

Is Group More Cost Effective than Individual Cognitive Behaviour Therapy? The Evidence is not Solid Yet

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Abstract. This paper critically evaluates the empirical evidence of 36 studies regarding the comparative cost-effectiveness of group and individual cognitive behaviour therapy (CBT) as a whole, and also for specific mental disorders (e.g. depression, anxiety, substance abuse) or populations (e.g. children). Methods of calculating costs, as well as methods of comparing treatment outcomes were appraised and criticized. Overall, the evidence that group CBT is more cost-effective than individual CBT is mixed, with group CBT appearing to be more cost effective in treating depression and children, but less cost effective in treating drugs and alcohol dependence, anxiety and social phobias. In addition, methodological weaknesses in the studies assessed are noted. There is a need to improve cost calculation methodology, as well as more solid and a greater number of empirical cost-effectiveness studies before a firm conclusion can be reached that group CBT is more cost effective than individual CBT.

Keywords: Cost effectiveness, cognitive behaviour therapy, group psychotherapy, individual CBT, treatment outcome.

Introduction

During World War II, huge patient numbers and small staff numbers led to sharp increases in group therapy and research in all medical fields. Since then, the interest and popularity of group therapy has increased, and it is suggested that the practical considerations of expediency and cost will undoubtedly take on more importance in the near future (Vinogradov and Yalom, 1994). It is from these practical considerations that the idea of group therapy emerged. In fact, in terms of psychological treatments, recent research has suggested that group cognitive behavioural therapy (GCBT) is an appealing alternative to individual therapy given its potential cost and time effectiveness in treating a large number of patients (Jeffrey, 1999; Kwon and Oei, 2003; Oei and Dingle, 2002; Vinogradov and Yalom, 1994), as well as the impact of non-specific factors such as group cohesion and therapeutic alliance (Oei and Browne, in press).

To date, many individual studies have examined the costs or the effectiveness of GCBT; however, these literature reviews have primarily focused on the efficacy of group versus individual CBT. As such, the current paper will expand on these studies and emphasize both the costs and efficacy of GCBT and individual CBT. In order to answer the above claims

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of group CBT's increased cost-efficiency, the advantages and disadvantages of each format will be considered, followed by a detailed examination of the empirical evidence regarding the efficacy of these two treatment approaches. Finally, the costs associated with group and individual therapy will be compared, as well as the interaction between costs and efficacy for specific disorders and populations. In addition to examining the claims of increased cost-efficiency by delivering CBT in a group format, this article will also highlight the need for more uniform cost accounting methods for comparing group and individual therapy.

Sources of research and empirical evidence

A comprehensive search of the PSYCHINFO database was conducted and included the use of different combinations of keywords: cognitive behaviour therapy, group, individual CBT, group CBT. As the searches failed to yield a great number of useful or insightful articles, the reference lists of those articles found from the initial search were further examined for additional references. This process continued until the most recent key articles were found.

Advantages and disadvantages of group therapy

Group therapy has been associated with many advantages such as potential time and cost savings per patient, the possibility of treating a greater number of people and reducing waiting lists (Jeffrey, 1999; Lewinsohn and Clarke, 1999; Morrison, 2001; Vinogradov and Yalom, 1994). The effects of group cohesion, imitative behaviour, interpersonal learning, opportunity for group members to serve as co-therapists and offer mutual support are claimed positive by-products of group treatment (Lewinsohn and Clarke, 1999; Morrison, 2001; Spence, 1989; Toseland and Siporin, 1986; Vinogradov and Yalom, 1994). Group settings are also said to provide group members with the opportunity to recognize common experiences shared among other group members (Lewinsohn and Clarke, 1999; Morrison, 2001; Toseland and Siporin, 1986; Vinogradov and Yalom, 1994). These non-specific factors of the therapeutic relationship have repeatedly been shown to produce equivalent improvements in client outcomes (Corey and Corey, 2002; Horvath and Bedi, 2002; Oei and Browne, in press).

However, there are also many disadvantages associated with group therapy. These include the risk of one patient monopolizing sessions, confrontation between group members, subgroups developing, differential improvement rates discouraging slower improvers, and the propensity for groups to descend into small-talk (Morrison, 2001; Vinogradov and Yalom, 1994). Further, group situations may mean that individuals are reluctant to discuss disturbing cognitions and, as a result, fail to undertake rigorous exploration and evaluation of some of these more challenging cognitions (Morrison, 2001; Toseland and Siporin, 1986; Vinogradov and Yalom, 1994). Difficulty in arranging a day or time convenient for all group members means that a greater number of missed sessions may result or, conversely, may require more time off work and lost income, reducing claims of cost-effectiveness (Morrison, 2001; Vinogradov and Yalom, 1994). However, it should be noted that the stated advantages and disadvantages of group psychotherapy are at present not solidly backed by empirical evidence (Hornsey, Dwyer and Oei, 2006).

Advantages and disadvantages of individual therapy

The advantages of individual treatment include the ability to design therapy around the patient's unique needs, and to invest more therapist time for each patient. Thus, individual

therapy provides a greater opportunity for the therapist to focus on each patient's personal and emotional issues (Lewinsohn and Clarke, 1999; Morrision, 2001; Spence, 1989). However, the disadvantages of individual therapy include high fiscal and time costs, and the patient's missed opportunity to benefit from the effects of group dynamics (Lewinsohn and Clarke, 1999; Morrision, 2001).

Cost considerations

One of the challenges in reviewing the literature is the widely varying methods taken in calculating the costs of psychotherapy treatment. For example, Wolff, Helminiak and Kraemer (1997) outlined three major approaches to cost calculation. First is a management perspective, which calculates costs based on direct dollar value of therapy sessions. Second is an accountant perspective, which includes all direct dollar costs associated with the provision of services to clients (e.g. cost of therapy session including rent, capital and administration considerations). Third is an economist perspective, which takes into consideration implicit as well as explicit costs, not necessarily in dollar terms. The economist method, in addition to dollar costs, focuses on opportunity costs involved in taking particular courses of action, opportunity costs being the calculated costs of missing out on the next best alternative (Wolff et al., 1997). Cost calculations are not limited to these approaches and other methods of cost calculation include estimating the total expense to patients, unit costs (dollars/hr) and cost-benefit ratios.

Table 1 consists of articles that directly compare the costs of group versus individual therapy. These articles have relied upon vastly different cost calculation methods, the majority of which fall into one of the categories outlined above. These differing cost calculations make it difficult to perform direct cost comparisons, demonstrating the need to introduce uniform comprehensive cost-calculation procedures in future cost-effectiveness research. Of the 13 articles reviewed, only one article concluded that costs were lower for individual CBT (Holder, Longbaugh, Miller and Rubonis, 1991). Over 90% of the studies agreed that group CBT was less expensive than individual CBT, although it is worth noting that the ways in which these studies arrived at this same conclusion varied widely.

Holder et al. (1991) calculated an average cost for individual therapy from four different sources. However, the cost estimate for group CBT was based on one report only. Comparing a single source of data with an averaged statistic may mean that the group therapy costs are biased by the accounting practice of the single facility and region the reported data is from. This may be why individual CBT was reported as less costly than group CBT in this instance. In addition, the type of individual CBT administered may have differed greatly between the four sources cited. For example, the cheaper individual therapy costs may be due to short-term or self-directed CBT. This may have biased the estimate of cost for individual therapy.

In this article, treatment costs were sourced from United States health care providers, insurance carriers, state alcohol and drug abuse authorities, and self-insured employers (Holder et al., 1991). However, the authors warn that their average cost calculations are not complete, defining costs as charges to health care providers, which failed to include personal costs to patients such as transport and forfeited wages. In addition, the health care providers and state authorities providing cost information used different definitions of costs, with some including administrative and facility costs, while others based their calculations on direct costs only. For this reason, the averaged cost calculations reported in Holder et al. (1991) may serve only to confuse the issue rather than to clarify the true comparative costs of group and individual

Table 1. Articles assessing the costs of group and individual CBT

Authors	Design	Participants	Cost calculations and findings
Marques and Formigoni (2001)	Compared ICBT and GCBT for substance dependence	$N = 155$	<ul style="list-style-type: none"> • Cites 1 study that found decreased costs were related to better treatment outcomes • Cites another study that found no relationship between costs and effectiveness
Morrison (2001)	Literature review comparing GCT and ICT		<ul style="list-style-type: none"> • Varied cost calculation methods • 100% studies cited found GCT more cost effective than ICT • Cost savings estimates 2–42%
Otto et al. (2000)	Compared GCBT, ICBT and pharmacology for panic disorder	$N = 80$ (40 only included in cost estimates)	<ul style="list-style-type: none"> • Economic cost calculations • Costs per visit ICBT = \$114; GCBT = \$48 • Total visit costs at four months and 1 year calculated, ICBT > GCBT • Calculated a cost-benefit ratio for GCBT (\$246), ICBT (\$565) and pharmacotherapy (\$447)
Antonuccio et al. (1997)	Cost-effectiveness analysis of GCBT, ICBT and Prozac in the treatment of depression		<ul style="list-style-type: none"> • Economic cost calculations • Costs calculated using direct treatment costs to the patient or third party provider, direct costs to the community and indirect costs to society • ICBT total treatment costs = \$23,696 • GCBT total treatment costs = \$23,120, a saving of only 2% over ICBT
Gould et al. (1997)	Meta-analysis of CBT and pharmacological treatment of social phobia		<ul style="list-style-type: none"> • Management cost calculation • GCBT $M = \\$600/\text{year}$ • ICBT $M = \\$1350/\text{year}$
Wolff et al. (1997)	Compared group and individual therapy, calculating the unit costs using different approaches		<ul style="list-style-type: none"> • Accountant, management and economic calculation method • Costs lower for group therapy using management, accountant and economist calculations • \$/hr costs higher for all individual treatments • Time limited individual treatment was calculated as cheaper than group therapy
Gould et al. (1995)	Meta-analysis of treatment outcomes for panic disorder		<ul style="list-style-type: none"> • Management calculation method • GCBT $M = \\$840/\text{year}$ • ICBT $M = \\$1350/\text{year}$

Kashner et al. (1995)	Studied group therapy for somatization disorder	$N = 70$	<ul style="list-style-type: none"> • Management calculation method • Estimated a 52% saving for group therapy • Group therapy reduced health care charges by \$513 • Savings of \$725/year were calculated • ICT $M = \\$433$, low-medium on a comparative cost scale. ICT indeterminate effectiveness • Group therapy = \$563, rated in the low to medium comparative cost scale. No support for group therapy effectiveness
Holder et al. (1991)	Literature review of the cost-effectiveness of a variety of treatment approaches for alcoholism		
Scott and Stradling (1990)	Reports on 2 studies comparing GCT and ICT for depression	$N = 67$	<ul style="list-style-type: none"> • Management calculation method • ICT, 6 patients required 54 therapist hours • GCT with six patients used 31.5 therapist hours <p>GCT (4 patients) 25% saving of therapist time and GCT with 8 patients yields a 50% saving of therapist time</p>
Faulk et al. (1988)	Summarizes a community centre's low cost group therapy and other cost cutting approaches		<ul style="list-style-type: none"> • Management calculation method • In a one-year period, 1200 clients were treated in the group format for 40 hours/client, at \$10/hour/client • Over 13 years, the centre's total costs were \$4,800,000. Individual service through a state or federal institution would have cost \$48,000,000, 10 times as much
Toseland and Siporin (1986)	Literature review comparing individual and group therapy		<ul style="list-style-type: none"> • Varied cost calculation methods • 83% of studies concluded that group therapy is more cost-effective than individual therapy
Webster-Stratton (1984)	Compared ICBT and GCBT for conduct disorder	$N = 35$	<ul style="list-style-type: none"> • Management calculation method • Total therapist time ICBT = 251 hours, GCBT = 48 hours • 16 therapist hours used on 5 or 6 patients in GCBT and on one individual in ICBT
Shapiro et al. (1982)	Compared GCBT and ICBT for depression and anxiety	$N = 35$	<ul style="list-style-type: none"> • Treated more people in the same amount of time • Management calculation method • GCBT cheaper than ICBT • 8 patients in a 10-session group program used 30 therapist hours • 8 patients in individual treatment (10 sessions) use 80 therapist hours • Costs calculated on the basis of \$30/therapist hour, the subsequent cost saving calculated being \$175 per patient

therapy. This is why a similar approach of averaging or aggregating costs was not taken in this review.

Only one article calculated cost estimates using all three perspectives outlined above (Wolff et al., 1997). Unusually, they yielded the same cost savings of 27%. This indicates that the author's economic considerations, such as opportunity costs, were equivalent for group and individual therapy. Three articles base their cost calculations on the economic perspective (Antonuccio, Thomas and Danton, 1997; Otto, Pollack and Maki, 2000; Wolff et al., 1997). As Table 1 shows, their estimated cost savings range from 2% to 61%. Antonuccio et al. (1997) provide the most detailed explanation of their cost calculations, which took into account the direct dollar cost of treatment to the patient or third party healthcare provider, the costs of relapse, the costs of partial successes, failures and drop outs, and estimates of the costs to society. It is interesting to note that this article, which provides the most comprehensive calculation of comparative costs, only found a 2% cost advantage in group therapy.

Otto et al. (2000) may have calculated an inflated cost-saving of 61% for group CBT, given that the opportunity costs of alternative treatments, and any costs due to medication were not taken into consideration. Cost benefit ratios were also calculated based upon these potentially biased cost estimates, with group CBT yielding the best ratio. The authors did not provide information on the exact method of calculation for these cost-benefit ratios. A subset of the total sample was used to calculate costs, whereas the effectiveness assessment (benefit) was based upon the whole sample. As only those not taking medication were selected for the cost calculations, the effectiveness value should have only been based upon these participants also. Failing to do so could potentially overestimate the benefit of a particular therapy, leading, in turn to inflated cost-benefit ratios.

One article focused on costs to the mental health care provider concluded that delivering CBT in a group format might reduce costs (Faulk, Glickman and Middleton, 1988). However, of all the articles reviewed in Table 1, the most common type of cost calculation was based solely on therapist's time. This may be misleading for several reasons. Whereas therapist hours are an important consideration (Shapiro, Sank, Shaffer and Donovan, 1982; Webster-Stratton, 1984), there are other factors that should be taken into consideration when calculating cost-efficiency. For example, many of these calculations appear to be neglecting to account for therapist preparation time, overhead costs and costs to patients, as well as opportunity costs (Toseland and Siporin, 1986; Wolff et al., 1997).

Of the reviewed articles looking at the cost-savings for the patient, agreement is unanimous that costs are reduced by group treatment. Savings to the client ranged from 52% to 56% (Gould, Buckminster, Pollack, Otto and Yap, 1997; Gould, Otto and Pollack, 1995; Kashner, Rost, Cohen, Anderson and Smith, 1995). Kashner et al. (1995) admit, however that "... the actual savings may vary, particularly in settings where ... patients have lower rates of utilization before intervention" (p. 468). Gould et al. (1997, 1995) demonstrated that when four group booster sessions, or four individual booster sessions, were conducted following the group treatment, group therapy remained less expensive than individual CBT. However, these cost calculations have not taken into consideration additional costs to the patients that could be associated with attending group sessions. These may include time and monetary costs from missing work in order to attend sessions, costs of missing sessions, and various other opportunity costs associated with activities patients could be doing if they were not spending a lengthier amount of time in a group, as opposed to shorter individual sessions (Wolff et al., 1997).

Finally, several articles have come to the conclusion that group CBT is more cost-effective than individual CBT on the basis of equivalent effectiveness outcome findings (McDermut, Miller and Brown, 2001; Muris, Mayer, Bartelds, Tierney and Bogie, 2001; Renjilian et al., 2001; Scott and Stradling, 1991; Shaffer, Shapiro, Sank and Coghlan, 1981; Spence, 1989, 1991). They have overlooked a cost analysis on the two treatment types (Toseland and Siporin, 1986). For this reason, their claims of cost-efficiency for group CBT have not been included in Table 1, as they are based on inadequate information. Despite the weaknesses and omissions in the consideration of the costs involved, it appears, on balance, that group CBT has the potential to reduce costs. However, the cost savings may not be so great in reality as the ones presented in many of the articles.

Comparative efficacy

Financial considerations alone are not sufficient to determine the cost-effectiveness of group and individual CBT. Another important consideration is the effectiveness of the treatments in question. If group CBT has less than equal therapeutic benefit when compared to individual CBT, it cannot be said to be more cost-effective, as money is being wasted on an ineffective treatment. That is, less effective treatment formats are more costly, in that their ineffectiveness wastes time and money. From a quality of care and ethical perspective, some would argue that one could not possibly deliver less effective therapy just because it costs less (Jeffrey, 1999). As a professional in a position of responsibility, psychologists have a duty of care to patients. A number of authors warn that patients' well-being cannot be compromised to meet economic objectives (Holder et al., 1991; Jeffrey, 1999; Mannasis et al., 2002; Marques and Formigoni, 2001; Wilson, 1989).

Health-care cost containment is an important factor to be considered in the choice of a treatment. Usually group approaches are less expensive than individual ones but it is important to determine whether the group setting reduces the effectiveness of treatment before recommending it to patients. (Marques and Formigoni, 2001, p. 835).

For these reasons, the comparative effectiveness on group and individual CBT will be discussed.

Table 2 shows that the empirical evidence is far from conclusive, with many articles contradicting one another. Sixty-one percent of the articles reviewed support equal treatment effects for both group and individual formats, whereas 35% of the articles support the superiority of individual CBT over group therapy. There is only one research finding presented in Table 2 that supports group CBT over individual CBT. Nonetheless, the evidence provided is weak and the authors doubt that the results are clinically significant (Renjilian et al., 2001). There are studies cited in Toseland and Siporin's (1986) literature review that have also found support for the superiority of group CBT but the balance of evidence seems to fall between equal treatment effects and individual CBT being superior. The one thing that the literature agrees on is that individual CBT is clearly preferable for patients who are severely impaired (Heimberg, Salzman, Holt and Blendell, 1993; Manassis et al., 2002; Muris et al., 2001).

Not only is there great debate, but there is also a lack of clear evidence as to whether group and individual CBT are equally effective. Furthermore, many of the results of effectiveness studies may be questioned due to methodological shortcomings. Most concerning of these research design flaws are small sample sizes (see Table 2). Studies with small sample sizes

Table 2. Studies comparing the effectiveness of group and individual CBT

Authors	Design	Participants	Findings
Chen et al. (2003)	Compared ICBT and GCBT for bulimia nervosa	<i>N</i> = 44	<ul style="list-style-type: none"> ● GCBT > ICBT on several measures at post-treatment, however differences not apparent at follow-up ● Concluded GCBT slower at bringing about positive change in behaviour
Stangier et al. (2003)	Compared ICT and GCT for social phobia	<i>N</i> = 59	<ul style="list-style-type: none"> ● ICT > GCT on several measures at post-treatment and follow-up ● Concluded effectiveness of CBT for social phobia might be compromised if delivered in a group setting
Manassis et al. (2002)	Compared ICBT and GCBT for childhood anxiety disorders	<i>N</i> = 78	<ul style="list-style-type: none"> ● Clinicians preferred ICBT ● ICBT = GCBT ● Children with high social anxiety responded preferentially to ICBT
Nolan et al. (2002)	Compared the effectiveness of individual and combined individual and group therapy for child sex abuse victims	<i>N</i> = 38	<ul style="list-style-type: none"> ● Individual therapy (<i>d</i> = .79) = combined individual and group therapy (<i>d</i> = .7)
Trowell et al. (2002)	Investigated outcome differences between ICBT and GCBT for sexually abused girls suffering PTSD	<i>N</i> = 71	<ul style="list-style-type: none"> ● ICBT > GCBT (greater improvement and maintenance) ● ICBT > GCBT (lower avoidance and re-experiencing traumatic events post-treatment)
Marques and Formigoni (2001)	Compared ICBT and GCBT for substance dependence	<i>N</i> = 155	<ul style="list-style-type: none"> ● ICBT = GCBT
McDermut et al. (2001)	Meta-analysis comparing ICBT and GCBT for depression		<ul style="list-style-type: none"> ● ICBT = GCBT; mean difference between effect sizes <i>d</i> = -.15, <i>ns</i>
Morrison (2001)	Literature review of studies comparing ICBT and GCBT		<ul style="list-style-type: none"> ● Cited 3 studies where ICBT > GCBT for severely depressed patients ● Cited 5 studies that found ICBT = GCBT ● No studies found GCBT > ICBT ● Suggests that some of the proposed advantages of group CBT may be more imagined than real

Muris et al. (2001)	Compared ICBT and GCBT for childhood anxiety disorders	$N = 36$	<ul style="list-style-type: none"> ● ICBT = GCBT ● ICBT > GCBT, lower anxiety scores, <i>ns</i> ● ICBT preferable for co-morbid ADHD ● ICBT preferable for severely traumatized children
Renjilian et al. (2001)	Compared ICBT and GCBT as a treatment for obesity	$N = 75$	<ul style="list-style-type: none"> ● GCBT > ICBT (greater weight loss) ● The total difference between the groups was 1.9 kg. The authors admitted that this difference was unlikely to be clinically significant
Engels and Vermey (1997)	Meta-analysis (depression in the elderly). Compared CT, BT, CBT and psychodynamic therapy. Group and individual formats were also compared		<ul style="list-style-type: none"> ● Individual format > Group format ● Individual therapy $d = .76$ ● Group therapy $d = .16$ ● Individual therapy alone was superior to combined group and individual therapy
Gould et al. (1997)	Meta-analysis of CBT and pharmacological treatment of social phobia		<ul style="list-style-type: none"> ● 16 studies reviewed ● ICBT ($d = .44$) = GCBT ($d = .88$)
Néron et al. (1995)	Compared GCBT and ICBT for panic disorder	$N = 20$	<ul style="list-style-type: none"> ● All scales but one showed ICBT > GCBT ● ICBT had more high responders to treatment ● Maintenance and improvement ICBT > GCBT at follow-up
Heimberg et al. (1993)	Evaluated GCBT for social phobia	$N = 19$	<ul style="list-style-type: none"> ● High attrition rates for GCBT ● Patients who showed long-term improvements from GCBT were those who were less severely impaired initially ● Concluded GCBT was an effective treatment for social phobia
Scott and Stradling (1990)	Compared the effectiveness of GCBT, ICBT and waiting list control for depression	$N = 67$	<ul style="list-style-type: none"> ● CBT > waiting list control ● ICBT = GCBT

Continued

Authors	Design	Participants	Findings
Spence (1989 and 1991)	Compared the effectiveness of ICBT and GCBT for chronic pain management	$N = 19$	<ul style="list-style-type: none"> • ICBT = GCBT at post-test, 6 months or 2 year follow-up • ICBT had lower BDI scores, lower trait anxiety scores, and better coping strategies, <i>ns</i>
Wilson (1989)	Literature review of CBT for depression		<ul style="list-style-type: none"> • 2 studies cited supported ICBT > GCBT • 1 study found ICBT = GCBT • Author hypothesized that GCBT did not allow for sufficient exploration and challenging of important cognitions • Individual therapy > group therapy (higher clinical significance)
Nietzel, Russell, Hemmings and Gretter (1987)	Meta-analysis of psychotherapy (predominantly CBT, 81.7%) for depression		<ul style="list-style-type: none"> • Individual therapy > group therapy (higher clinical significance)
Wierzbicki and Bartlett (1987)	Compared ICBT and GCBT for mild depression	$N = 38$	<ul style="list-style-type: none"> • ICBT > GCBT
Toseland and Siporin (1986)	Literature review comparing group and individual therapy		<ul style="list-style-type: none"> • 25 studies found individual therapy = group therapy • 2 studies found individual therapy > group therapy • 6 articles found group therapy > individual therapy
Webster-Stratton (1984)	Compared GCBT and ICBT for conduct-disordered children	$N = 35$	<ul style="list-style-type: none"> • ICBT = GCBT • Both therapies only slightly clinically significant
Shapiro et al. (1982)	Compared the effectiveness of GCBT and ICBT for depression and anxiety	$N = 35$	<ul style="list-style-type: none"> • GCBT = ICBT
Rush and Watkins (1981)	Compared ICT and GCT for depression and anxiety	$N = 44$	<ul style="list-style-type: none"> • ICT > GCT • ICT produced greater decreases in depressive symptoms
Shaffer et al. (1981)	Compared ICBT and GCBT for depression	$N = 35$	<ul style="list-style-type: none"> • Interpersonal therapy = GCBT = ICBT

lack statistical power, that is, there are not enough participants to detect significant differences between the treatment formats (Howell, 2001). If a research project has a small number of participants, one treatment type must be exponentially better in order for this to be considered statistically significant. Of the studies in Table 2 reporting equivalent treatment effects for both individual and group CBT, 78% were lacking in power (Chen et al., 2003; Heimberg et al., 1993; Muris et al., 2001; Nolan et al., 2002; Shaffer et al., 1981; Shapiro et al., 1982; Spence, 1991; Webster-Stratton, 1984). The studies supporting individual over group CBT also suffered from small sample sizes, with 60% of the articles lacking in power (Néron, Lacroix and Chaput, 1995; Rush and Watkins, 1981; Wierzbicki and Bartlett, 1987). Although one research finding in favour of group CBT was not lacking in power (Renjilian et al., 2001), only six studies in Table 2 were sufficient in power, indicating that greater numbers of participants are required in future research in this area (Manassis et al., 2002; Marques and Formigoni, 2001; Renjilian et al., 2001; Scott and Stradling, 1990; Stangier, Heidenreich, Peitz, Lauterbach and Clark, 2003; Trowell et al., 2002).

In two of the reviewed studies, the group CBT condition had a more behavioural focus, whereas the individual CBT condition had a cognitive focus (Renjilian et al., 2001; Webster-Stratton, 1984). This suggests that the results may be explained by the emphasis on behavioural as opposed to cognitive techniques, or vice versa, and not the group or individual format. Furthermore, many of the studies lack control comparisons, and those that had other forms of therapy as controls tended to show equivalent treatment effects (Bell, 1980, cited in Toseland and Siporin, 1986; Brown, 1977, cited in Toseland and Siporin, 1986; Brown and Lewinsohn, cited in Toseland and Siporin, 1986; Farenhorst, cited in Toseland and Siporin, 1986; Scholing and Emmelkamp, cited in Morrison, 2001; Shaffer et al., 1981; Shapiro et al., 1982). This is another weakness in the design of many of these studies, leaving the strength of the findings in the literature questionable.

The interface of cost and efficacy

This section looks at some of the specific disorders and evaluates the empirical evidence on the cost-effectiveness of group and individual CBT to further clarify the issue.

Depression

Of the articles looking at effectiveness, five provide support for the superiority of individual CBT in treating depression (Engels and Vermey, 1997; Nietzel, Russell, Hemming and Gretter, 1987; Rush and Watkins, 1981; Wierzbicki and Bartlett, 1987; Wilson, 1989), whereas five articles support the equal effectiveness of group and individual CBT (McDermut et al., 2001; Morrison, 2001; Scott and Stradling, 1990; Shapiro et al., 1982; Shaffer et al., 1981). Scott and Stradling (1990) report savings of 25% to 50% from using group CBT, whereas Shapiro et al. (1982) reported savings of 63%. Alternatively, Antonuccio et al. (1997), who had the most comprehensive method of cost-calculation, reported only a 2% saving from group CBT. Based on cost savings, coupled with apparent equal effectiveness of group and individual CBT, the current available evidence suggests that group CBT is a cost-effective treatment for depression.

Anxiety disorders

Four studies found individual CBT to be more effective than group CBT for anxiety and social phobia (Rush and Watkins, 1981; Stangier et al., 2003; Heimberg et al., 1993; Néron et al., 1995). Two articles found equivalent outcomes for group and individual CBT. However, the empirical evidence seems to clearly favour the individual format (Shapiro et al., 1982; Gould et al., 1997). Articles assessing cost agree that group CBT is cheaper, with estimated savings of 48% for clients, and 38% for healthcare providers (Otto et al., 2000; Gould et al., 1995). Once again, current empirical evidence suggests that group therapy may be less costly, but also less effective than individual therapy, casting doubt on claims of cost effectiveness. However, further empirical evidence is required before an informed decision can be reached.

CBT and children

One study found that individual CBT was more effective than group CBT (Trowell et al., 2002). Four articles attest to the equivalent effects of the two formats (Manassis et al., 2002; Muris et al., 2001; Nolan et al., 2002; Webster-Stratton, 1984). The costs for group CBT with children show a saving of 80% of therapist time (Webster-Stratton, 1984). On the basis of this evidence, group CBT appears to be more cost-effective for therapists. However, more detailed cost-analysis is required that accounts for more than direct time costs, such as therapist preparation time and resource costs. Looking at the opportunity costs for patients is also required.

Drug and alcohol dependence

Marques and Formigoni (2001) reported equivalent treatment outcomes for group and individual CBT. Holder et al.'s (1991) calculations indicate that group CBT is more expensive and less effective than individual CBT. Individual CBT was 23% cheaper and for these reasons individual CBT is hesitantly considered more cost-effective. However, research in this area remains limited and studies that address both the comparative costs and effectiveness of group CBT are called for.

Conclusion and implications

The reported empirical evidence generally attests to lower costs and equivalent effectiveness of group compared to individual CBT. Whereas this conclusion is tempting, the strength of the evidence remains questionable. Methodological shortcomings and a lack of thorough cost examination means that more studies addressing these issues are required before a firm conclusion can be ascertained as to the cost-effectiveness of group CBT. This paper highlights the need for more effectiveness studies comparing individual and group therapy, as all the studies reviewed were randomized control trial studies, which considered the internal validity of the therapy formats only, without considering whether these findings would generalize to real world settings. That is, the external validity of the claims of equivalent treatment outcomes and cost findings should also be evaluated in naturalistic settings, in addition to controlled environments. However, it can be tentatively said that group CBT appears to be more cost-effective in treating depression and children, while individual CBT appears to be

more cost-effective for the treatment of substance abuse and anxiety disorders. As such, it could also be suggested that group CBT is cost-effective for the treatment of some disorders and not others, and some types of individuals and not others. The major implication of this review is the clear need for further research to disentangle these interactions. It has been demonstrated consistently throughout this paper that the evidence regarding the cost-effectiveness of group CBT is seriously flawed, both in terms of the quantity of research conducted and the quality of the cost calculations made. Future research should focus on comprehensive, standardized cost calculations, and many more studies are needed regarding the treatment of specific disorders. It cannot be summarily or definitively stated that group CBT is a cost-effective treatment, but the current research suggests that delivering therapy in a group format has the potential to yield increased cost-efficiency.

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