Cognitive Behavioral Therapy
for Depression in Youth

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Depression in childhood and adolescence is widely prevalent, with nearly one in five youths experiencing a clinically significant episode before age 18 [1]. Depression interferes with a youth's ability to form and maintain close relationships with family, friends, and early romantic partners, impairs school performance, and increases the risk of suicide attempt and completion [2–4]. The negative effects of early-onset mood problems may propagate forward through development. Depression in youth predicts various adverse functional outcomes in adulthood, including lower educational attainment, poor work history, substance abuse, and recurrent episodes of mood disorder [2,5].

Without question, cognitive behavioral therapy (CBT) is the most studied nonpharmacologic intervention for the treatment of depression in youth, with more than 80% of published psychotherapy trials testing the effects of CBT protocols [6]. Until recently, CBT also was widely proclaimed to be a highly effective intervention for youth depression, albeit with stronger data for adolescent than for child samples [7]. Meta-analyses conducted through the late 1990s indicated that effect sizes for CBT on measures of depression were among the highest in the youth psychotherapy literature [8,9], and CBT was fast on the way to becoming a "benchmark" treatment, against which the effects of alternate interventions could be compared to assess their value [10]. National guidelines encouraged the use of CBT as a first-choice intervention for treating depressed youth [11], with

endorsements of CBT growing stronger as data suggesting possible increases in suicidiality associated with antidepressant medication use in youths came to light [12].

Within the last 2 years, however, a series of new findings has complicated this previously rosy picture of CBT effects. The most well-known results come from the Treatment of Adolescents with Depression Study (TADS) [13]. In the TADS investigation, CBT failed to outperform a pill placebo, whereas active medication treatments (fluoxetine alone and fluoxetine-plus-CBT) produced strong and consistent effects. Some of the secondary findings in TADS suggested value in adding CBT to medication, but overall, these results seemed to stand in sharp contrast to the previous two decades of research on the positive effects of CBT in treating depressed youth. Even more recently, a new meta-analysis of the youth depression literature has suggested that previous reviews may have overestimated the size of CBT effects by a factor of three. Although CBT did demonstrate a significant effect is this review, what were once the largest effects of psychotherapy in the youth treatment literature are proposed to be among the smallest [6].

In the remainder of this article, we strive to make sense of these seemingly conflicting findings, provide direction for the appropriate use of CBT in practice given the current evidence base, and suggest areas of additional investigation that may help to clarify the current confusion on the effects of CBT. To accomplish these goals, we begin with a summary of CBT theory and description of intervention techniques before turning to a review of major empirical findings, primarily focusing on investigations of CBT in samples of youth meeting diagnostic criteria. We conclude with our critique and recommendations.

The cognitive behavioral therapy model

Theoretical model

Although current CBT treatment programs acknowledge the biologic, behavioral, and environmental bases of depression, at its core the intervention is based on a cognitive vulnerability model. The original version of this model, put forth by Beck [14], argues that depression is the result of trait-like, negative "schemas" or working models of the self, world, and future. Schemas are hypothesized to be formed early in life as the result of stressful experiences. Under stressful circumstances that are reminiscent of those that produced the depressogenic schema, vulnerable individuals engage in irrational, overly negative thinking about their current stressful situations—thinking that is driven in large part by these core working models rather than by rational aspects of current experience. As a result of these automatic thoughts, feelings of depression build and deepen, and individuals engage in various maladaptive behaviors (eg, withdrawing effort from social relationships because of feelings of hopelessness). Although the Beck model and

other cognitive theories (eg, learned helplessness) posit a childhood basis of depression, the models were developed to describe and explain the symptoms of depression in adulthood [15,16].

In addition to cognitive models, there are several behavioral theories of depression, and CBT approaches draw heavily from the behavioral technique domain. The most prominent of the behavioral models, social learning theory [17], suggests that depression is caused and maintained by the disruptions in adaptive behavior caused by stressful life events. This disruption is more severe for individuals weak in behavioral self-regulation skills (eg, using pleasant activities to elevate mood). Social learning theory is not incompatible with cognitive models. In social learning theory, depression may emerge from several possible diatheses (eg, stressful events, maladaptive cognitions, behavioral withdrawal) that interact with other risk factors to disrupt adaptive behavior patterns and spiral mood downward.

Cognitive behavioral therapy manuals

CBT techniques for youth depression target these hypothesized cognitive distortions and behavioral deficits to improve current mood and prevent future episodes of depression. In Box 1, we briefly describe common CBT techniques and the general sequence of treatment across youth depression protocols. Specific CBT manuals vary substantially in the extent to which they emphasize the primacy of cognitive or behavioral strategies, the overall number of sessions, modality (group versus individual), and general stance and level of structure [18]. Across these variations, CBT programs attempt to (1) teach depressed youths specific CBT mood regulation skills, (2) encourage practice of skills within and between sessions, and (3) treat skill acquisition as an experiment in which youths are coached by their therapists to make changes in their lives and then collaboratively assess the extent to which these changes lead to positive affective outcomes.

CBT protocols also vary in the extent to which they are developmentally sensitive. As with much of the child treatment literature, CBT began as downward extension of adult cognitive treatments. The core techniques of CBT may not be a developmental fit for youths' less developed abstract reasoning and perspective taking skills and limited control over their personal environments [19]. To better match youths' cognitive developmental capacities, CBT programs for children and adolescents (1) emphasize the use of concrete examples (eg, having youths identify negative automatic thoughts in cartoon strips) [20], (2) include frequent capsule summaries and review of key points [21], and (3) have youths teach treatment lessons to their therapists or parents to cement learning [22]. To address youths' dependence on their environment, many CBT protocols include family components, which range in intensity from brief family psychoeducation at the beginning of treatment [23] to complete parent curricula teaching parallel set of CBT skills to those learned by the depressed youth [22,25]. Somewhat surprisingly,

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**Box 1. Cognitive-behavioral therapy for children
and adolescents with depression: Common techniques
and typical sequence**

Psychoeducation and mood monitoring
Providing parents and youths information about the course and
  characteristics of depression and of the CBT model of
  treatment. Teaching youths to monitor their moods, thoughts,
  and behaviors to begin see patterns.

Pleasant activity scheduling and behavioral activation
Promoting engagement in activities that provide opportunities
  for mastery or pleasure, both for short-term mood regulation
  (e.g., pleasant activity scheduling) and to promote a long-term
  focus on creating a rewarding, non-stressful, and mood-
  elevating environment (ie, newer behavioral activation
  strategies).

Cognitive restructuring
Helping youths to examine their automatic thoughts and core
  schemas and assess the accuracy and affective consequences
  of their views. Teaching youths to engage in ''rational'' thinking
  about themselves, the world, and their possibilities for the
  future.

*Additional CBT skill-building techniques used in many
programs*
Teaching relaxation techniques to cope with continuing
  environmental stressors, providing social skills and conflict
  resolution training to enhance youths' adaptive behavioral
  repertoire, and teaching general problem-solving skills.

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the inclusion of additional family or parent elements to CBT has not been
shown to markedly improve outcome in studies to date [24,25].

Support for cognitive theory

There is some evidence that children and adolescents engage in the pat-
terns of depressogenic thinking specified in cognitive theories [26], and a neg-
ative cognitive style may predict later episodes of depression in youth rather
than simply be a symptom of depressed mood [27]. This finding may be de-
velopmentally bound or partly caused by to prior episodes of depression,
however. In one longitudinal study, cognitive distortions were associated
with depression in prepubertal children and adolescents, but only in adoles-
cents was there evidence that the distortions persisted after the episode re-
solved [28].

Data from youth treatment and prevention studies also provide some support for the cognitive model of depression at the heart of CBT. In four separate investigations, youths who participated in CBT showed significant and specific changes in their self-reported negative cognitive styles in comparison to youths in the control conditions [29–32]. In three of these studies, changes in some cognitive measures statistically "mediated" change in depressive symptoms [30–32], although only one of these studies measured cognitions before symptoms [30]. Logically, to demonstrate a causal role for cognitive mechanisms, change in cognition should temporally precede change in symptoms and account for substantial variability in symptom outcome [10]. Only one of these studies examined whether change in behavioral processes (eg, involvement in pleasant activities) was a significant mediator of depression outcome. Results did not support behavioral mediation; however, measurement of the behavioral constructs was not ideal [32].

Review of major empirical findings

In Table 1, we provide summary information on all published CBT depression trials for children and adolescents that have appeared in peer-reviewed, English-language journals. In addition to treatment trials, we include targeted prevention studies of youths with current high levels of depressive symptoms, because these investigations have similar subject inclusion criteria to many of the so-called "treatment" studies.

A quick review of the table reveals several notable characteristics of this literature. In terms of depression severity, the studies are split evenly between those that focused on youths with diagnosable levels of depression ($n = 10$) versus those that enrolled participants on the basis of high symptoms scores ($n = 12$). This difference in severity travels with several other sample characteristics. Studies of youth with diagnosable major depression are more likely to have recruited from health service settings using provider referral (eg, mental health clinics, primary care pharmacy records), whereas high symptom studies generally have recruited by screening large numbers of unselected youth, many of whom may not have been previously identified as needing care (eg, classrooms, general primary care screening). Note, however, that some of the high-symptom studies are designed as prevention trials, whereas the risk group was defined by presence of subsyndromal depression and current, diagnosable major depression was an exclusion criterion [20,33]. Age also is confounded with severity in the literature, and all investigations of diagnosed samples have been conducted with adolescents.

The table also reveals notable overlap in treatment manuals. Although all CBT protocols share some common elements, they do differ in terms of dose, emphasis on cognitive versus behavioral techniques, and format. From the table, three clusters of manuals emerge: the Coping With Depression for Adolescents (CWD-A) program, the individual cognitive therapy

Table 1
Cognitive behavioral therapy studies of depression in youth

	Sample				Treatment			Outcome		Percent responding	
Study	N	Age	Depression severity	Source of sample	CBT manual		Mean sessions	Definition of response		CBT	Control
Ackerson [31]	30	Teen	High symptoms	Recruited from primary care	Individual CBT self-help book, not used by others		4 weeks to read book	Normal CDI		59, combined response rate across CBT and WL	
Asarnow [22]	23	Child	High symptoms	Recruited from schools	Group CBT with family sessions, not used by others		10	No categorical measure		—	—
Asarnow [39]	418	Teen	High symptoms	Recruited from primary care, some on SSRIs	CWD-A adapted for primary care and for individuals		6-month window, mean of 3 sessions	No severe depression on the CES-D		69	58 TAU
Brent [23]	107	Teen	MDD, moderate to severe	Recruited from clinical sources and by advertisement	Individual CBT, served as partial basis for TADS		12	No mood diagnosis and normal BDI		60	39 NST
Butler [59]	56	Child	High symptoms	Recruited from schools	Group CBT, not used by others		10	No categorical measure		—	—
Clarke [33]	150	Teen	High symptoms	Recruited from schools, prevention sample	CWD-A adapted for prevention		15	Categorical measure only available at 1 year follow-up		85	74 TAU

Clarke [24]	123	Teen	MDD	Recruited by advertisement	CWD-A CWD-A plus parent sessions	16 16 + 9P	No mood diagnosis	65 CWD-A 69 CWD-AP	48 WL
Clarke [20]	94	Teen	High symptoms	Recruited from HMO, offspring of depressed parents	CWD-A adapted for prevention	15	No episodes over 1 year follow-up	90	71 TAU
Clarke [42]	88	Teen	MDD	Recruited from HMO, offspring of depressed parents	CWD-A	16	No mood diagnosis	58	53 TAU
Clarke [40]	152	Teen	MDD	Recruited from primary care, teens already receiving SSRIs	CWD-A adapted for primary care and for individuals	5–9	Recovery from major depression	57	43 TAU
Kahn [60]	68	Child	High symptoms	Recruited from schools	CWD-A, early adaptation	12	Normal CDI	88	29 WL
Kerfoot [36]	52	Teen	High symptoms	Recruited from social services, high rates of disruptive disorders	Individual CBT, similar to Wood	Very low, most less than 4 sessions	No residual symptoms of depression	23	20 TAU
Lewinsohn [25]	69	Teen	MDD	Recruited by advertisement	CWD-A CWD-A plus parent sessions	14 14 + 7	No mood diagnosis	43 CWDA 47 CWD-AP	5 WL
Liddle & Spence [61]	31	Child	High symptoms	Recruited from schools	Group CBT, not used by others	8	No categorical measure	—	—
Reynolds & Coats [62]	30	Teen	High symptoms	Recruited from schools	Group CBT, not used by others	10	Normal BDI	83	0 WL
Rohde [41]	93	Teen	MDD, all with CD	Recruited from juvenile justice referrals	CWD-A adapted for disruptive youth	16	No current major depression	39	19 LS

Table 1 (*continued*)

Study	Sample				Treatment			Outcome		
									Percent responding	
	N	Age	Depression severity	Source of sample	CBT manual	Mean sessions	Definition of response		CBT	Control
Rosselló & Bernal [57]	71	Teen	MDD	Recruited from schools	Individual CBT, culturally adapted, not used by others	12	Normal CDI		59	—
Stark [63]	29	Child	High symptoms	Recruited from schools	Self-control (SC) Problem-solving (PS) (both individual)	12 12	Normal CDI		78 SC 60 PS	11 WL
TADS [13]	439	Teen	MDD, moderate to severe	Recruited from multiple settings and by advertisement	Individual CBT, adapted from Brent and CWD-A	15 + 6 15	Clinically meaningful response rated by interviewers		71 CBT + FLX 43 CBT	35 PLA
Vostanis [35]	63	Teen, some child	MDD	Recruited from clinical sources	Individual CBT, similar to Wood	6	No mood diagnosis		86	75 NST
Weisz [64]	48	Child	High symptoms	Recruited from schools	Group CBT, not used by others	8	Normal CDI		50	31 NTX
Wood [34]	53	Teen, some child	MDD	Recruited from clinical sources	Individual CBT	6.4	"Clinical remission"		54	21 RLX

Abbreviations: BDI, Beck Depression Inventory; CDI, Children's Depression Inventory; CES-D, Center for Epidemiological Studies Depression scale; CBT, cognitive behavioral therapy manual that has not been tested in more than one study; CWD-A, Coping with Depression for Adolescents; CWD-AP, Coping with Depression for Adolescents with additional parent sessions; FLX, fluoxetine; HMO, health maintenance organization; LS, life skills tutoring and case management group; MDD, major depressive disorder; NST, nondirective supportive therapy; NTX, no treatment; PLA, pill placebo; RLX, relaxation therapy; TAU, treatment as usual across a variety of service settings, may include counseling or antidepressant medication; WL, wait list.

manual from the Brent clinical trial [23], and a set of similar brief CBT protocols tested in the United Kingdom [34–36]. All of these manuals have been used in diagnosed samples, and CWD-A has been adapted by numerous teams and applied in various settings and samples of adolescents. None of these programs has been tested in a primarily child sample, however, and there has yet to be a true replication study in the preadolescent CBT depression literature.

Readers are referred to the last three columns of Table 1 for summary information on CBT outcomes across the child and adolescent literature. Later in the article we review the findings of the investigations of the three major CBT treatment manuals in greater detail. The TADS investigation combined elements of CWD-A and the Brent program into a new CBT protocol, and we review the TADS findings separately from these other investigations.

Coping with Depression for Adolescents program

Almost half (10/22) of all published CBT studies for youth depression have used CWD-A as a base manual. CWD-A is a comprehensive CBT program that includes psychoeducation, pleasant activity scheduling, social skills training, problem-solving training, and cognitive restructuring. The treatment is a group therapy course delivered in an interactive classroom style, with structured activities, a patient workbook, and standardized homework assignments to practice skills [37]. As with many CBT programs, it began as a skills group for depressed adults and was adapted to be developmentally appropriate for adolescents (eg, by including cartoon examples for cognitive restructuring).

Early in the development of CWD-A, a parent curriculum also was created to map onto the developmental needs of adolescents. In the first randomized CWD-A investigation by Lewinsohn and colleagues [25], this enhanced parent program was compared against teen-only CWD-A and a wait list. The two CBT conditions significantly outperformed the wait list (43% and 47% versus 5% diagnosis free). To the surprise of the investigators, however, the extra parent sessions did not improve treatment response. In 1999, Clarke and colleagues [24] published a replication of the findings from Lewinsohn and colleagues [25]. The design of the active treatment phase of this study was identical to that of Lewinsohn and colleagues (with slight modifications to the CWD manual), and results of the RCT were similar. CWD-A with and without parent sessions reduced depression significantly more than wait list on dimensional symptom measures and on presence of diagnosable depression at posttreatment and follow-up. Addition of parent sessions did not seem to improve the effects of teen-only group CBT. In this trial, booster sessions were provided after the termination of the acute treatment phase, although they were poorly attended across the sample. These booster sessions did not reduce the rate of depression recurrence

for individuals who had remitted by the end of treatment, although booster sessions did seem to assist teens who had not yet recovered from depression at the end of the acute treatment phase.

Based on these early positive CWD-A findings, the program spread and was adapted to other populations. A major thrust of this work has been to craft a prevention protocol, Coping with Stress, for youth at high risk for depression because of family history of mood disorder or current subsyndromal mood symptoms. Across several investigations, this Coping with Stress variant has shown promising effects, with youths in the intervention group evidencing substantially fewer episodes of major depression over follow-up (9%) than youths in control conditions (29%) [20]. Additional analyses have indicated that the cost-effectiveness of Coping with Stress is within the economic parameters of other beneficial health care programs, with some evidence of cost offset [38].

In a somewhat similar vein, CWD-A has been shortened and simplified for the purpose of treating depressed teens seen for services in primary care. In the larger of these investigations by Asarnow and colleagues [39], youths with high symptoms of depression were screened from primary care waiting rooms and randomized to either primary care treatment as usual (TAU) or a quality improvement arm that included access to CBT (short CWD-A) or medication management. Youths in the arm with access to CBT generally chose to use those services and demonstrated better outcomes over time than TAU teens. Another primary care study did not demonstrate significant benefit for a short, individual variant of the CWD-A intervention. In this study, depressed adolescents who received standard antidepressant medication management had outcomes equivalent to youths whose care was supplemented by participation in CWD-A [40]. Of note, depressed teens in this CWD-A condition reduced their use of antidepressants by 20% over the course of this study, an unintended byproduct of participation in psychotherapy. This reduction in medication use also complicates interpretation of the ''no difference'' finding between the two arms, because one view of the results may be that participation in CWD-A enabled adolescents to terminate medication while maintaining their clinical gains.

On the other end of the severity spectrum, CWD-A has been adapted for and applied to samples of clinically complicated youth, including teens with comorbid major depression and conduct disorder [41] and depressed adolescent offspring of parents who are themselves currently depressed [42]. In general, the intervention has been less efficacious in these applications. In the comorbid sample, the program response rate was substantially lower (39%) than in previous published CWD-A studies. Compared with a life skills/tutoring control group, CWD-A did produce significantly superior results on depression outcomes at immediate posttreatment, but these differences did not persist at 6- or 12-month follow-up. In the depressed offspring sample, CWD-A did not separate from TAU provided by a large health maintenance organization.

Brief cognitive behavioral therapy

Three investigations in the United Kingdom have examined the effects of a set of similar, brief CBT protocols. All of these investigations are notable for their use of help-seeking samples, whether depressed adolescent outpatients or youths involved with the social service system. Vostanis and colleagues [35,43,44] compared brief CBT to supportive therapy in a sample of depressed teen outpatients and found no difference between the treatment groups in depression response (86% versus 75%). In this investigation, treatment not only was low dose (mean of six sessions) but also was offered over an extended time frame (1–5 months). In contrast to the Vostanis results, Wood and colleagues [34] found a similar brief CBT program to be superior to relaxation therapy for adolescent outpatients, across multiple indices (eg, dimensional symptom measures, functional impairment, comorbid anxiety). Upon follow-up, the two treatment groups converged because of continued improvement in the relaxation group and relapse in the CBT group. The addition of six monthly booster CBT sessions after acute treatment seemed to result in a much lower relapse rate than acute treatment alone, compared with a historical control condition (20% versus 50%) [45].

On the basis of the promising Wood results, this brief CBT program was adapted for use in general social service settings in the United Kingdom and taught to social work therapists. The brief CBT effectiveness study suffered from difficulties in recruitment of social workers and depressed teens, and there was a high rate of drop-out from therapy. Under these conditions, CBT and usual case management services did not differ significantly [36]. Social workers who had been trained in brief CBT found it to be a valuable experience and believed that it enhanced their skills, even as their patients failed to show any added benefit from the therapists' participation in the training program.

The Pittsburgh cognitive therapy study

The final core manual in the youth depression literature is the cognitive therapy program developed and tested by Brent and colleagues [23] in Pittsburgh. The number of CBT sessions (12–16) in the Pittsburgh manual was more similar to CWD-A than the short interventions used in the United Kingdom investigations. The structure of the Pittsburgh program seemed more flexible than CWD-A, however. The treatment was individual therapy, driven by cognitive case conceptualization, with no preset exercises or homework assignments [21]. Content of the intervention focuses largely on cognitive restructuring, behavioral activation, and problem-solving skills [46].

In the study by Brent [23], adolescents with major depression were randomly assigned to CBT, family therapy, or a supportive therapy control. Notably, most teens came from clinical referral sources, including referral from inpatient treatment, and the sample seems to be significantly

depressed. At posttreatment, significantly more teens who received CBT (83%) than supportive therapy (58%) no longer met diagnostic criteria for major depression. Full remission of depression also was more common in CBT (60%) than in either family (38%) or supportive (39%) therapy, and symptom relief was faster in CBT than the other two treatments. By 2-year follow-up, depression remission and recovery rates between the three treatments were not significantly different [47], although the descriptive data again favored CBT (94% in remission) over family (77%) and supportive (74%) therapy [46].

There have been no formal replications of the Brent findings; however, the manual from the clinical trial has served as the guiding treatment paradigm for an outpatient depression clinical service in Pittsburgh over the last decade. A project that examined archival medical records data from this service found that youths treated with CBT in general practice had outcomes similar to teens enrolled in the clinical trial when controlling for baseline differences in the two samples [48]. The Brent manual, along with CWD-A, also was one of the source manuals used to create the TADS CBT protocol [49].

The Treatment of Adolescents with Depression Study

The CBT landscape changed in 2004 with the publication of the TADS trial [13]. TADS was designed to be a well-powered, definitive test of the relative efficacy of fluoxetine, CBT, and their combination in treating serious depression in adolescents, with a pill placebo condition as a rigorous control group. The TADS CBT intervention manual was created by combining elements of CWD-A, aspects of the Pittsburgh cognitive therapy manual, and the investigators' expertise in CBT for anxiety and CBT and family interventions for substance abuse [49]. The treatment was delivered in an individual format, although there were several required and some optional family/parent sessions. In general, the TADS manual strove to be comprehensive and included a broad range of CBT depression techniques and modules designed to treat common comorbid conditions (eg, anxiety, family conflict). Algorithms were provided to guide therapists and supervisors in selecting different modules for patients on a case-by-case basis, and modules had specific required elements and homework exercises.

Outcomes of TADS were not encouraging for CBT. Across multiple indices, CBT failed to outperform pill placebo, whereas the conditions that included medication—fluoxetine alone and combination treatment—showed positive effects at immediate posttreatment. The response rate for the TADS CBT alone condition (43%) is one of the lowest reported for CBT, whereas the response rates for the medication conditions are among the highest in the youth depression treatment literature (61% medication alone, 71% combination). There was some evidence that participation in CBT may have had a weak beneficial effect in buffering youths against negative life

stress and suicidal feelings, which led the authors to recommend the combination of CBT and fluoxetine as the best supported intervention for adolescent depression.

Making sense of conflicting cognitive behavioral therapy findings

It is difficult to draw strong conclusions from the current CBT literature on the treatment of depression in youth. Some investigations, such as the Pittsburgh cognitive therapy study, suggest that CBT is an efficacious treatment for seriously depressed teens and is superior to other credible interventions, such as family therapy and supportive counseling [23]. Results of TADS [13] paint a different picture, however, with CBT seeming to produce effects simply on par with placebo and general nonspecific remoralization. As can be seen in Table 1, CBT response rates vary substantially across the entire literature, and CBT effect size estimates have fluctuated dramatically from review [7] to review [6]. How can one make sense of these conflicting findings?

Sample factors

It has been suggested that the one reason for the variance in CBT outcomes may be differences in samples between studies. There is evidence for and against this hypothesis. In support of this view, data on predictors of general treatment response and moderators of CBT effects suggest that the intervention may not work as well (1) in families with maternal depression [17,50–52], (2) for youths with severe depression and functional impairment [48,50–52], and (3) in cases with externalizing comorbidity [53]. Extensions of CWD-A to more clinically complex populations also lend support to this view. Although the intervention has worked well as a preventive program with high symptom youth [20] and as a treatment for mild to moderate depression [25], the program failed to substantially separate from control when treating depressed teens whose parents were also depressed [42], and response was muted and transitory in samples of depressed youths with comorbid conduct disorder [41].

The evidence for sample effects is not universal. Within the most recent meta-analysis of the youth depression literature, sample factors did not seem to influence effect sizes significantly [6], although this analysis was underpowered and relied on study level summary variables of sample composition. There is evidence that CBT may be robust to several potential adverse predictors of treatment response, especially compared with alternate psychosocial interventions [52], and that presence of comorbid anxiety may predict positive outcome of CBT for adolescent depression [52,53]. Finally, much has been made of the severity of the adolescents in TADS; however, across major indicators the Pittsburgh cognitive therapy sample seems to have been as severely depressed and impaired as TADS and likely more suicidal [54].

Treatment factors

In addition to sample characteristics, treatment manuals vary across the CBT literature. Three main CBT programs seem to account for much of the research in the field, although a sizeable number of studies also use novel manuals that have been tested only in one investigation. Of the "big three" manuals, CWD-A has the broadest base of support while also having accrued several nonsignificant findings (albeit many within more severe samples). Brief CBT as investigated in the United Kingdom showed some early promise, but results are mixed over multiple investigations, including an effectiveness trial. The Pittsburgh cognitive program produced impressive results in one main study and has informed an effectiveness study and TADS.

The TADS protocol can be viewed as belonging in the "novel manual" category. Although the intervention was built by combining established CBT programs, the intervention had never been tested in its final form before the TADS trial. There are two reasons to suspect why this may have mattered and impacted the TADS CBT response rate. First, the TADS protocol attempted to merge a structured, group-administered coping class (CWD-A) with perhaps the least structured, principle-driven individual therapy manual in the youth depression literature (Pittsburgh cognitive therapy). Flexibility in TADS was preserved by allowing therapist choice of specific intervention modules, but within these modules there seems to have been a high degree of structure, with didactics, preprogrammed skill exercises, and homework worksheets. Second, the module approach itself is a novel contribution to the youth depression literature. Although the strategy of allowing therapists and supervisors to pick from a range of possible skill modules is intuitively appealing, in practice, it may have led to many youths receiving a lower dose of core CBT techniques (eg, behavioral activation) than in other protocols, with techniques less central to the CBT model dominating the treatment dose (eg, rekindling attachment). Given these two factors, it has been argued that the low response rate of CBT in TADS may be specific to the TADS manual and not reflective of CBT in general as it has been delivered in other clinical trials [55].

Design factors

Finally, the design of the various CBT investigations also may have played a role in producing the conflicting results in the literature. Choices of sample and treatment manual are design decisions, but another key factor is selection of a control or comparison condition. Across studies, CBT generally performs well when compared with the passage of time or weak attention conditions. When compared with strong, alternate treatments or active controls, however, effects seem less impressive. For example, CWD-A has produced significant benefit compared with wait list [24,25], small but significant improvement over TAU management of depression in public primary

care clinics [40], and substantial preventive effects compared against passive TAU in schools and health maintenance organizations [20,33]. CWD-A has not fared as well compared with TAU that includes well-managed [56] antidepressant medication [41,43]. There also are examples in the literature of CBT performing better than alternate, active interventions, such as relaxation therapy [34], family therapy [23], and supportive counseling [23] and equivalent to interpersonal therapy for adolescents [57]. Interpretation of the pattern of effects in TADS is complicated by inconsistent blinding across control conditions. For example, youths in the combined CBT and fluoxetine condition were aware that they were receiving active antidepressant medication, and teens in the CBT-only condition knew that they were not. In contrast, youth in the pill placebo and fluoxetine conditions were blinded to control group status. In the Weisz meta analysis [6] of CBT for youth depression, type of control condition did not significantly predict effect size, although descriptive data did support the pattern of results seen across the replications of CWD-A, with CBT effect sizes compared with active controls almost half the size of effects compared against inert controls.

Summary

Taking all evidence into consideration, CBT for youth depression seems to be a promising intervention and a rational treatment choice. There is evidence, however, that CBT may be more appropriate for cases of mild to moderate depression than severe depression and that intervention effects may not be as strong if youths also exhibit externalizing behavior problems or if parents of youth are depressed themselves. Most CBT protocols are designed to be delivered in 8 to 16 sessions, and treatment response is expected to occur early in that time frame [58]. Given a lack of CBT response, results of the TADS study suggest that CBT plus fluoxetine is a beneficial combination. TADS findings also support the use of careful medication management without CBT, depending on patient/family preference and availability of trained CBT therapists.

All recommendations regarding the use of CBT, antidepressants, and their combination are likely to be in flux over the next several years as results of in-progress clinical trials are published (eg, Treatment of Resistant Depression in Adolescents Study [TORDIA]). The findings of TADS and careful reviews and meta-analyses suggest that additional CBT research to untangle the conflicting effects across the literature would be of great value. For example, as can been seen in Table 1, sample, treatment, and design characteristics are not evenly distributed in the published research space. Sample characteristics have clustered, and there are currently no published data on the effects of CBT in samples of prepubescent youth with diagnosable levels of depression. Control group and sample are also confounded, such that we have used our stringent controls in our most seriously impaired

samples, making it difficult to pin down reasons for discrepant findings seen in these studies, compared with the broader literature. We would suggest the development of a set of answerable questions about CBT for youth depression to serve as an agenda for the next wave of clinically relevant research. At a basic level, we would hope that this list would prioritize (1) understanding in what populations CBT is beneficial and probing moderators of treatment response, (2) identifying what manuals, core components, or process elements (eg, flexible individual administration versus didactic group administration) are most critical in producing CBT effects in these populations, and (3) investigating the benefits of continuation treatments given evidence that intervention effects may not endure over long-term follow-up.

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