Published in final edited form as:

J Am Acad Child Adolesc Psychiatry. 2016 June ; 55(6): 495–503.e2. doi:10.1016/j.jaac.2016.04.003.

Brief Psychotherapy for Maternal Depression: Impact on Mothers and Children

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Disclosure: Dr. Swartz has received royalties from UpToDate. Dr. Frank has received royalties from the American Psychological Association and Guilford Press. She has received honoraria for chairing the planning of an annual conference on circadian rhythms sponsored by Servier. She and her spouse have served on an advisory board to Servier. She and her spouse hold stock in Health Rhythms and Psychiatric Assessments, Inc. Her spouse holds the copyright for the Pittsburgh Sleep Quality Index. Dr. Zuckoff has received royalties from Guilford Press and is an employee of Vital Decisions, LLC. Dr. Brent has received royalties from Guilford Press, UpToDate, and ERT, Inc. Dr. Markowitz has received research funding for salary support from the Earle Mack Foundation. He has received royalties from American Psychiatric Publishing, Basic Books, and Oxford University Press, and an editorial stipend from Elsevier Press. Drs. Cyranowski, Cheng, and Mss. Martin, Amole, and Ritchey report no biomedical financial interests or potential conflicts of interest.

Supplemental material cited in this article is available online.

Clinical trial registration information—Psychotherapy for Depressed Mothers of Psychiatrically Ill Children; <http://clinicaltrials.gov/>; NCT00919594.

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Abstract

Objective—Two-generation studies demonstrate that treating maternal depression benefits school-age children. Although mothers prefer psychotherapy to medication, little is known about how psychotherapy for maternal depression affects offspring, especially in very high-risk families wherein both mothers and children concurrently meet syndromal criteria for psychiatric disorders. This trial evaluated effects of two brief psychotherapies for maternal depression on very high-risk families.

Method—Mothers with major depressive disorder were randomly assigned to nine sessions of either brief interpersonal psychotherapy for mothers (IPT-MOMS; n=85) or brief supportive psychotherapy (BSP; n=83). Independent assessors evaluated mothers and their children, ages 7-18, diagnosed with at least one internalizing disorder, every three months over one year.

Results—Symptoms and functioning of mothers and children improved significantly over time, with no between-group differences. However, children of mothers assigned to BSP had more outpatient mental health visits and were more likely to receive antidepressant medication. Mothers reported greater satisfaction with IPT-MOMS than BSP. Improvement in mothers' depressive symptoms was associated with improvement in child functioning in time-lagged fashion, with children improving 3-6 months after mothers improved. Antidepressant medication use and number of mental health visits received by children did not affect outcomes.

Conclusion—IPT-MOMS and BSP demonstrated comparable beneficial effects on maternal depression. Children's functioning improved following maternal improvement, independent of youth's treatment. Children of mothers randomized to IPT-MOMS, compared to BSP, achieved comparable outcomes despite less follow-up treatment. Observation of lagged association between maternal improvement and change in child functioning should influence treatment planning for families.

Keywords

Psychotherapy; mothers; children; depression; treatment

INTRODUCTION

School-age children receiving mental health services often face double jeopardy: not only do they struggle with their own mental health challenges, but one in three has a mother also suffering from depression.^{1, 2} Research has consistently shown that maternal depression constitutes an important risk factor for childhood psychiatric illness^{1, 3, 4} and negatively influences child psychiatric outcomes, even among treated children.^{5, 6}

Two-generation studies have demonstrated that treatment-related improvement in maternal depression is associated with better outcomes in youth. Pharmacotherapy studies have shown that twelve months after mothers with depression began antidepressant treatment, school-age children of mothers who remitted had lower prevalence of psychiatric disorders and fewer psychiatric symptoms than children of non-remitting mothers.⁷ In another

pharmacotherapy trial for maternal depression, the association between maternal and child symptoms was mediated by improved parental functioning.⁸

Psychotherapy for mothers of school-age children has received less study, despite a three-fold preference for psychotherapy over pharmacotherapy among women with mood disorders.⁹ A meta-analysis of the effects of psychological treatments for maternal depression on children showed a favorable, overall positive effect size of 0.35.¹⁰ However, the meta-analysis included only eight trials, seven of which involved women with postpartum depression or children under the age of five. Only one trial included in the meta-analysis focused on school-age children: this small study (n=47) demonstrated salutary effects of interpersonal psychotherapy (IPT) for maternal depression on child psychiatric outcomes. Maternal assignment to IPT was associated with significantly greater reductions in maternal mood symptoms and impairment than treatment as usual (TAU), and with significantly greater reductions in mood symptoms and impairment in offspring ages 6-18 compared to children of mothers receiving TAU.¹¹ Another small trial absent from the meta-analysis examined cognitive-behavioral therapy (CBT) for affected mothers of children age 4-11 but yielded few conclusions, as only seven mothers assigned to CBT (less than a third) received a “minimally therapeutic dose” of treatment, defined as 6 sessions.¹² No study has compared active psychotherapies for maternal depression to evaluate their differential effects on mothers and their school-age children.

With one exception,¹¹ an important limitation of prior maternal treatment studies is that all used “top down” sampling frames: recruiting mothers with depression and enrolling offspring whether or not children met criteria for behavioral disorders. This method oversamples relatively healthy families. Indeed, in prior trials, offspring had non-clinical mean symptom scores¹² or included samples where fewer than half of mothers had children who met criteria for psychiatric disorders at baseline.^{8, 13} Thus, only a subset of families in prior studies carried very high risk for poor outcomes, defined as having members from at least two generations who concurrently met syndromal psychiatric disorder criteria. This methodologic consideration matters because co-occurring psychiatric illness in both members of the dyad is associated with greater family burden,¹⁴ decreased treatment-seeking among ill mothers,^{1, 15} and worse outcomes in ill youth.⁵ Despite the public health importance of treating very high-risk families¹⁴ and the strong preference for psychosocial treatment among women,⁹ too little is known about psychotherapy outcomes targeting maternal depression within families in this especially vulnerable population.

The current trial evaluated the effects of two brief psychotherapies for maternal depression on very high-risk families using “bottom up” sampling: recruiting mothers with depression by first identifying their offspring, ages 7-18, who had at least one internalizing diagnosis and were currently receiving care in child treatment settings. Prior studies found that non-treatment-seeking mothers with depression are unlikely to participate in psychotherapy lasting longer than 8-9 sessions.¹⁶ We therefore compared interpersonal psychotherapy for mothers (IPT-MOMS), a brief version of interpersonal psychotherapy¹⁷ specifically addressing mother-child relationship problems,¹¹ to brief supportive psychotherapy (BSP),¹⁸ a manualized treatment that acts as an active control for non-specific aspects of psychotherapy. Because prior work suggested that improvements in parenting may drive

child outcomes over and above changes in maternal depressive symptoms,^{8, 19} we hypothesized that IPT-MOMS, a treatment targeting mother–child relationship problems, would yield greater improvements in maternal depression symptoms and functioning and hence better child outcomes compared to BSP, an active comparator²⁰ that does not target specific mother–child factors.

METHOD

The protocol was registered with clinicaltrials.gov (NCT00919594). The University of Pittsburgh Biomedical Institutional Review Board approved all study procedures.

Participants

Potential participants provided informed written consent or assent (age <18) after receiving a complete study description. Participants, enrolled from 2010–2013, comprised mother–child dyads recruited from child specialty mental health clinics, pediatric primary care practices, and by advertisement. Child clinicians, informed about the study by research personnel, used methods appropriate to their clinical services to refer potential participants, ranging from clinician-based referrals of children and their parent to clinic-wide referrals based on results of universal (non-research) parental depression screening.¹⁵ Study advertisements posted in child clinics allowed families to self-refer. Research staff encouraged referrals through written and in-person psychoeducation to child clinicians about the deleterious influence of maternal depression on school-age offspring. When families declined study participation or were ineligible, research staff facilitated referrals to adult mental health services for parents.

Child participants were outpatients aged 7–18 with at least one internalizing disorder (mood or anxiety disorder according the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; *DSM-IV*²¹) and no lifetime history of autism, schizophrenia, current substance use disorders, or developmental delays that would preclude study participation. Adult participants, outpatients aged 18–65 with non-psychotic *DSM-IV* major depressive disorder, had no history of bipolar disorder, schizophrenia, schizoaffective disorder, current substance use disorder, or borderline or antisocial personality disorder. Adults scored ≥ 15 on the 25-item Hamilton Rating Scale for Depression (HRSD-25),²² were biological or adoptive mothers of, and lived with and had custody of, a child who met inclusion criteria. Current receipt of other individual psychotherapy was proscribed for mothers, but concurrent antidepressant medication was permitted if the dose had been stable for ≥ 4 consecutive weeks before study entry and the participant agreed to continue that dosage throughout the study's acute phase.

Randomization

As the consolidated standards of reporting (CONSORT) diagram shows (Figure 1), 270 dyads were screened to yield 174 dyads eligible for randomization. Sixty-three percent (169/270) were recruited from child specialty mental health settings, 16% (43/270) by advertisement, 4% (12/270) from pediatric offices, and 17% (46/270) from missing/unknown referral sources. Maternal treatment assignment to IPT-MOMS (n=87) or BSP (n=87) was generated in random blocks, stratified by child age (≥ 13) and whether mothers

were taking antidepressant medications. Randomization was conducted by an independent data manager otherwise uninvolved in study procedures. Six dyads were excluded from the intent-to-treat sample following randomization (but prior to notification of treatment assignment) because mothers or children refused to participate in the second half of the baseline assessment (n=5) or the child met an exclusion criterion (n=1), resulting in 168 dyads in the modified intent-to-treat sample.

Interventions

Mothers were provided nine weekly 45-minute psychotherapy sessions over three months, allowing for cancellations and rescheduling, which were common. All sessions occurred prior to the three month assessment time point. Children received open treatment in the community (see Table S1, available online). Mothers were offered psychotherapy sessions at the same time and in the same location as their child's mental health visits when feasible, with a telephone session option to facilitate participation. Telephone sessions comprised 14% (180/1,252) of sessions (no between-group difference). Sessions were video- or audio-recorded to monitor fidelity. Ten therapists with master's or doctoral degrees in social work, psychology, or psychiatry conducted all psychotherapy sessions. To reduce therapist allegiance effects,²³ therapists provided only IPT-MOMS or BSP, excepting the first author, who provided both therapies at separate time points (6 BSP and 3 IPT-MOMS cases). All therapists participated in weekly supervision (separate supervision for IPT-MOMS and BSP), in which they presented cases, reviewed session recordings, and received expert supervisor feedback. Treatment fidelity was assessed using a modified Collaborative Study Psychotherapy Rating Scale (CSPRS-6).²⁴ Trained, blinded raters reliably distinguished between the two psychotherapies on a subset (25%) of CSPRS-6-rated session tapes: IPT-MOMS sessions scored significantly higher on the IPT subscale (53.0 ± 10.9 v. 32.7 ± 4.2 ; $p < .0001$), BSP sessions on the BSP subscale (18.6 ± 1.5 v. 10.0 ± 2.5 ; $p < .0001$).

After completing the three-month assessment, mothers received additional open treatment in the community if needed. IPT-MOMS and BSP mothers did not differ in follow-up treatment received (Table S2, available online). Children received open treatment in the community throughout the study (Table S3, available online).

Brief Interpersonal Psychotherapy for Mothers (IPT-MOMS)—IPT-MOMS, described elsewhere,²⁵ includes an initial engagement session based on principles of motivational interviewing²⁶ and ethnographic interviewing²⁷ designed to explore and resolve potential barriers to treatment seeking,²⁸ followed by eight brief IPT sessions.²⁹ IPT, an evidence-based therapy for depression,¹⁷ helps individuals to understand links between mood and relationships, mobilize social support, and address interpersonal difficulties. IPTMOMS incorporates specific strategies to help mothers manage problematic interpersonal relationships with their psychiatrically ill children.

Brief Supportive Psychotherapy (BSP)—Used in previous randomized controlled depression trials and showing evidence of efficacy,²⁰ supportive psychotherapy controls for the non-specific factors of psychotherapy.¹⁸ Rooted in Rogers' Client-Centered Therapy,³⁰ BSP is a manualized intervention utilizing a non-directive approach to facilitate exploration

of affect, emphasize patient strengths, and engender a therapeutic alliance.¹⁸ The patient determines the treatment agenda. Therapists employ strategies such as reflective listening and open-ended questions to explore feelings and provide empathic support. The psychotherapeutic common factors BSP embodies may account for 30-70% of variance in treatment outcomes.³¹

Assessments

Mother and child participants completed assessments at baseline, 3-, 6-, 9-, and 12-month follow-up. Raters were blind to treatment assignment. Separate assessors evaluated children and mothers. Maternal psychiatric diagnoses were determined with the Structured Clinical Interview for *DSM-IV* Axis I Disorders (SCID-I)³² and Personality Disorders (SCID-II).³³ The 17-item HRSD, as well as the expanded 25-item version of the HRSD that includes reverse neurovegetative symptoms, assessed depressive symptom severity, with higher scores indicating more depressive symptoms.^{22, 34} The Work and Social Adjustment Scale (WSAS) measured maternal functioning, with a possible range of 0 (no impairment) to 40 (severe impairment).³⁵ The Client Satisfaction Question (CSQ) assessed treatment satisfaction: higher scores (range 8-32) indicate greater satisfaction.³⁶ HRSD-25 inter-rater reliability was high (intra-class correlation=0.989). Inter-rater reliability data is not available on the SCID, but raters participated in weekly conferences to review SCIDs, discuss scoring conventions, and resolve diagnostic uncertainties. All SCID assessments were reviewed by a psychiatrist with over 20 years of clinical experience and expertise with this population.

Child diagnoses were determined using the Kiddie Schedule for Affective Disorders and Schizophrenia–Present and Lifetime Version (K-SADS-PL).³⁷ Self-report instruments assessed child symptoms: the 27-item Child Depression Inventory (CDI), ranging from 0 (less depressed) to 54 (more depressed) measures depressive symptoms;³⁸ and the 34-item Strengths and Difficulties Questionnaire (SDQ), ranging from 0 (no symptoms) to 40 (many symptoms), measures both internalizing and externalizing symptoms.³⁹ The 19-item self-report Columbia Impairment Scale (CIS) measures psychosocial functioning, ranging from 0 (not impaired) to 52 (highly impaired).⁴⁰ Research assistants read self-reports to children with reading difficulties and transcribed their answers. Inter-rater reliability on K-SADS diagnoses was excellent, with agreement on presence/absence of diagnoses ranging from 93-95%.

Data Analysis

Analyses were conducted on the modified intent-to-treat sample. Randomization groups were compared on baseline demographic and clinical information, using t-tests or Wilcoxon tests for continuous variables and χ^2 tests for categorical variables. Effect of treatment assignment was evaluated using linear mixed-effects models. The fixed terms included group, time as a five-level factor (baseline, 3-, 6-, 9- and 12 months), and group-by-time interaction. Participant was included as a random term to account for dependence among repeated measures over time from the same participant. Maternal outcome models were adjusted for the stratification variable (child age [13]) and factors hypothesized a priori to affect mother or child psychiatric outcomes: child gender,⁴¹ maternal marital status,⁴² and total family income (\$30,000).⁴³ Antidepressant medication use, although a stratification

variable, was omitted from the model because only 9% (15/168) of mothers received antidepressants at baseline. The child models similarly adjusted for child age, child gender, total family income, and presence of externalizing diagnoses. If F tests from the mixed-effects models suggested a group effect, planned contrasts compared the two treatment groups on changes in maternal and child outcomes from baseline to subsequent time points.

To evaluate equivalence between treatment groups in a post hoc analysis, the primary maternal outcome (HRSD-25 scores) at 3-month assessment was examined by estimating a Bayes factor comparing the fit of data under the null hypothesis (no difference between IPT-MOMS and BSP) and the alternative hypothesis (a group difference with an effect size of 0.45, as hypothesized in the original power calculation).⁴⁴

As a preliminary examination of the relationship between maternal and child outcomes, maternal depression change scores were calculated by subtracting baseline HRSD-25 scores from later assessment point scores, such that negative (positive) scores indicated reduction (increase) in depression. WSAS change scores were similarly computed for functioning. Mixed-effect models evaluated the relationship between maternal change scores and child change scores at each time point. Thus, in models predicting change in child outcomes, fixed terms included maternal change scores (HRSD-25, WSAS), time as a four-level factor corresponding to changes at 3, 6, 9, and 12 months, and the interaction term of time and change score, as well as treatment group, child age, child gender, family income, and presence of externalizing diagnoses. Including the interaction term allowed the strength of the association between maternal and child outcomes to vary across time. Because prior work showed a delayed relationship between maternal symptoms and child outcomes¹¹ and visual inspection of data (Figures 2 and 3) suggested a delayed temporal relationship between maternal and child outcomes, lag analyses were conducted to evaluate temporal relationships.

Three-month lag (Lag-3) mixed-effect models examined changes in child CDI, CIS, and SDQ scores from baseline to 6, 9, and 12 months using change in maternal HRSD-25 or WSAS scores from baseline to 3, 6, and 9 months, respectively, as predictors, to examine whether change in maternal outcomes predicted change in child outcomes three months later (e.g., maternal HRSD-25 score change from baseline to month 3 predicting change in child CDI score from baseline to month 6). Analogously, six-month lag (Lag-6) analyses examined changes in child scores from baseline to 9 and 12 months using change in maternal scores from baseline to 3 and 6 months, respectively. Participant was included in both concurrent and lag association analyses as a random term to account for dependence in repeated measures. Analyses were adjusted for treatment group, child age, child gender, and family income. If a significant time-by-maternal change interaction on child outcomes emerged, contrasts were set up to evaluate slopes at each time point. For non-significant interactions, the average slope was reported. Because significant group differences in child treatment were observed (see below), post hoc analyses were run to evaluate all child outcomes in models that additionally controlled for child treatment (antidepressant use, number of outpatient mental health visits).

RESULTS

Characteristics of Mothers With Depression and Their Children by Maternal Treatment

No significant differences appeared in mothers' or children's baseline demographic or clinical characteristics by maternal treatment (Tables 1, 2, and S4, available online). Mothers were 44.7 (± 7.3) years old and 79% (133/168) white. Children were 13.9 (± 2.8) years old, 41% (69/168) male, and 73% white (123/168). Forty-six percent (78/168) of children met criteria for an externalizing disorder in addition to a current or lifetime internalizing disorder. Forty-eight percent (80/168) of children were taking antidepressant medication: 53% (44/83) in BSP group and 42% (36/85) in IPT-MOMS group (Table 2). Seventy-three percent (123/168) of dyads completed the twelve-month follow-up assessment (Figure 1). The only differences observed between the dyads that completed and those who dropped out were that mothers who dropped out were younger (42.7 ± 7.1 v. 45.4 ± 7.2 , $t = -2.19$, $p = 0.03$) and more likely to have a lifetime anxiety disorder (82% [37/45] v. 66% [81/123], $X^2 = 4.2$, $p = .04$).

During the acute (months 0-3) phase of the maternal treatment study, child treatment did not differ by group (Table S1, available online): 40% (25/63) of IPT-MOMS offspring and 53% (34/65) of BSP offspring received antidepressant medication; 63% (40/63) and 59% (38/65) received individual psychotherapy; 27% (17/63) and 22% (14/65) participated in family therapy. Very few children were hospitalized for psychiatric reasons (3 and 4 in the IPT-MOMS and BSP groups, respectively).

Maternal Outcomes by Treatment

Mothers attended on average 7.5 (± 2.6) psychotherapy sessions over three months, without between-group differences. Eighty-seven percent (74/85) of mothers assigned to IPT-MOMS and 82% (68/83) in BSP received a "minimally therapeutic dose of treatment" (defined as attending 6 psychotherapy sessions¹²). Mean CSQ satisfaction scores were significantly higher for patients receiving IPT-MOMS: 28.6 ± 3.3 for IPT-MOMS, 26.5 ± 4.8 for BSP ($t = 2.8$, $df = 101$, $p = .006$). Both treatments yielded comparable maternal response rates following treatment, defined as 50% reduction in HRSD-25 baseline scores: 49% (65/133) in the entire sample, without between-group differences ($X^2 = 1.3$, NS). As a proxy for remission, 34% (45/133) achieved a HRSD-25 score < 8 at 3 months (no between-group differences; $X^2 = 0.13$, NS). Mean HRSD-25 scores at 3 months in IPT-MOMS and BSP groups were 11.7 ± 7.5 and 10.9 ± 6.7 , respectively (no between-group differences; $t = 0.62$, NS). An estimated Bayes factor⁴⁴ evaluating maternal HRSD-25 scores posttreatment (3 month assessment) was 3.2:1, favoring the null hypothesis of no difference in posttreatment depression scores between IPT-MOMS and BSP.

Of mothers who achieved HRSD-25 scores < 8 who returned for 1 follow-up visit, most (74%; 32/43) remained well (defined as HRSD-25 score remaining < 14 at all follow-up points), without between-group differences ($X^2 = 3.4$, $p = .07$) (Figure 2). Linear mixed-effects models for HRSD-25 scores, after adjusting for child age, child gender, marital status and income, showed a significant time effect ($F[4, 503] = 96$, $p < .0001$), with both groups improving over time, but no significant group effect or group-by-time interactions. A

similarly significant time effect for WSAS scores ($F[4, 479] = 34, p < .0001$) was qualified by a group-by-time interaction ($F[4, 479] = 2.65, p = .03$) favoring BSP. Post hoc contrasts at individual time points were not statistically significant. None of these results changed when we removed the mothers ($n=15$) who received concomitant antidepressant medication.

Child Outcomes by Maternal Treatment

Both groups of children improved over time, showing significant time effects ($F[4, 437] = 14, p < .0001$ for CDI; $F[4, 432] = 19, p < .0001$ for CIS; and $F[4, 400] = 15, p < .0001$ for SDQ), after adjusting for child age, child gender, family income, and externalizing diagnoses. No significant group or group-by-time interactions emerged for any measure (Figure 3). Adjusting analyses for children's treatment (antidepressant use, number of outpatient mental health visits) did not alter results. During follow-up phase (months 4-12), children of mothers receiving BSP were more likely to receive antidepressant medication (56% [37/66] v. 38% [26/68]; $X^2=4.3, p=.04$) and had more outpatient mental health visits (median=9 [interquartile range=22] v. 6 [interquartile range=10]; Wilcoxon $Z=1.98, p=.05$) than children of mothers receiving IPT-MOMS (Table S3, available online).

Association Between Maternal and Child Outcomes

Models of concurrent associations between maternal and child outcomes (HRSD-25 and WSAS as maternal predictors; CDI, CIS, and SDQ as child outcomes) yielded only one trend-level association, between maternal HRSD-25 score improvement and child functioning improvement (CIS scores; $\beta = 0.10, p = .06$). However, Lag-3 analyses showed a significant association between improvement in maternal depression and child functioning three months later (CIS; $\beta = 0.14, p = .03$), an association that proved even stronger in Lag-6 analyses ($\beta = 0.2, p = .01$). No other association analyses reached significance. Post hoc analyses controlling for children's treatment did not alter these results, nor was child treatment a significant predictor in these dyadic association models.

DISCUSSION

In families with at least two psychiatrically ill generations, mothers treated with either IPT-MOMS or BSP improved quickly, with posttreatment HRSD scores dropping into the non-clinical range after 7-8 sessions of psychotherapy. Gains in symptom relief and functioning were maintained over a year-long follow-up period. These are notable findings given the brevity of the interventions, the nature of the population (non-treatment-seeking mothers burdened by the demands of parenting psychiatrically ill children), and earlier studies that did not show comparable effects with TAU.¹¹

Although we hypothesized differential outcomes by psychotherapies, BSP fared as well as IPTMOMS in treating maternal depression. On average, mothers in BSP showed greater functional improvement over time than those in IPT-MOMS. However, closer inspection of the data (Figure S1, available online) shows considerable variability in functioning during the follow-up period. Furthermore, individual time point contrasts were not significant, suggesting no advantage for either treatment on functioning. On all other maternal outcome measures, the two treatments were comparable. Although not designed as a non-inferiority

trial, a Bayes factor of 3.2:1 supports the post hoc null hypothesis of no group difference in depression improvement, suggesting that BSP has comparable efficacy to IPT-MOMS, a treatment previously shown to be superior to TAU for maternal depression.¹¹ These results suggest that both IPT-MOMS and BSP are helpful therapies for mothers with depression. Mothers, however, reported significantly greater satisfaction with IPT-MOMS than BSP. Anecdotally, some BSP mothers complained about lack of direction from their therapist and requested more feedback on how to interact with their children, strategies proscribed in BSP.

Children of mothers with depression also improved, without outcome differences by maternal treatment assignment. Furthermore, antidepressant medication use in children of mothers in IPT-MOMS declined over time (from 42% at baseline to 38% during the follow-up period), whereas use increased slightly in the BSP group (from 53% to 56%), with a significant difference in antidepressant use between groups at follow-up. Children of the IPT-MOMS group had significantly fewer outpatient mental health visits at follow-up, yet achieved equivalent outcomes to BSP children. This suggests that compared to BSP, the interpersonally focused IPT-MOMS may enable mothers to help their children achieve similar improvements in mood and functioning with fewer psychiatric services and less medication exposure. This finding, although requiring replication, has implications for health care utilization in very high-risk families and warrants cost-effectiveness research.

Improved child outcomes were related to but lagged behind maternal improvement, as previously reported in some⁷ but not other¹⁹ studies of the impact of maternal depression treatment on their children. The association between improved child functioning and maternal symptoms emerged three months after maternal symptoms improved, and strengthened further at six months. This was unrelated to treatment received by children. The specific association with child functioning has not been observed in maternal pharmacotherapy trials,⁸ suggesting that maternal psychotherapy may have downstream effects particularly on child functioning. This hypothesis, however, remains speculative without a direct comparison of psychotherapy and medication. Differential outcomes that were limited to child functioning may also be secondary to heterogeneity of diagnoses in youth; signal detection in specific symptom domains is problematic in transdiagnostic samples but may become apparent in the more general area of functioning.

Although prior studies have linked improved maternal symptoms and child outcomes,^{7, 8, 11, 12} this is the first large study to demonstrate this relationship with very-high-risk families whose mothers receive psychotherapy alone (n.b., removing the 9% of mothers who received concomitant antidepressant medication did not change outcomes). It establishes that psychiatrically ill children improve when their mothers' depression improves, a finding that complements and extends earlier data showing that children treated for depression do not improve when mothers remain symptomatic.⁵ Taken together with earlier research results showing persistence of child symptoms when mothers are ill, our study underscores the importance of intervening for mothers with depression when both mothers and children suffer from psychiatric illness. Over time, these maternal-child effects are likely bidirectional and complex, such that child symptom improvement also has positive effects on mothers. Indeed, many mothers anecdotally reported that they felt better when their children were doing better. Subsequent studies utilizing advanced modeling techniques

(such as time-varying effects models) will be needed to tease out the timing and dynamic nature of these reciprocal relationships.

This study has limitations. Lacking an inactive comparator group, we cannot know whether some mothers and children would have improved without maternal treatment. We felt, however, it would have been unethical to withhold active treatment from mothers with depression in these high-risk families. Attrition over twelve months was 27%, which might bias results. It is unknown whether lower child psychiatric services utilization in the IPT-MOMS group resulted from decreased need for services or maternal difficulty in bringing children for care. The latter explanation seems less likely, however, as children in BSP and IPT-MOMS groups had similar symptom and functioning scores. Differences in antidepressant use between groups of children at follow-up, although statistically significant, were small and may have been driven at least in part by baseline differences between groups, which showed a numeric but not statistically significant difference in use. The role of fathers, not assessed, undoubtedly influences child outcomes. Lack of a specific youth anxiety measure also precludes thorough evaluation of these symptoms over time.

Brief psychotherapy poses no teratogenic risk to mothers of child-bearing potential, requires limited therapist time, and imposes only limited additional burden on mothers juggling their children's mental health needs with their own. BSP and IPT-MOMS are associated with reductions in maternal depressive symptoms in mothers who have children with mood or anxiety disorders. In addition, it appears that children with internalizing disorders show downstream improvement in functioning, regardless of their own treatment when their mothers receive brief psychotherapy. Having evidence of efficacy and low burden, these therapies should be offered to vulnerable families. When mothers are treated, one can anticipate a 3–6 month delay in improved child functioning, information that can help providers and families plan interim family support. Subsequent studies should examine factors mediating the relationship between maternal and child outcomes in order to identify potential treatment targets that may hasten child improvement in very-high-risk families.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Funding is provided by the National Institute of Mental Health R01 MH083647 (Swartz, PI).

Dr. Cheng served as the statistical expert for this research.

The authors would like to thank the families who participated in this research project and the clinics/staff that helped them to recruit participants.

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Figure 1.

Consolidated standards of reporting (CONSORT) diagram. Note: BSP = brief supportive psychotherapy; IPT-MOMS = interpersonal psychotherapy for mothers.

Figure 2.

Mean maternal depression scores over time by treatment assignment. Note: Unadjusted mean scores are shown with bars indicating standard error.

Figure 3.
Mean child impairment scores over time by maternal treatment assignment. Note:
Unadjusted mean scores are shown with bars indicating standard error.

Table 1

Mothers' Demographic and Baseline Clinical Characteristics

Variable	BSP (n = 83)	IPT-MOMS (n = 85)	p
Ethnicity (% Hispanic)	0 (0%)	0 (0%)	1
Race (% White)	67 (80.7%)	66 (77.7%)	.62
Age (years)	44.4 (6.7)	45.0 (7.8)	.59
Married	43 (51.8%)	36 (42.4%)	.22
Total family income < \$30,000 per year	25 (30.1%)	28 (32.9%)	.69
On antidepressants	4 (4.8%)	9 (10.6%)	.25
On anticonvulsants	4 (4.8%)	5 (5.9%)	1
On benzodiazepines/sedatives/hypnotics	2 (2.4%)	4 (4.7%)	.68
Lifetime diagnosis of anxiety – <i>DSM-IV</i>	59 (71.1%)	59 (69.4%)	.81
Current diagnosis of anxiety – <i>DSM-IV</i>	55 (66.3%)	53 (62.4%)	.60
More than 3 lifetime major depressive episodes	36 (43.4%)	40 (47.1%)	.63
Hamilton Rating Scale for Depression – 17 Item	16.7 (4.0)	16.5 (4.9)	.75
Hamilton Rating Scale for Depression – 25 Item	20.6 (5.3)	20.1 (6.4)	.58

Note: BSP = brief supportive psychotherapy; IPT-MOMS = interpersonal psychotherapy for mothers.

Table 2

Children's Demographic and Baseline Clinical Characteristics

Variable	BSP Offspring (n = 83)	IPT-MOMS Offspring (n = 85)	<i>p</i>
Gender (% female)	51 (61.5%)	48 (56.5%)	.52
Ethnicity (% Hispanic)	3 (3.6%)	6 (7.1%)	.50
Race (% White)	66 (79.5%)	57 (67.9%)	.09
Age (years)	13.8 (2.8)	14.1 (2.9)	.56
Number of current internalizing diagnoses	1.7 (1.0)	1.6 (1.0)	.57
Number of current externalizing diagnoses	0.6 (0.7)	0.7 (0.8)	.18
On antidepressants	44 (53%)	36 (42%)	.17
Child Depression Inventory	13.4 (9.2)	12.2 (8.8)	.40
Columbia Impairment Scale	16.1 (10.1)	15.6 (8.4)	.72
Strengths and Difficulties Questionnaire	14.8 (6.2)	14.7 (6.8)	.91

Note: BSP = brief supportive psychotherapy; IPT-MOMS = interpersonal psychotherapy for mothers.