

A critical evaluation of the role of cognitive behaviour therapy in children and adolescents with depression

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Abstract. Depressive disorders are relatively common in adolescents although less so in younger children. They accrue significant morbidity and frequent long-term sequelae as well as increased suicide risk in sufferers. Evidence-based treatment of depression in children and adolescents is the subject of intense investigation and debate. This article reviews the current evidence base for cognitive behaviour therapy in this group and makes recommendations for further areas of research.

Key words: children and adolescents, cognitive behaviour therapy, depression, evidence-based practice.

Introduction

The role of cognitive behaviour therapy (CBT) in the treatment of major depressive disorder (MDD) in youth is currently a subject of intense debate. This paper will explore the relevance and importance of this question at this time, explore some of the current controversies, and make recommendations for areas for future research.

Review

MDD is uncommon in prepubertal children, the most frequently cited figure being 1 in 1000 (Harrington, 2005). In this age group the sex incidence is equal. MDD in adolescence, on the other hand, is relatively common. The point prevalence is 1 in 20 (Esseau & Dobson, 1999). Nearly one in five youths will experience an episode before age 18 years (Lewinsohn *et al.* 1993). The sex ratio in adolescents resembles more closely that of the adult population, with a female:male ratio of 2:1 (Harrington, 2005). This has led to some speculation that the adolescent disorder more closely resembles the adult disorder (Harrington, 2005).

Depression in children and adolescents is associated with significant morbidity and family burden (Rohde *et al.* 1994; Angold *et al.* 1998). MDD in children and adolescents also increases the risk of suicide attempt and completion in this age group (Brent *et al.* 1993; Gould *et al.* 1998). Furthermore, there is evidence that adolescent depression exhibits a continuity into

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adult life, with impaired functioning in work, social and family life, and marked elevated risk of adult suicide attempts and completed suicide (Weissman *et al.* 1999; Costello *et al.* 2002). Youth depression is therefore one of the most important public health issues of our time. Yet there continues to be controversy regarding the most appropriate treatment modalities for this important disorder.

CBT is the most studied non-pharmacological intervention for depression in this age group – in 80% of the published trials (Weisz *et al.* 2006). Until recently it was considered the treatment of choice for youth depression (NICE, 2005). The NICE recommendations were based on three meta-analyses (Reinecke *et al.* 1998; Lewinsohn & Clarke, 1999; Michael & Crowley, 2002), all of which found moderate or large effect sizes (0.7–1.2) for the use of CBT in children and adolescents with depression. At the same time, the evidence base for the use of antidepressant medication was found to be weak (Michael & Crowley, 2002). There was also growing concern about the potential for antidepressants, in particular the selective serotonin reuptake inhibitor (SSRI) family, to induce suicidality (suicidal thoughts or acts, but *not* completed suicide) in children and adolescents (Hetrick *et al.* 2007).

However, within the last 3 years, this apparently ‘rosy’ (Weersing & Brent, 2006) picture of the role of CBT in depressed youth has changed, with the publication of the Treatment of Adolescents with Depression Study (TADS, 2004). In this study, CBT alone failed to outperform pill placebo, whereas active medication treatments, fluoxetine, and fluoxetine plus CBT, produced strong and consistent effects. Were the initial meta-analyses reporting effect sizes of 0.7–1.2 incorrect, or methodologically unsound (Weisz *et al.* 2006)? Does the explanation lie with the methodology or process of the TADS study (TADS, 2007a)? Could it be that the purported critical ingredients of CBT are not specifically ameliorative for child and adolescent depression (Spielmans *et al.* 2007)?

The most recent meta-analysis of the evidence base for the effects of psychotherapy (including CBT) for depression in children and adolescents is that of Weisz *et al.* (2006). These authors sought to improve upon the methodologies of previous studies in a number of important ways as follows:

- They included studies where participants had elevated levels of depressive symptoms, formal diagnosis of MDD or dysthymia disorder, or research diagnostic criteria diagnosis of minor or intermittent depression (former studies had not been so inclusive).
- They included studies in which there was *true* random assignment of participants to at least one active treatment group and at least one untreated, wait list, minimally treated or active placebo group (previous studies not having limited themselves to studies which had *true* randomization).
- They defined the age range clearly to samples of mean age less than 19 years.
- They included only studies where the intervention was intended by the investigator to target depressive symptoms or disorder.
- They included non-peer-reviewed papers, and doctoral dissertations. They excluded single case-study designs.
- They included a comparison of interventions that had a cognitive emphasis to those that did not.
- Effect size was calculated by two raters to enhance reliability.
- Analyses were limited to only those studies with acceptable power.

Overall findings were that for passive control conditions, the effect size for psychotherapy (including CBT) was 0.41. However, for active control conditions, the effect size was only 0.24.

No significant difference was found in effect size between those treatments that emphasized changing cognitions, and those that did not. The studies were found to be representative of clinical populations, and so the findings were felt to be generalizable. There was also no difference in effect size between group interventions and individual interventions. There was a very slight, but negative correlation between effect size and duration of treatment. There was very little difference in effect size between peer-reviewed and non-peer-reviewed papers. There were only very marginal effects on suicidality.

Given the findings of Weisz *et al.* (2006) are the findings of the TADS study at all surprising, but rather consistent with this review? What of the question regarding the scientific rigour of the TADS study? Or the quality of the CBT delivered? TADS was a multicentre, randomized clinical trial designed to be well powered, and to evaluate the effectiveness of treatments for adolescents with depression. Stage 1 compared randomly assigned groups receiving 12 weeks treatment with:

- (1) fluoxetine alone,
- (2) CBT alone,
- (3) fluoxetine with CBT,
- (4) pill placebo.

Placebo and fluoxetine were administered double blind, while CBT and CBT with fluoxetine were administered unblinded. Blinding for the primary dependent measures was maintained by means of an independent evaluator. Intention-to-treat effectiveness was measured at 12 weeks. The two main outcome measures were the Children's Depression Rating Scale – Revised (CDRS-R) and the Clinical Global Impressions (CGI) Improvement Score.

The findings were that outcomes for the fluoxetine with CBT group, and the fluoxetine-alone group were statistically significantly better than placebo, whereas those for the CBT-alone group were not. The effect size on the CDRS-R for fluoxetine with CBT was 0.98, for fluoxetine alone was 0.68 and for CBT alone was -0.03 . While allowing that recent meta-analyses suggest a lower effect size for CBT than was previously thought (Weisz *et al.* 2006), this still seems a disappointingly poor effect size for CBT alone.

Was there a problem with the quality, process or content of the CBT delivered in this trial? While the precise programme and components of the CBT used in the trial were specifically devised for the trial, and as such, had not been the subject of an efficacy trial prior to the study, they were nonetheless based on both social learning theory and behavioural family systems theory, which are empirically validated theoretical bases for CBT for depressed children and adolescents (TADS, 2004). The modular basis of the CBT delivered may have contributed to heterogeneity in the CBT delivered. Family-based interventions, emphasized in the other most prominent psychotherapeutic approach in the child literature, interpersonal therapy (Mufson *et al.* 2004), were among the 'optional' rather than 'mandatory' modules. Module selection was based on individual case formulation, an approach that while considered best practice has yet to establish an evidence base in the child and adolescent literature (Drinkwater, 2005). Much is made of the severity of the depression in the adolescents in the TADS sample. The mean severity of depression at entry to the study was moderate to severe (TADS, 2004). However, Weersing & Brent, (2006) argue that the sample in the study by Brent *et al.* (1997) were just as severely depressed, and probably more suicidal, and yet a 60% response rate was reported in this study to CBT over 12 weeks, compared to 43.2% in the TADS study.

Follow-up studies from the TADS group (TADS, 2007b) revealed that 49.9% of participants perceived themselves to have received 'education' rather than therapy – perhaps the delivery

of the CBT was excessively didactic? Comorbidity was high in the TADS group, with 50% having comorbid anxiety, of which a large proportion was social anxiety. The programme did not contain, for example, exposure components to deal with this (TADS 2007a). It is also noteworthy that while placebo and fluoxetine were administered double blind, the combined (fluoxetine plus CBT) and CBT-alone conditions were administered unblinded.

Part of the protocol for either of the medication arms included medication review visits that included emphasizing the effectiveness of medication. For the combined group, this also meant increased therapist contact time overall. It is possible that these differences have contributed to the greater effectiveness of both arms containing medication.

However, it is important to recognize that while CBT alone failed to prove better than pill placebo at 12 weeks on depression scores, it made a significant contribution to safety in the arms in which it was included. By week 12, patients treated with fluoxetine continued to show more clinically significant suicidal ideation than those treated with CBT, or as a trend, with combination therapy (TADS, 2004). This is a very significant finding clinically, given the potential for depressed adolescents to commit suicide. This finding, coupled with the finding that overall, those having combined therapy had the best response rate (71%), has led the authors to conclude overall that 'the combination of fluoxetine with CBT offered the most favourable trade-off between benefit and risk for adolescents with major depressive disorder' (TADS, 2004).

While the TADS trial ran from 2000 to 2003, and 12-week outcomes were published in 2004, it was only in October 2007 (TADS, 2007c) that effectiveness results at weeks 18, 24 and 36 were published. Rates of responsiveness were 73% for combination therapy, 62% for fluoxetine alone, and 48% for CBT at week 12; 85% for combination therapy, 69% for fluoxetine therapy and 65% for CBT at week 18; and 86% for combination therapy, 81% for fluoxetine therapy and 81% for CBT at week 36. It is tempting to extrapolate from this that CBT 'caught up' at week 18, and that an analysis at week 12 was premature, given that the CBT programme was an 18-week programme.

However, Weersing & Brent, (2006) argue that while most CBT protocols are designed to be delivered in 8–16 sessions, treatment response is expected to occur early in that time-frame. It is also not possible to conclude on a scientific basis that any of the treatment arms were superior to placebo after week 12, as the placebo arm was discontinued at this time on ethical grounds as part of the original study design. We also know that 30–70% of youth with major depression recover spontaneously within the first year (TADS 2007a). The mean duration of disorder at the outset of the TADS study was 76 weeks (TADS, 2004) which makes it quite plausible that the apparent equality of effectiveness of all treatments at week 36 is at least in part explainable by spontaneous recovery. Importantly, however, the contribution noted to be made by CBT to reduced suicidality, and therefore enhanced safety, reported at week 12, was sustained throughout the study to week 36.

The more recent TORDIA trial (Brent *et al.* 2008) supports the conclusions of the TADS trial, that CBT has a place in the management of moderate to severe depression in conjunction with medication. This randomized controlled trial investigated the effect of switching to another SSRI or venlafaxine with or without CBT in depressed adolescents showing an inadequate clinical response to a single SSRI. It therefore investigated a different population to the TADS trial, and did not investigate the effect of using CBT alone. Two of the findings are nonetheless relevant to the foregoing discussion. Combined treatment outperformed a medication switch alone, similar to the TADS study (58% response to another SSRI plus CBT, 47% to venlafaxine

plus CBT, and only 40% to medication switch alone). However, this study found no advantage of the combination of CBT and medication over CBT alone on the incidence of suicidal adverse events. However, this apparent lack of protectiveness afforded by CBT in this study may be explained by sample differences. The subjects in the TORDIA trial had higher suicidality at intake, experienced a greater number of suicidal events and were subjected to more intense and frequent safety monitoring (Brent *et al.* 2008).

The Adolescent Depression Antidepressant and Psychotherapy Trial (ADAPT; Goodyer *et al.* 2007) stands somewhat in contrast to these findings. This study, powered to detect difference in effectiveness between a SSRI alone, and a SSRI in combination with CBT for moderately to severely depressed teens found no evidence that outcomes were better in the combined treatment group. There was no difference between groups in terms of suicidality. There are two possible explanations for the different outcome from TADS. The ADAPT authors argued that their sample included more severely depressed teens (they did not exclude those with suicidality, and recruited the entire sample from clinic groups – TADS recruited some by advertisement). Moreover, attendance rate for CBT in their study was low.

In contrast, the study by Melvin *et al.* (2006), which compared CBT, sertraline (SSRI) and their combination for adolescents with mild depression, found that all modalities brought about improvement, but once more, no evidence of superiority of combined treatment. CBT did not convey advantages in terms of suicidality in this study either, but possible advantages in terms of symptom amelioration in the acute phase.

CBT response rates vary substantially therefore across the literature (Weersing & Brent, 2006). What can account for these varied study outcomes?

Differences in CBT protocols and manuals across the literature is an obvious possible confounding variable in the studies. Three main programmes account for much of the literature: (1) The Coping with Depression for Adolescents programme (CWD-A, group programme) (Clarke *et al.* 1990); (2) The Pittsburgh cognitive programme (individual) programme (Brent *et al.* 1997) and (3) a set of similar brief CBT protocols tested in the UK (Kerfoot *et al.* 2004). The integrity of the CBT delivered, even within these varied protocols, is not always possible to maintain (e.g. there was a wide variability in the CBT delivered in the TORDIA trial).

Sample variables may also contribute to the varied outcomes. While Weisz *et al.* (2006) analysed this issue, their study is considered too underpowered to detect all possible effects (Weersing & Brent, 2006). Data on sample moderators of CBT effects suggests that CBT works well as a preventive measure in high symptom youth (Clarke *et al.* 2001), and as a treatment for mild to moderate depression (Lewinsohn *et al.* 1990). However, it may not work so well for depressed youth with depressed mothers (Clarke *et al.* 1992; Brent *et al.* 1998), for youth with severe depression and functional impairment (Clarke *et al.* 1992; Brent *et al.* 1998; Weersing & Brent, 2006), and in cases with externalizing comorbidity (Rohde *et al.* 2001).

Study design factors also influence the literature. CBT generally performs well when compared to the passage of time, or weak attention conditions. However, when compared to active treatments the effects are less positive (TADS, 2004; Weersing & Brent, 2006).

There is a relative dearth of literature on component analysis of CBT for depressed children and adolescents. While the reviews of Compton *et al.* (2004) and Weersing & Brent (2006) cited conflicting evidence with regard to whether parent component enhances response, the meta-analysis by Spielmanns *et al.* (2007) found that full CBT treatments offered no advantage over their components. Similarly, their analysis was largely composed of studies comparing parent involvement with non-involvement. This study also returned a probable 'Dodo Bird' verdict,

i.e. that effects were probably due to non-specific components common to all psychotherapies, rather than to the model.

Conclusion

How then to make sense of such a confusing field of evidence? This author supports the view that the effect size for CBT in depression is more likely the 0.24 found in the meta-analysis of Weisz *et al.* (2006) than the 0.7–1.2 found in previous studies. This is based on the fact that this most recent analysis demonstrates greater scientific rigour than previous studies. CBT nonetheless shows promise for mild depression (Melvin *et al.* 2006; Weersing & Brent, 2006) or as a preventative for youth at high risk of depression because of family history (Lynch *et al.* 2005). It seems that, for now, the place of CBT for moderately or severely depressed youth is in combination with medication, based on the findings of the TADS study (and further supported by the TORDIA study). Given the important additive effect it has not only to effectiveness but also safety in the TADS trial, its role nonetheless should not be trivialized.

Further research is required that is better powered to detect real differences between treatments. It is also important that more studies are done that compare CBT to other active treatment conditions, as there is a relative dearth of such studies in the literature. Future research needs to address the question of which population of depressed adolescents CBT is beneficial to, and further explore moderators and mediators of response. It is essential that research tries to identify what manuals, core components or processes (e.g. individual *vs.* group treatment, flexible *vs.* structured) are most critical in producing CBT effects. We need to explore whether there are benefits from long-term therapy over short-term therapy, and whether CBT has a role in relapse prevention. Potential adverse effects of CBT also need to be examined. Research is needed in the area of the much rarer childhood (less than 12 years) depression. Thirty percent of TADS youth did not respond to any treatment, and of responders two thirds had a significant residual impairment (Jensen, 2006). It is therefore imperative that we continue to press for answers to the above questions. Service user feedback needs to be explored as part of researching the above questions. It behoves the reader and clinician to bear in mind, that evidence-based medicine is the judicious combination of utilizing empirical research, clinical experience and service user preference (Sackett *et al.* 1996).

Summary

This article has delineated the importance of studying the role of CBT in the management of depression in children and adolescents. It has explored current controversies in the scientific literature. It has made recommendations for future research directions for the field of CBT and its relevance to youth depression. It is hoped that this review will prove useful to busy practitioners in their daily practice.

Declaration of Interest

None.

Recommended follow-up reading

- Treatment of Adolescents with Depression Study (TADS)** (2007). *Cognitive Behaviour Therapy Manual* (<https://trialweb.dcri.duke.edu/tads/manuals.html>). Accessed 1 November 2008.
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Learning objectives

- (1) To learn about the current empirical evidence for the use of CBT with children and adolescents with depressive disorders, and current controversies.
- (2) To familiarize the reader with necessary future research directions on this area.