

Rational Emotive Therapy With Children and Adolescents:

A Meta-Analysis

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Evidence has shown that almost 70% of youth receiving mental health services do so only at school, making the education system the de facto system of service delivery for children and youth with mental health concerns (Farmer, Burns, Phillips, Angold, & Costello, 2003). As the number of students needing mental health and academic support services and the range of academic and mental health problems increase, the demand for evidence-based interventions (EBI) in the schools has increased as well (Stoiber & Kratochwill, 2000). Over the last decade, a convergent and cumulative evidence base of empirical findings for childhood and adolescent interventions, especially psychotherapies, has suggested the effects are positive, of a reasonable magnitude, and comparable to effects found in adult outcome literature (Department of Health and Human Services, 2000; Weisz, Huey, & Weersing, 1998). Four broad-based meta-analyses with diverse child and adolescent populations covering a range of problems have shown the effects of psychotherapy to be positive, with mean effect sizes ranging from .54 (Weisz, Weiss, Han, Granger, & Morton, 1995) to .88 (Kazdin & Bass, 1990). More focused meta-analyses (i.e.,

This article systematically reviews the available research on rational emotive behavioral therapy (REBT) with children and adolescents. Meta-analytic procedures were applied to 19 studies that met inclusion criteria. The overall mean weighted effect of REBT was positive and significant. Weighted z , effect sizes were also computed for five outcome categories: anxiety, disruptive behaviors, irrationality, self-concept, and grade point average. In terms of magnitude, the largest positive mean effect of REBT was on disruptive behaviors. Analyses also revealed the following noteworthy findings: (a) there was no statistical difference between studies identified low or high in internal validity; (b) REBT appeared equally effective for children and adolescents presenting with and without identified problems; (c) non-mental health professionals produced REBT effects of greater magnitude than their mental health counterparts; (d) the longer the duration of REBT sessions, the greater the impact, and (e) children benefited more from REBT than adolescents. The findings are discussed in terms of several important limitations along with suggestions for future research.

specific subsets of treatment studies) have shown positive treatment effects as well. For example, Durlak, Fuhrman, and Lampman (1991) found an overall effect size of .92 for cognitive behavior therapy (CBT) for maladaptive children and adolescents in the formal operational level of cognitive functioning. In the context of child and adolescent psychotherapy, rational emotive behavior therapy (REBT; see Note) has emerged as a popular form of therapy with many applications for mental and nonmental health professionals.

REBT comes from a family of therapies subsumed under the CBT umbrella.

These therapies cover a variety of techniques in which children and adolescents are taught to use cognitive mediational strategies as a means of guiding their behavior, with the ultimate goal of positive behavioral and mental adjustment (Durlak et al., 1991). The basic premise underlying REBT is that emotional disturbances emerge from faulty thinking about events rather than the events themselves. According to REBT, at the core of faulty thinking are rigid and absolute beliefs (e.g., "musts," "oughts") and their derivatives (e.g., "awfulizing"). The faulty thinking is thought to be irrational be-

cause it is antiempirical, illogical, self-defeating, and ultimately promotes emotional disturbances (Neenan & Dryden, 1999).

The tenets of REBT with children and adolescents parallel those developed for adults. Specifically, it is postulated that goal-defeating behaviors and emotional consequences (C) result from and are mediated by an individual's faulty beliefs (B) about activating events (A). Although it may appear that A causes C, REBT maintains that it is B (cognitive appraisals of what happened at A) that largely "causes" or "creates" C (Ellis & Grieger, 1986). When an individual's beliefs are absolute, rigid, or demanding, the individual tends to reach irrational conclusions that lead to highly stressful and goal-defeating consequences. Advances in the theory and practice of REBT have extended the ABC model to include the following: disputation of disturbance generating ideas (D) and a new and effective rational outlook (E; Neenan & Dryden, 1999), which are discussed next.

Using the classic ABCDE framework, treatment typically begins with relationship building followed by problem solving (Bernard & Joyce 1991, 1993). First, REBT practitioners establish rapport with the young person by using numerous relationship-building skills (e.g., attending, empathy, respect; Bernard & Joyce, 1984). Second, REBT therapists address problem identification and problem analysis by listening for inferences (i.e., conclusions or predictions usually in the form of automatic thoughts) and evaluative errors (i.e., irrational beliefs) that are considered to mediate emotional disturbance. Third, treatment goals are developed for the purposes of reducing the intensity, duration, and frequency of disturbed emotions that often lead to problematic outcomes. Fourth, cognitive change is brought about through disputation (the "D" in the ABCDE model). *Disputation* refers to the process of systematically examining one's thoughts and beliefs to assess the degree to which they are true (i.e., based on factual evidence), sensible (i.e., logical), and helpful (i.e., goal-directed; Bernard & Joyce, 1991, 1993). Finally, the ABCD approach leads to the amelioration of dis-

turbances, thereby producing a rational and effective (E) outlook (Neenan & Dryden, 1999).

REBT was pioneered by Albert Ellis in the mid-1950s and is considered the first of the modern-day cognitively based therapies used for the treatment of school-age childhood and adolescent maladjustment (Ellis & Bernard, 1983; Hajzler & Bernard, 1991). Early on, Ellis and his followers demonstrated that REBT's highly directive, educative, and preventative nature could be used with children and adolescents. REBT has been applied to children and adolescents exhibiting conduct disorders (Morris, 1993), aggression (Raynor, 1992), test anxiety (Warren, Deffenbacher, & Brading, 1976), disruptive classroom behaviors (Zelie, Stone, & Lehr, 1980), attention-deficit/hyperactive disorder (Morris, 1993), low self-esteem (Weaver & Matthews, 1993), low self-concept (Cangelosi, Gressard, & Mines, 1980), irrationality (Rosenbaum, McMurray, & Campbell, 1991), general anxiety (Knaus & Boker, 1975), and low academic achievement (Block, 1978).

Considerable qualitative research has been generated investigating the effectiveness of REBT with adults. In a qualitative review, Silverman, McCarthy, and McGovern (1992) found that 49 of 89 studies reported positive findings for REBT. No alternative treatments resulted in significantly better outcomes. These findings supported previous qualitative reviews (e.g., DiGiuseppe & Miller, 1977; McGovern & Silverman, 1984) on the effects of REBT with adults. Meta-analyses of REBT with adults also have demonstrated its effectiveness. In the most recent meta-analysis of 28 controlled studies yielding 31 comparisons, Engles, Garnefski, and Diekstra (1993) reported a grand effect size of 1.62 for REBT. REBT yielded the highest overall effect size when compared to systematic desensitization, combination treatments, and placebo conditions. In a meta-analysis of 70 REBT outcome studies yielding 236 comparisons, Lyons and Woods (1991) addressed the efficacy of REBT in comparison to no treatment controls, attention control placebos, and cognitive behavior modification. The overall efficacy of REBT was

.95. These meta-analytic results have demonstrated that REBT is an effective form of therapy with adults.

Although one might assume that the findings pertaining to REBT with adults could be generalized downward to children and adolescents, important differences between these populations bear noting. To begin with, unlike adults, children and adolescents seldom perceive themselves as "disturbed" or in need of therapeutic treatment. Rather, most child and adolescent treatment referrals are made by parents, teachers, or other caretakers who often determine the desired goal of the therapy and also provide the information required by the therapist—two areas of potential bias and/or distortion (Weisz et al., 1998). Nevertheless, as Rosenbaum et al. (1991) pointed out, "As with adults, the explanations that children give to causes of events in their lives play a strong role in determining their adaptive behavior and the degree of psychological and emotional well-being" (p. 188). Investigating the efficacy of REBT with children and adolescents per se clearly is necessary if we wish to use this technique with this population.

Although not a quantitative synthesis, Hajzler and Bernard (1991) reported that REBT led to decreases in irrationality, anxiety, and disruptive behaviors among students in 88%, 80%, and 56% of the studies, respectively. Locus of control was also modified toward internality, and self-esteem increased in 71% and 57% of the studies, respectively. These results were consistent with those of a previous qualitative review of REBT research conducted with children and adolescents (i.e., DiGiuseppe & Bernard, 1990).

The two qualitative reviews, while impressive, do not provide quantitative estimates of treatment effects or an understanding of the characteristics that either promote or diminish the effectiveness of REBT with children and adolescents. A meta-analysis of the research conducted on REBT with children and adolescents would clearly extend our knowledge in this important area. Applying meta-analytic techniques to experimental outcome studies of REBT with children and adolescents would shed some light on the

overall magnitude and relative contribution of moderators as they influence treatment effectiveness of REBT with children and adolescents. The major purpose of this meta-analysis was to evaluate the impact of REBT on treatment outcomes for children and adolescents. A secondary purpose of this review was to identify and evaluate variables that moderate study outcomes.

METHOD

Selection of Studies

Psychological Abstracts, Educational Resources Information Center (ERIC), and Sociological Abstracts, dating from 1972 to January, 2002, were computer-searched for studies relevant to the use of REBT with children and adolescents. The key words used to identify populations of interest consisted of *children, adolescents*, and their derivatives (e.g., *kids, child, teens, youth, juvenile*). Key words and phrases to identify proper treatment studies consisted of *rational emotive therapy, rational therapy, rational emotive education, RET, and REBT*. The references of the obtained journal articles and the qualitative reviews were also examined to identify additional studies fitting our criteria for inclusion. Whenever possible, hand searches of the journals that frequently published REBT studies were also conducted. Finally, electronic and Web-based databases amassed at the Albert Ellis Institute on REBT were also scanned for additional relevant empirical studies related to REBT with children and adolescents. In each case, abstracts of all identified studies were reviewed to eliminate articles that did not meet the inclusion criteria.

Each of the studies included in this analysis had to meet a number of selection criteria. The inclusion criteria were chosen to provide data on the magnitude of REBT effects as a function of outcome categories (e.g., anxiety, disruptive behaviors) and study design features or client characteristics. First, to be included, the meta-analyses investigations had to address the effects of REBT treatment with children or adolescents. Children and

adolescents were defined as any school-age individual under the age of 18 who received REBT regardless of the treatment setting (e.g., school or clinic-based). Second, studies had to provide the necessary statistical information for the estimation of effect sizes (e.g., means, standard deviations, group sizes, *F* values, *t* values, *r* values). Case studies, narratives, and other descriptive studies were excluded. Finally, studies had to incorporate a control group. The control group designation was broadly defined to include wait-list and attention-control groups.

As done in Weisz et al. (1995) to assure overall quality control, only studies published in refereed journals were included; unpublished manuscripts were excluded (e.g., dissertations). In addition, only studies published in English were considered. The criteria yielded 46 studies; of these, 27 studies did not meet inclusion criteria because they did not provide sufficient statistical information and/or were case studies. After excluding the 27 studies, 19 studies were left, producing 56 effect sizes. Table 1 provides descriptive information for these studies.

Estimation of Subcharacteristic (moderating variables) Effect Sizes

Each study was coded according to its outcome domain and study or client characteristics to assess the relative magnitude of the effects on REBT outcomes. This process consisted of the simultaneous coding and categorization of the descriptions of the independent variables provided by the researchers. A category was formed when at least 3 studies reported data on an outcome category and/or study/client characteristic. This inductive categorization process resulted in five outcome domains:

1. disruptive behaviors,
2. endorsement of irrationality,
3. grade point average,
4. self-concept, and
5. anxiety.

In addition, several study subordinate characteristics emerged: (a) internal validity,

(b) student grade level, (c) study population, (d) therapist designation, (e) comparison group, and (f) total therapy minutes.

Internal Validity. The validity of each study was determined to be either high or low. A study high in internal validity contained random assignment of participants to treatment conditions, used psychometrically sound instruments, and possessed a mortality rate that was less than 15% and equivalent across groups. All other studies were coded as low in internal validity.

Student Grade Level. Grade level was determined as follows: (a) Grades 1 through 6 were coded as elementary school, (b) Grades 7 through 9 were coded as middle school, and (c) Grades 10 through 12 were coded as high school. Studies were not coded for this domain if grade level could not be determined.

Study Population. Population was coded as either with or without presenting problems. Participants labeled without presenting problems had no immediate presenting problem but were considered at risk (e.g., school failure) of emotional (e.g., low self-esteem) or behavioral difficulties. All other participants presented problems such as test anxiety, behavior problems, or were labeled as being at risk of school failure.

Therapist's Designation. Therapist designation was categorized as either mental health or nonmental health professionals, with the former group consisting of counselors, therapists, social workers, and psychologists. A nonmental health designation was assigned if the individual administering the treatment was a classroom teacher, student, or other paraprofessional.

Comparison Groups. Groups were coded as either being a no-treatment control, placebo-control, or an alternative-treatment control group. No-treatment control groups received no experimental treatment. Placebo-control treatments were designed to create demand effects that were unrelated to any active treatment. Al-

TABLE I
Demographic, Design Features, and Outcomes of Studies in the Meta-Analysis

Study	Age	Gender	SES	Racial/ Ethnic status	Treatment group size	Treatment duration (min)	Sessions	Setting	Active treatment components	Dependent variables	Measure type	Group comparison(s)	Outcomes
Block (1978)	—	19 males 21 females	Low	Black Hispanic	16	45	47	School	Discussion, behavioral rehearsal, homework	Disruptive behaviors	Frequency	Human relations training (HRT) group, Wait list control (WLC)	REBT incidents of dis- ruptive classroom behaviors signifi- cantly lower than HRT & WLC group
Cangelosi et al. (1980)	—	3 males 33 females	Middle	—	12	60	24	School	Uncovering anti- empirical beliefs, cog- nitive, re- structuring corrective behavior	Self- concept	Self- report checklist	No-treatment group (NTG), Placebo treat- ment Group (PTG)	REBT group GPA sig- nificantly higher than HRT & WLC group REBT treatment signifi- cantly increased adolescent self- concept over NTG & PTG
Block (1978)	—	19 males 21 females	Low	Black Hispanic	16	45	47	School	Discussion behavioral rehearsal, homework	Disruptive behaviors	Frequency	HRT group, WLC	REBT incidents of dis- ruptive classroom behaviors signifi- cantly lower than HRT & WLC group
Cangelosi et al. (1980)	—	3 males 33 females	Middle	—	12	60	24	School	Uncovering anti- empirical beliefs, cog- nitive, re- structuring corrective behavior	Self- concept	Self- report checklist	HRT group, WLC NTG, PTG	REBT group GPA sig- nificantly higher than HRT & WLC group REBT treatment signifi- cantly increased adolescent self- concept over NTG & PTG

(table continues)

(Table 1 continued)

Study	Age	Gender	SES	Racial/ Ethnic status	Treatment group size	Treatment duration (min)	Sessions	Setting	Active treatment components	Dependent variables	Measure type	Group comparison(s)	Outcomes
De Anda (1998)	12–14	—	Low Middle	White 47% Hispanic 22% Black 10% Other 21%	36	—	10	School	Subjective ap- praisal, problem solving, homework, muscle relaxation	Anxiety	Self- report checklist	No-treatment control (NTC)	REBT significantly in- creased coping strategies for deal- ing with state anxi- ety produced by stress compared to NTC
DiGiuseppe & Kassinove (1976)	—	101 males 103 females	Middle	—	35	50	15	School	Cognitive— behavioral training	Rational thinking	Self- report checklist	HRT group, NTC	REBT group reported significantly less en- dorsement of irra- tional beliefs than HRT and NTC
Fiannagan, Povall, Del- lino, & Byrne (1998)	9–11	17 males 27 females	—	86% White 14% other	22	30	12	School	Problem solv- ing, self-help	Rational thinking	Self- report checklist	Problem-solving group (PSG)	REBT group reported significantly less trait anxiety than HRT and NTC
Hooper & Layne (1985)	9–15	653 males 671 females	—	—	586	60	6	School	Identifying common feelings, uncovering anti- empirical beliefs	Rational thinking	Self- report checklist	NTC	Rational-emo- tive group scored signifi- cantly higher in ra- tional thinking than NTC
Kachman & Mazer (1990)	—	53 males 56 females	—	—	59	—	12	School	Discussion, role-playing, informal lecture, worksheets	Rational thinking	Self- report checklist	NTC	No significant differ- ence between REBT group and NTC on rationality

(table continues)

(Table 1 continued)

Study	Age	Gender	SES	Racial/ Ethnic status	Treatment group size	Treatment duration (min)	Sessions	Setting	Active treatment components	Dependent variables	Measure type	Group comparison(s)	Outcomes
Kachman cont'd.										GPA	Final grades		No significant difference between REBT and NTC on GPA
										Disruptive behaviors	Frequency		No significant difference between REBT group and NTC on frequency of detentions
Knaus & Boker (1975)	11-13	—	Low	Black 40% Hispanic 24% Other 36%	18	10-30	85	School	Discussion	Self- concept	Self- report checklist	Self-concept enhancement (SCE), NTC	REBT group scored significantly higher in enhanced self-concept than SCE and NTC groups
Laconte, Shaw, & Dunn (1993)	12-15	—	Varied	Varied	12	45	15	School	Problem solving, communication, relationships	Self- concept	Self- report checklist	NTC	No difference between REBT and NTC groups on self-concept
										GPA	Final grades		No difference between REBT and NTC groups on GPA
Miller & Kassinove (1978)	—	—	Middle	—	72	60	12	School	Discussion, behavioral rehearsal, homework	Anxiety	Self- report checklist	NTC	Full REBT yielded significantly less anxiety compared to NTC group
										Rational thinking	Self- report checklist		Full REBT group reported significantly less endorsement of irrational beliefs than NTC

(table continues)

(Table 1 continued)

Study	Age	Gender	SES	Racial/ Ethnic status	Treatment group size	Treatment duration (min)	Sessions	Setting	Active treatment components	Dependent variables	Measure type	Group comparison(s)	Outcomes
Omizo, Cubberly, & Omizo (1985)	8-11	—	Middle	Pre-dominately White	24	60	24	School	Discussion behavioral rehearsal, exercises	Self-concept	Self-report checklist	NTC	REBT group reported significantly enhanced self-concept compared to NTC
Omizo, Lo Fuang-Luan, & Williams (1986)	14-18	—	Varied	Pre-dominately White	30	60	12	School	Discussion, behavioral rehearsal, exercises	Self-concept	Self-report checklist	NTC	REBT group reported significantly enhanced self-concept over NTC group
Rosenbaum et al. (1991)	Mean age 9 yrs	36 females	—	White	22	55	10	School	Discussion, behavioral rehearsal, exercises	Anxiety	Self-report checklist	Attention control (AC)	REBT group experienced no significant reduction in anxiety compared to AC group
													REBT group experienced significant increase in internal locus of control
													REBT group reported significantly less endorsement of irrational beliefs than AC
Shannon & Allen (1998)	—	18 males 37 females	Low	Black	24	—	8	School	Cognitive restructuring, relaxation, homework	Grades	Final grade checklist	Attention control group (ACG)	REBT group obtained significantly higher math grades on standardized test than AC

(table continues)

(Table 1 continued)

Study	Age	Gender	SES	Racial/ Ethnic status	Treatment group size	Treatment duration (min)	Sessions	Setting	Active treatment components	Dependent variables	Measure type	Group comparison(s)	Outcomes
Warren et al. (1976)	—	18 males 14 females	Middle	Pre- domi- nantly White	18	30	7	School	Discussion, behavioral rehearsal, exercises	Anxiety	Self- report checklist	NTC	REBT group reported significantly less test anxiety than NTC
Weaver & Mathews (1993)	—	37 males 33 females	—	Pre- domi- nantly Black	35	50	28	School	Discussion, behavioral rehearsal, exercises	Disruptive behaviors	Frequency	NTC	REBT group had signifi- cantly fewer refer- rals to the princi- pal's office
										Self- concept	Self- report checklist		REBT group had signifi- cantly higher overall self-concept than NTC
										GPA	Final grades		REBT group scored significantly higher on achievement than NTC
Wessel & Mersch (1994)	15–18	19 males 22 females	—	Pre- domi- nantly White	22	120	10	School	Discussion, behavioral rehearsal, homework	Anxiety	Self- report checklist	Wait-list control (WLC)	REBT group experi- enced significant re- duction in test & social anxiety
Wilde (1994)	—	40 males 22 females	—	—	40	52	7	School	Game activi- ties oriented on RET principles	Irrational thinking	Self- report checklist	NTC	Significant finding of in- creased rationality among 9th-grade REBT group over NTC, but not for 10th, 11th and 12th grades
Zelie et al. (1980)	—	—	—	—	30	30	—	School	Discussion	Disruptive behaviors	Frequency	NTC	Discipline referrals for disruptive behaviors found to be signifi- cantly lower for REBT group than NTC

Note. SES = socioeconomic status; REBT = rational emotive behavior therapy; GPA = grade point average.

ternative treatment groups received a form of therapy other than REBT (i.e., Human Relations Training, Self-Concept Enhancement). Due to the lack of studies using a placebo control group ($n = 1$), this category was removed from further statistical analysis.

Total Therapy Minutes. Time was calculated for each study by multiplying the number of sessions by session length. The resulting total was subsequently categorized into low (60 to 375 minutes), medium (675 to 770 minutes), and high (1,200 to 2,115 minutes) groups based on the natural clustering of studies along this dimension.

Finally, many important design features of the selected studies were also considered as potential moderators (e.g., presence of generalization, maintenance, REBT components). Analysis revealed, however, that too few studies addressed each additional potential moderator adequately and with enough numbers to justify coding for that moderator.

Coding Reliability. Interrater agreement was not calculated for study characteristics that required little or no subjective interpretation (i.e., number of sessions, treatment group size, and total therapy minutes). Interrater agreement for the remaining study or client characteristics (i.e., internal validity, grade level, study population, therapist designation, and comparison group) was calculated by comparing the study characteristics assigned to each study by the first author versus the fourth or fifth authors, dividing the total number of agreements by the number of agreements plus disagreements and multiplying by 100. The initial mean interrater agreements for these variables were 85%, 79%, 100%, 71%, and 85%, respectively. The low initial interrater agreement for comparison groups resulted from confusion over an operational definition of alternative therapies. Ultimately, all coding disagreements were, however, resolved through collaborative discussion and consensus among the authors.

Data Analysis Strategy

We used meta-analytic techniques (Hedges & Olkin, 1985) to derive average mean effect sizes within delineated categories of study characteristics. We did not, however, apply homogeneity tests or other techniques (e.g., regression analyses) designed to identify predictor variables. Rather, we used average effect size estimators as a common metric to assist the reader in discerning the magnitude and relative influence of various study characteristics on the treatment effectiveness of REBT. Researchers have used such delimited meta-analytic techniques when the depth and breadth of the program of research precludes more refined analyses of predictor variables (e.g., Rosenshine & Meister, 1994). We used Z_r (Fisher z transformed correlation) effect size estimators (Hedges & Olkin, 1985). The primary advantage of such estimators over mean difference effect size is that the summary statistics from primary research studies may be in almost any form and need not contain all summary data necessary to compute mean difference effect sizes (e.g., means, standard deviations). Additionally, Z_r effect size estimators provide a practical and conceptual understanding of the strength and relative magnitude of the influence of study characteristics on the treatment effectiveness of REBT. The Z_r effect size estimators are generally considered more useful because of their generality of interpretation, consistency of meaning, and simplicity of interpretation (Rosenthal, 1995b). Cohen's (1988) interpretive framework was used to gauge the impact of the Z_r effect size estimators: (a) .1 to .29 (small), (b) .3 to .49 (moderate), and (c) $\geq .5$ (large).

We made several decisions during the literature review process based on commonly accepted meta-analytic literature review guidelines to reduce redundancy or overweights of estimates in the research samples or measures (Cooper & Hedges, 1996; Rosenthal, 1995a). First, we reviewed the studies to ensure statistical independence of the samples. In each case, the studies represented were independent of one another. Second, in calculating ef-

fect size estimates, average Z_r s were weighted by sample size, according to procedures recommended in Hedges and Olkin (1985). Weighting was conducted because of the general tendency for treatment effects to be inversely related to sample size (Weisz et al., 1995). The two primary forms of summary statistics used to compute Z_r s were correlational or predictive and those used to test statistical significance. Studies using correlational or predictive summary statistics reported effect sizes, correlations, or beta weights. Studies using summary statistics to test statistical significance generally reported a t , F , or p value. Calculations of average unweighted Z_r were also conducted. All effect size estimates (e.g., d) were converted to r and subsequently to Z_r . The Z_r transformation was also used to reduce the effects of skewness associated with the sampling distribution of r (Hinkle, Wiersma, & Jurs, 1994). In instances where no means or standard deviations were provided, Z_r s were computed using F or t following the recommendations by Cooper and Hedges (1996) and Rosenberg, Adams, and Gurevitch (2000) and converted to r and subsequently Z_r . The MetaWin 2.0 (Rosenberg et al., 2000) statistical program was used to calculate all effect sizes and conversion to Z_r . The formulas used to convert the summary statistics to a Z_r effect size were as follows:

$$t \quad r = \sqrt{\frac{t^2}{t^2 + df}} \quad z = \frac{1}{2} \ln \left(\frac{1+r}{1-r} \right)$$

$$F \quad r = \sqrt{\frac{F}{F + df}}$$

Finally, averaged weighted Z_r effect sizes were calculated for both outcome categories under investigation and, if applicable, associated subordinate study or client characteristics (e.g., internal validity, grade). If researchers used several measures of the same construct (e.g., self-concept), we calculated a single within-study average Z_r effect size estimate for that characteristic. We also calculated 95% confidence intervals for all of the obtained Z_r effect sizes to provide an index from which to judge whether the obtained

effect sizes differed statistically from zero and whether there were statistically significant differences in the relative magnitude of outcome categories and client or study characteristics.

RESULTS

Analysis of experimental- and control-group samples revealed some extreme outliers (i.e., $n = 586$ and $n = 738$, respectively). In order to reduce their influence, a Winsorizing procedure was applied, in which extreme scores were reduced to a “reasonable upper boundary” (RUB) and a “reasonable lower boundary” (RLB; Hinkle et al., 1994) based on the interquartile range (IQR; i.e., the difference between the 75th percentile and the 25th percentile or $IQR = Q_3 - Q_1$). The RUB is calculated as $RUB = Q_3 + 1.5$ (IQR), whereas the RLB is calculated as $RLB = Q_1 - 1.5$ (IQR). Those scores exceeding the RUB are replaced by the RUB. Similarly, those scores below the RLB are replaced by the RLB.

For the experimental group, no sample sizes fell below a RLB of 8. One sample size (586), however, fell outside the RUB of 72, and it was replaced accordingly with the RUB. Similarly, for the control group, no sample sizes fell below the RLB of 5. One sample size (738), however, fell outside the RUB boundary of 56 and was replaced accordingly with the RUB.

The published studies included in the meta-analysis were distributed between the years of 1975 to 1998. A total of 1,021 children and adolescents served as treatment group participants. The number of Z_r effect sizes for each outcome domain and subordinate characteristic along with 95% confidence intervals are presented in Table 2.

Considerable variation existed among the number of Z_r effect sizes per outcome domain and subordinate study characteristics. The number of effect sizes ranged from 7 to 15 and 7 to 45 for outcome domains and subordinate characteristics, respectively. The grand weighted mean Z_r was .50. The weighted mean Z_r effect sizes for the outcome domains ranged from a low of .38 for self-concept to a high of

1.15 for disruptive behaviors. Comparison of the 95% confidence intervals for the outcome domains showed that the weighted mean Z_r effect size for disruptive behaviors did not overlap with any other outcome domain. In addition, irrationality, GPA, and anxiety Z_r s were all statistically distinct from self-concept, with the latter statistically equivalent to one another and former possessing the lowest magnitude. All outcome domain Z_r effect sizes were also statistically different from zero.

Weighted mean Z_r subordinate characteristic effect sizes ranged from a low of

.18 to a high of .70 for middle and elementary school students, respectively. Comparisons of 95% confidence intervals revealed that there was no statistical difference between studies low in internal validity versus studies high in internal validity nor difference for students with versus those without presenting problems as a function of REBT. There were, however, distinct differences in service delivery between mental health professionals and nonmental health professionals, with the latter producing effect sizes of greater magnitude. Regarding length of time in REBT, the magnitude of effect for low

TABLE 2
Weighted Z_r Estimates for Grand and Outcome Domain Effects

Domain	Number of effect sizes	Weighted Mean Z_r	95% CI
Grand effect size	56	0.50	0.40–0.61
Outcome domains			
Anxiety	12	0.48	0.44–0.59
Disruptive behaviors	7	1.15	0.89–1.42
Irrationality	15	0.51	0.49–0.54
Self-Concept	15	0.38	0.34–0.41
Grade point average	7	0.49	0.43–0.55
Study characteristics			
Internal validity			
Low	35	0.53	0.48–0.58
High	23	0.50	0.48–0.52
Study population			
With problems	45	0.50	0.49–0.53
Without problems	13	0.51	0.48–0.55
Therapist designation			
Health professional	18	0.36	0.34–0.38
Nonmental health	15	0.54	0.51–0.57
Time			
Low	7	0.22	0.20–0.25
Medium	26	0.54	0.52–0.56
High	20	0.59	0.54–0.64
Comparison group			
Alternative treatment	13	0.57	0.53–0.62
No treatment control	45	0.49	0.47–0.51
Grade			
Elementary	18	0.70	0.62–0.68
Middle school	9	0.18	0.16–0.20
High school	24	0.51	0.48–0.55

Note. CI = confidence interval.

therapy minutes was statistically lower compared to medium and high therapy minutes, which were found to be equivalent. Alternative treatment controls produced statistically higher weighted Z_r effect sizes than no-treatment controls. In addition, all grade levels were statistically different from one another in terms of the magnitude of weighted Z_r effect sizes, with the greatest REBT effect produced in elementary school. Finally, all study characteristics were statistically different from zero.

DISCUSSION

The primary purpose of this investigation was to apply meta-analytic techniques to evaluate the impact of REBT on treatment outcomes for children and adolescents. There are seven principle findings to highlight. First, the overall grand weighted Z_r was 0.50, an estimate remarkably similar to Weisz et al.'s (1995) grand weighted effect size estimate of 0.54 in their broad-based meta-analysis of child and adolescent psychotherapy outcome research. In this meta-analysis, after REBT treatment, the average child or adolescent scored better on outcome measures than approximately 69% of the untreated control groups. Clearly, in both the present focused meta-analysis and Weisz et al.'s meta-analysis, the effects of psychotherapy with children and adolescents were beneficial and of a respectable magnitude.

Second, REBT had its most pronounced impact on disruptive behaviors. This finding was not surprising given that disruptive behaviors are among the most frequently reported problems when children or adolescents are referred to mental health clinics (Forehand & McMahon, 1981). Children and adolescents with behavioral problems present significant challenges to schools. Often these students are the most difficult to teach and manage in the classroom. Because their behaviors are so disruptive and bothersome, these students often arouse negative feelings in others—alienating schoolmates and adults and ultimately robbing them of the benefits of learning opportunities. It must be stressed, however, that the large magnitude of the effect size for disruptive behaviors

may be artifactual and simply an outcome of the measures used to assess disruptive behaviors (e.g., frequency counts).

Third, studies high in internal validity were statistically equivalent to studies low in internal validity, suggesting no relative difference in variation in effect sizes as a function of this important dimension. The obvious implication of this finding is that the methodologically more rigorous studies were no different in demonstrating the effectiveness of REBT than less well-conducted studies. Engles et al. (1993) also found no statistical differences between levels of internal validity (i.e., low, medium, high) across studies of REBT with adults. One intriguing possibility for this finding is that the effects of REBT were robust against the methodological differences among the studies low and high in internal validity. Given the few number of studies included in this meta-analysis, however, this finding must be interpreted with caution.

Fourth, REBT appeared equally effective for children and adolescents with and without an identified problem. This finding suggests that REBT may be useful for both intervention and prevention purposes with a wide range of students. Fifth, the weighted effect sizes showed that non-mental health professionals produced REBT effect sizes of greater magnitude. This finding is consistent with extensive literature reviews suggesting little difference in effectiveness between professional and paraprofessional therapists (e.g., Christensen & Jacobson, 1994). Clearly, this finding has practice implications. Current research has suggested that only 6% of the 20% of school-age children evidencing mental health problems in need of intervention are receiving such services (Doll, 1996). Perhaps now is the time for the “disbursement of responsibility for student mental health to be shared among all school staff” (Doll, 1996, p. 36). One way to achieve widespread effects is “to give psychology away” to mental health paraprofessionals (Leviton, 1996; Miller, 1969).

Sixth, the greatest impact of REBT among children and adolescents occurred in the medium to high treatment duration range. This finding confirms previous crit-

icisms (e.g., Lyons & Woods, 1991) that treatments of short duration limit the effectiveness of REBT. In the present review, the longer the therapy sessions in terms of minutes, the greater the impact of REBT across outcomes. Finally, treatment effects were greater for elementary school-age children than both middle and high school students. Perhaps, Weisz and colleagues (1987) noted, (a) adolescents were less responsive to the REBT therapist's influence as a function of their advanced reasoning ability, making them more skilled at averting or undermining therapist attempts; (b) adolescent problems are more deeply involved; or (c) the outcome measures used with adolescents were less sensitive to change. To an extent, this finding is also consistent with extant research showing that children with learning and or behavioral problems become less responsive to intervention as they get older, with their problems getting broader in scope and increasingly more severe (O'Shaughnessy, Lane, Gresham, & Beebe-Frankenberger, 2002).

Whenever possible, the findings in the present meta-analysis were compared to findings in meta-analyses done with adults (i.e., Engles et al., 1993; Lyons & Woods, 1991). As in the present analysis, Lyons and Woods found REBT to be more efficacious than no-treatment controls. Unlike the present analysis, however, Engles et al. and Lyons and Woods found that REBT was no more effective than alternative therapies. This difference may have resulted from that fact that Engles et al. (1993) and Lyons and Woods (1991) compared REBT to well-researched alternative therapies (e.g., systematic desensitization), whereas in the present analysis REBT was compared to treatments with relatively little empirical support (e.g., human relations education, self-concept enhancement training).

Both the present analysis and Engles et al. (1993) found internal validity to be statistically unrelated to treatment efficacy. The implication of this finding is that there was no difference between well-conducted and poorly conducted studies in demonstrating the effectiveness of REBT. Engles et al. explained this finding by noting that the more rigorous studies

in their meta-analysis controlled for allegiance effects by using experimenters blind to the purpose of the study. Given that positive allegiance has been found to be associated with larger effect sizes (Smith, Glass, & Miller, 1980), controlling for this variable may have attenuated the impact of REBT in these methodologically more rigorous studies. Unfortunately, sufficient information was unavailable in the present analysis to assess the impact of allegiance effects.

LIMITATIONS AND FUTURE RESEARCH

It is important to understand the results of this meta-analysis in terms of its limitations. These limitations should be considered with evaluating the generalizability of the results. First, despite an exhaustive literature search, we were able to locate only 19 studies that met our inclusion criteria, a relatively small number compared to meta-analyses of REBT with adults. For example, Engels et al. (1993) and Lyons and Woods (1991) used 28 and 70 studies each, respectively. Clearly, there is a paucity of and greater need for empirical studies using REBT with children and adolescents. Second, interrater reliability of article selection was not assessed. It is altogether possible that a relevant study may have been erroneously considered as not meeting inclusion criteria. Only interrater study selection procedures conducted at the outset would have diminished the likelihood of this potential bias.

Third, as a whole, the studies included in this review provided insufficient information on the characteristics of the children and adolescents beyond their age and, to a limited degree, their gender that could conceivably moderate sensitivity to REBT. Indeed the limited availability of demographic characteristics precluded a more thorough investigation of fixed or variable risk factors that may predict REBT outcomes with children and adolescents. Although some studies noted demographic characteristics of children and youth, the significance of that information was seldom explored. Without this important information, it is difficult to assess the types of children and youth who are

most and least likely to benefit from REBT (Weisz et al., 1998). Future research on treatment outcomes should seek to link these outcomes to the contexts in which children and adolescents live and search for interactions among these factors. Fourth, it was not possible to code for important study design features such as generalization and maintenance of treatment effects. Very few studies conducted the necessary follow-up analyses to code for these important features. Without examining these important features it is difficult to determine whether the beneficial effects of REBT extend beyond the treatment settings (e.g., schools) or are maintained beyond the initial treatment phases. Clearly, future research should seek to incorporate these important design features into their methodologies.

Fifth, few if any of the studies provided sufficient information from which to determine whether the treatments were implemented with integrity to each component in the REBT framework. Without procedures to determine the fidelity of implementation, it is difficult to conclusively attribute outcomes strictly to a given component of REBT (e.g., disputation, homework). Future research should seek to provide sufficient information to permit a component analysis of REBT. Two promising approaches to accomplish this goal are dismantling and additive methods. In dismantling, REBT is broken down into its constituent parts and varied across different populations. An additive would involve the successive addition of new components or combinations of two or more REBT components (Weisz et al., 1998) across populations.

Sixth, as a criterion of quality, we chose to exclude dissertations, professional presentations, and ERIC documents as one way to address the need for a standard of study quality (peer reviewed in our case). Nevertheless, within the sample of articles meeting the quality criterion, there remained substantial variability in terms of strengths and weaknesses. Future researchers should use strategies that enhance the quality and quantity of research on REBT. Seventh, virtually all the studies occurred in school settings with nonreferred children and adoles-

cents—a threat to the external validity of the findings to clinical settings and practices. In fact, Weisz et al. (1998) have referred to this phenomenon as “research therapy,” to distinguish it from “clinical therapy.” As Weisz and his colleagues pointed out, there are sufficient differences between research-based and actual clinical practice to warrant asking whether the results found in this meta-analysis extend to or are representative of clinical practice.

Finally, many of the studies used a relatively restricted range of outcome assessment measures. Weisz and colleagues (1998) argued for the addition of an expanded assessment framework using measures that examine not only symptoms (e.g., checklists) but also consumer responses (e.g., social validity) and other system-related variables. Future research should also seek to assess beyond posttest to examine the maintenance effects of REBT. Without this valuable information, it is difficult to determine whether children and youth may need follow-up sessions to strengthen the effects of REBT over time.

Within the context of these limitations, the present findings of this meta-analysis on the effects of REBT with children and adolescents adds to the cumulative record of work on the effects of psychotherapies with children and adolescents. Noteworthy were our findings that (a) REBT had its greatest impact on child and adolescent disruptive behaviors; (b) relatively little difference existed between studies identified as low or high in internal validity; (c) REBT appeared equally effective, regardless of whether the client did or did not have a presenting problem; (d) nonmental health professionals produced REBT effects of greater magnitude than those produced by mental health professionals; (e) more is better in terms of duration of REBT sessions; and (f) children appear to benefit more from REBT than older adolescents.

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Note

In 1993 the "B" in REBT was added to reflect that RET was first and foremost highly cognitive, emotive, and behavioral, both conceptually and theoretically. This new name reflected REBT's tripartite approach to relieving emotional disturbances by encouraging individuals to think, feel, and act against irrational beliefs.

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