 37.02, p < 0.001; I^2 = 64.9%$). Because the methods with which these outcomes were measured differed considerably in the included studies, we did not conduct further analyses on subsets of these studies.

Psychological treatment and treatment with antidepressive medication

We succeeded in comparing the effects of psychological treatment on continuous outcomes directly with the effects of antidepressive medication in three studies (Sloane *et al.*, 1985; Reynolds *et al.*, 1999; Thompson *et al.*, 2001). The effect sizes ranged from 0.15 in favor of antidepressive medication (Sloane *et al.*, 1985) to 0.32 in favor of psychological treatment (Thompson *et al.*, 2001). The mean effect size was -0.01 (95% CI: -0.26 ~ 0.24; $Q = 2.33$ n.s.; $I^2 = 0.2%$), suggesting that no significant differences existed in the effect sizes between the two treatment types.

The additional impact (continuous outcomes) of adding psychological treatment to the effects of

antidepressive medication alone could be calculated for only two studies (Thompson *et al.*, 2001; Sirey *et al.*, 2005). The mean effect size was 0.50 in favor of combined treatment (95% CI: 0.13 ~ 0.87; $Q = 2.01$ n.s.; $I^2 = 50.2%$).

Comparative effects of different psychological treatments

The effects of different types of psychological treatment were compared in 12 studies (18 comparisons). These comparisons are graphically represented in Table 3. Because these comparisons differed strongly, we did not further analyze them.

However, the analyses made it clear that no clear differences in effects between different psychological treatments were found. As can be seen from Table 3, only two comparisons reached a significance level of $p < 0.05$ (Scogin *et al.*, 1989; Klausner *et al.*, 1998). On the basis of these studies, it is not possible to decide whether one type of treatment is more effective than another.

Effects at follow-up

The effects of psychological treatments at follow-up could be compared to care-as-usual control groups in only two studies (three comparisons): 0.35 at

Table 3. Comparisons of psychological treatments to other psychological treatments for depression in older adults^a

Study name	Comparison	d 95% CI	Std diff in means and 95% CI
Arean, 1993	PST vs REM	0,53 (−0.06 ~ 1.12)	
Floyd, 1998	IND-CBT vs MC-CBT	0,51 (−0.19 ~ 1.21)	
Gallagher, 1981	BT vs ST	0,00 (−0.74 ~ 0.74)	
Gallagher, 1982 (A)	BT vs CBT	0,05 (−0.83 ~ 0.93)	
Gallagher, 1982 (B)	BT vs PD	0,34 (−0.54 ~ 1.22)	
Gallagher, 1982 (C)	CBT vs PD	0,38 (−0.50 ~ 1.26)	
Klausner, 1998	GFT vs REM	1,40 (0.23 ~ 2.57)	
Latour, 1994	CBT+pre vs CT	0,92 (−0.06 ~ 1.90)	
Scogin, 1989	MC-BT vs MC-CBT	0,69 (0.05 ~ 1.33)	
Thompson, 1984 (A)	BT vs PD	0,14 (−0.65 ~ 0.93)	
Thompson, 1984 (B)	CBT vs BT	0,31 (−0.56 ~ 1.18)	
Thompson, 1984 (C)	CBT vs PD	0,64 (−0.29 ~ 1.57)	
Thompson, 1987 (A)	BT vs CBT	0,05 (−0.49 ~ 0.59)	
Thompson, 1987 (B)	BT vs PD	0,20 (−0.36 ~ 0.76)	
Thompson, 1987 (C)	CBT vs PD	0,13 (−0.42 ~ 0.68)	
Watt, 2000	Instr-REM vs Integr-REM	0,11 (−0.82 ~ 1.04)	

Abbreviations: PST: problem solving therapy; REM: reminiscence; IND: individual; CBT: cognitive behavior therapy; MC: minimal contact; BT: behavior therapy; ST: supportive therapy; PD: psychodynamic therapy; GFT: goal-focused therapy; pre: pretreatment; Instr: instrumental; Integr: integrative; vs: versus.

^aIn the comparisons, the most effective treatment is mentioned first.

12 months follow-up (Ciechanowski *et al.*, 2004); 2.26 for instrumental reminiscence (Watt and Cappeliez, 2000); and 2.28 for integrative reminiscence (Watt and Cappeliez, 2000). Because of the small number of studies, no conclusions can be drawn on the effects in the longer term.

It was possible to calculate the effect sizes indicating the change from post-test to follow-up in treatment conditions in four studies (eight comparisons), with the follow-up periods ranging from 3 months to 1 year. These effect sizes ranged from −0.71 to 0.73, but none of these reached significant levels of $p < 0.05$. This could indicate that the effects of the interventions at post-test remained stable over time. However, because of the small number of studies, no definite conclusions can be drawn.

DISCUSSION

We wanted to examine whether a meta-analysis of randomized studies of psychological treatments for depression in older adults would confirm the results of earlier meta-analyses that psychological interventions are effective in the treatment of depression in older adults. We found clear evidence that this is indeed the case. There is no doubt that psychological treatments

are effective in older adults with depression. The overall effect (mean effect size 0.72) is comparable to effect sizes found in meta-analyses of psychological treatments for depression in younger adults (Cuijpers and Dekker, 2005).

The number of studies comparing the effects of psychological and pharmacological treatments was too small to draw any definite conclusion, nor were sufficient studies available to examine whether combined psychological and pharmacological treatment was superior to pharmacological treatment alone. As the effects of psychological treatments are very similar in younger and older adults, it is entirely possible that combined treatment is superior in older adults, as has been shown clearly in meta-analyses with younger adults (Friedman *et al.*, 2004; Pampanolla *et al.*, 2004). We did not find indications either, that individual therapies are more effective than group therapies. Again, however, the number of studies was too small to draw any definite conclusion on the relative effectiveness of individual and group therapies, especially because meta-analyses in younger adults did find indications that individual therapies are somewhat more effective than group therapies (Churchill *et al.*, 2001; McDermut *et al.*, 2001).

In meta-analyses with younger adults, it has been suggested that cognitive therapy is more effective than other psychological therapies (Gloaguen *et al.*, 1998). We found no indication that this is true in older adults. The equivalence of cognitive and other therapies, has also been confirmed in a recent meta-analysis involving younger adults (Wampold *et al.*, 2002).

This study has several limitations. First, we found that the quality of many studies on psychological treatment of depression in older adults was not optimal. Although it is clearly inherent in studies of psychological treatments that it is not possible to conceal to subjects to which condition they are assigned (in waiting list control conditions it is not possible at all), many studies did not meet other major quality criteria, such as assignment to conditions by an independent person, and blinding of assessors. In some studies we also found high drop-out rates.

Another limitation of this meta-analysis is that we could include only a relatively small number of effect sizes. Furthermore, most studies used a waiting list or a care-as-usual control group, and very few studies used placebo control groups.

We also had to exclude two studies in order to get a sample of heterogeneous studies. It is not clear why these two studies were outliers. One of them was an old study, in which the sample was not described adequately (Fry, 1983). The other, however, was a high-quality study (Williams *et al.*, 2000), which differed from most other studies only in the use of a placebo control group. On the other hand, the two other placebo controlled studies in this meta-analysis did not find such small effect sizes (Sloane *et al.*, 1985; Reynolds *et al.*, 1999). This study also differed from other studies in that it used problem-solving therapy as psychological intervention.

Despite the limitations of this meta-analysis, however, we did find clear indications that psychological therapies are effective in treating depression in older adults. These effects are comparable to the effects of psychological treatments in younger adults. From a clinical point of view, the results of this meta-analysis indicate that psychological treatments can be used as a first line option in treating depression in older adults. This is important because many depressed people are reluctant in accepting antidepressive medication, and this meta-analysis shows that psychological treatment is a good alternative. Interestingly, the comparable effect sizes of different types of psychological treatments and the low heterogeneity indicate that all types of treatment are equally effective. This result should be considered cautiously, because the number of studies is relatively small.

KEY POINTS

- Psychological treatments are effective in the treatment of depression in older adults.
- The effects of psychological treatments are comparable to the effects of pharmacological treatments.
- There are no indications that one type of psychological treatment is more effective than another type.
- The effects at follow-up remain unclear.

However, there is no reason yet to prefer one type of psychological treatment, and which treatments are offered can be decided on the basis of preferences of practitioners and patients. This may stimulate the use of psychological treatments in routine practice.

Clearly, more research in this area is needed. Although we included only randomized trials, the quality of these studies was not optimal, and there is a need for high-quality studies. Furthermore, a growing number of high-quality studies may very well result in different results in meta-analyses, which was recently illustrated in the area of depression in children and adolescents. A new, large meta-analysis (Weisz *et al.*, 2006) resulted in a considerably lower mean effect size than earlier, smaller meta-analyses in the same area. Important research questions for future studies include the issue of combined versus single treatments, the longer term effects of psychological and combined treatments, effective ingredients, and differential effects in specific subpopulations, such as older adults with somatic illnesses.

Until now, however, it can be safely assumed that psychological treatments for depression are effective in older adults and this should be seen as an indication that further dissemination of these treatments is justified.

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