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Longitudinal relationship between maternal distress and pediatric mood symptoms in youth with mood disorders

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Abstract

Parents of a child with a mood disorder report significant levels of distress and burden from caregiving. This study examined whether maternal distress varies over time with levels of mood symptoms in youth with mood disorders, and whether expressed emotion (EE) and family functioning moderate these associations. We recruited youth (ages 9–17 years) with mood disorders and familial risk for bipolar disorder (BD) for a randomized trial of family-focused therapy compared to standard psychoeducation. Participants were assessed every 4–6 months for up to 4 years. Using repeated-measures mixed effects modeling, we examined the longitudinal effects of youths' mood symptoms and maternal distress concurrently, as well as whether each variable predicted the other in successive study intervals. Secondary analyses examined the moderating effects of EE and ratings of family cohesion and adaptability on maternal distress. In sample of 118 youth-mother dyads, levels of self-reported parental distress decreased over time, with no differences between treatment conditions. Youths' depressive symptoms and, most strongly, mood lability were associated with greater maternal distress longitudinally; however, maternal distress did not predict youths' mood symptoms or lability. The effect of youth symptoms on maternal distress was greater among mothers who were high EE. Family cohesion was associated with reduced concurrent ratings of maternal distress, whereas family adaptability was associated with reduced maternal distress at successive follow-ups. While maternal distress decreases over time as youths' symptoms decrease, mothers of youth with mood disorders experience significant distress that is directly linked to the youths' depressive symptom severity and lability. Improved family functioning appears to be an important mechanism by which to intervene.

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Declaration of competing interest

The authors declare no conflicts of interest.

Keywords

Depression; Mood lability; Burden; Expressed emotion; Family functioning

1. Introduction

Caring for a child with or at risk for a mood disorder is associated with significant emotional and financial strain as well as a gradual narrowing of social networks (e.g., Nadkarni and Fristad, 2012; Wilkinson et al., 2013). Mother-child relationships in the context of pediatric bipolar disorder (BD), especially in families with a parental mood disorder, are more conflictual and less warm, affectionate, and cohesive compared to mother/child relationships in age-matched healthy controls (Schenkel et al., 2008). Whereas significant efforts have been undertaken to better understand the course of mood symptoms in youth at high risk for BD (e.g., Birmaher et al., 2009; Weintraub et al., 2020), little is known about psychological stress in their parents.

The majority of individuals with BD experience subthreshold mood symptoms in late childhood or early adolescence, well before the full onset of the disorder (Axelson et al., 2011; Perlis et al., 2009). Youth with clear family histories of BD and who have early onsets of depression, anxiety, mood instability, and/or subthreshold manic symptoms have upwards of a 49% risk of developing a bipolar spectrum disorder over an 8-year period, compared to a population base rate of 2–3% (Hafeman et al., 2016). Mood lability, irritability, and suicidality in adults with BD have been identified as the most distressing symptoms for their caregivers (Beentjes et al., 2012; Chessick et al., 2007). Youth who are at high risk for BD also have significant episodic irritability, emotional dysregulation, and suicidality, all of which are likely to affect their parents' well-being (Farchione et al., 2007; Goldstein, 2009; Sparks et al., 2014). When attempting to cope with their offspring's mood difficulties, parents often face stigma and blame from others (Hinshaw, 2005; Perlick et al., 2007). Together, caregivers of these youth face significant depression, anxiety and impairments in physical health (Fagiolini et al., 2013; Perlick et al., 2005).

The association between parental distress and youths' mood may be affected by levels of expressed emotion (EE), a measure of critical, hostile, and/or emotionally overinvolved attitudes of parents toward their ill child. EE is one of the most robust predictors of longitudinal illness course among adults and youth with mood or psychotic disorders (Hooley, 2007; Peris and Miklowitz, 2015). When examined cross-sectionally, high EE parents of adolescents with BD I or II report having more psychological distress than low-EE parents (Millman et al., 2018). Moreover, among families of youth with BD, there is increased conflict, lower cohesion, and lower adaptability compared to non-affected families (Stapp et al., 2020). These family attributes often co-occur with high levels of EE in parents (Sullivan and Miklowitz, 2010). However, there are no studies investigating whether parental EE or familial conflict are prospectively related to parents' own levels of distress.

In a sample of youth who were at high risk for the onset of BD – with depression, subthreshold mania, and a family history of BD I or II - we examined the relationships among maternal distress, mood symptoms in high-risk youth, and family functioning over

a 1-4-year period. We recruited youth for a randomized trial of family-focused therapy (FFT) and followed youth and their primary caregivers for up to 4 years. Primary results from this trial showed that high-risk youth who received 4 months of FFT had longer well intervals between mood episodes and less suicidal ideation and behavior than youth who received a standardized psychoeducational treatment (Miklowitz et al., 2020). In this study, we examined whether levels of maternal distress correlated with the severity of youths' mood symptoms at concurrent and subsequent timepoints across the study. Secondly, we hypothesized that greater youth mood symptoms, and in particular mood lability and suicidality, would be associated with more maternal distress in successive study timepoints. Finally, we hypothesized that mothers with high-EE attitudes, and those who reported less family cohesion and adaptability, would have the highest levels of distress over time.

2. Method

2.1. Participants

The study enrolled youth between the ages of 9 and 17 years and their parent(s). Inclusion criteria for youth were: (1) meeting DSM-IV criteria (American Psychiatric Association, 2000) and, later, DSM-5 (American Psychiatric Association, 2013) criteria for major depressive disorder (MDD) or other specified bipolar disorder (OSBD; see criteria below); (2) having at least one first- or second-degree relative with a lifetime history of BD I or II; (3) current active mood symptoms, as indicated by a score ≥ 30 on the Child Depression Rating Scale, Revised (Poznanski and Mokros, 1996) over the past two weeks or ≥ 12 on the Young Mania Rating Scale (Young et al., 1978) over the past week; and (4) willingness to engage in family treatment with at least one parent or other caregiver. OSBD was operationalized as a history of recurrent 1–3 day periods of elevated, expansive or irritable mood plus two (three, if irritable mood only) DSM symptoms of mania that reflected a change from baseline mood, caused a change in functioning, and totaled a minimum of 10 days in the child's lifetime (Axelson et al., 2015). Youth who met DSM-IV or -5 criteria for bipolar I/II disorder (BD), autism spectrum disorder, or a current substance use disorder were excluded.

2.2. Procedures

The study was conducted at the University of California, Los Angeles School of Medicine; University of Colorado, Boulder (Department of Psychology outpatient clinic); and Stanford University School of Medicine. After giving informed consent/assent to participate, trained clinical assessors interviewed youths using the Kiddie Schedule for Affective Disorders and Schizophrenia, Present and Lifetime Version (KSADS-PL; Chambers et al., 1985; Kaufman et al., 1997) to assess current and lifetime DSM diagnoses. At least one parent was also interviewed about the child's history using the KSADS-PL, with final item ratings and diagnoses based on a consensus between the youth's and parent's report. To determine whether youth had a family history of BD, we interviewed first-degree relatives using the MINI-International Neuropsychiatric Interview (Sheehan et al., 1998). We used the secondary reports of parents on the Family History Screen Instrument (Weissman et al., 2000) when first- or second-degree relatives could not be interviewed directly.

Following baseline assessments, we randomly assigned participants into either family-focused therapy for high-risk youth (FFT), which includes a total of 12 sessions of psychoeducation, communication enhancement training, and problem-solving over 4 months; or a psychoeducational-only comparison condition (called enhanced care or EC), which included 6 total sessions (3 family sessions and 3 individual sessions (Miklowitz et al., 2020)). The psychoeducation module for both treatment conditions seeks to teach families about mood symptoms, risk and protective factors, coping skills, and helps them develop a mood management and relapse prevention plan. Communication enhancement training in active listening, expressing positive and negative emotions, communication clarity, and making a positive request using a behavioral rehearsal format. The problem-solving module provides families with a structured method to communicate about and resolve current family conflicts. Study psychiatrists provided pharmacotherapy for youth participants if families were interested, and followed a pharmacotherapy algorithm designed for this population (Schneck et al., 2017).

2.3. Study assessments

Study assessments were done at baseline, 4, 8, and 12 months following randomization, and then every 6 months thereafter for up to 48 months. At each assessment, parents completed the Symptom Checklist-90 Revised (SCL-90; Derogatis, 1979; Derogatis and Unger, 2010). The SCL-90 is a 90-item symptom inventory that measures nine domains of psychological distress or impairment: depression, anxiety, somatization, interpersonal sensitivity (feelings of inadequacy), obsessive-compulsiveness, phobic anxiety, hostility, paranoid ideation, and psychoticism. Symptoms are reported on 5-point Likert scales from 0 (not at all) to 4 (extremely). The measure of parental distress for this study was the SCL-90 global distress index, which is the sum of ratings of all 90 items. Norms from unscreened community adults samples for adult women on the SCL-90-R's global distress index range from 32.4 to 69.3 (Derogatis and Cleary, 1977; Todd et al., 1997). Internal reliability for the SCL-90 was very high in this sample (Cronbach's $\alpha = 0.97$).

Youth mood symptoms (depression or mania) were measured by weekly ratings on the Adolescent Longitudinal Interval Follow-Up Evaluation (A-LIFE; Keller et al., 1987), which was administered to the youth and at least one parent at each study assessment. The A-LIFE yields Psychiatric Status Ratings (PSRs) of depression, mania, and hypomania on scales of 1 (absent) to 6 (extremely severe). Following the A-LIFE interviews, consensus PSRs were derived from youth and parent reports regarding each week of the previous 4- or 6-month interval. The weekly PSRs were then averaged to create a single average mood rating for each study follow-up visit. Interrater reliabilities (intraclass r_s) between evaluators at the three study sites for weekly depression PSRs averaged 0.79, and for mania PSRs, 0.76.

At each study assessment, parents filled out the Children's Affective Lability Scale (CALS; Gerson et al., 1996), a 20 item questionnaire that examines the child's mood instability over the prior month. The CALS is rated on a 5-point Likert scale from "Never or rarely occurs" to "1 or more times a day." Youths filled out the Suicidal Ideation Questionnaire (SIQ; Reynolds, 1987) concerning their thoughts in the prior month. The 15 scale items are rated on 7-point Likert scales from "I never had this thought" to "Almost every day."

Internal reliability for the CALS and SIQ were strong (Cronbach's α 's = 0.93 and 0.96, respectively).

Parental EE was measured at the baseline assessment using the Five-Minute Speech Sample (FMSS). Individual parents were asked to talk for 5 min about "what kind of person is [*youth's name*], and how the two of you get along together" (Magaña et al., 1986). The speech samples were audiotaped and rated for EE by Ana Magaña-Amato, MA, who developed the EE coding system for the FMSS. Parents were classified as high in EE if they showed evidence of criticism (i.e., at least one negative comment about the child's behavior with accompanying voice tone), hostility (presence/absence of personal or generalized criticism) or emotional overinvolvement (overconcern, inordinate self-sacrifice or exaggerated emotional responses).

Whereas EE reflects the parents' attitudes toward the high-risk participant, the 30-item Family Adaptability and Cohesion Scale-II (FACES-II; Olson et al., 1982) measures attributes of the overall family climate. The FACES-II was completed by caregivers at baseline and each follow-up visit and measured two dimensions of family functioning: cohesion (closeness and interconnectedness) and adaptability (ability to change patterns or habits when necessary). Internal reliability for the cohesion subscale was good in this sample; for the adaptability subscale, it was acceptable (Cronbach's α 's = 0.89 and 0.71, respectively).

2.4. Statistical analyses

Study hypotheses were examined using IBM's Statistical Package for the Social Sciences (SPSS) version 26. Using analysis of variance and linear regression models, we examined the cross-sectional relationships between baseline maternal distress (SCL-90) and (1) youth and parent psychiatric characteristics, (2) presence/absence of bipolar I or II disorder in the mother, (3) maternal EE classification, and (4) mother-rated family adaptability and cohesion scores.

We used repeated measures mixed-effects regression models to test longitudinal hypotheses. Mixed-effect regression models account for the non-independence of repeated within-subject data while comparing the trajectory of scores across groups. In these mixed models, we first examined the effects of time (i.e., study visit, measured categorically, up to 48 months), treatment condition (FFT, EC) and their interaction on maternal distress (total SCL-90) scores. Second, we examined the relationship between maternal distress scores and concurrent youths' symptoms (average of weekly PSR scores) across the 4-year study period.

We then examined the direction of effects between maternal distress scores and youths' mood severity (PSR) scores. To predict maternal distress scores from symptom scores, the maternal distress scores from interval X were regressed on youths' PSR scores from the antecedent (X-1) intervals, using all study intervals in the same model. The analysis controlled for baseline levels of maternal distress. We also conducted follow-up analyses with the CALS and SIQ as additional covariates to determine the unique contribution of youth irritability and suicidality to maternal distress above and beyond overall depressive

and manic symptoms. SIQ total scores were log-transformed due to their significant positive skew. The same methodology applied to models in which maternal distress scores were used to predict youths' mood scores. Since youths' mood scores were significantly affected by randomized treatments (Miklowitz et al., 2020), these analyses controlled for treatment condition as well as youths' primary mood diagnosis and baseline PSR scores.

The final set of analyses used mixed-effect regression models to examine the relationship between baseline EE on longitudinal maternal distress scores as well as the prospective relationship between family cohesion and adaptability (measured repeatedly at each study assessment) on concurrent and successive maternal distress scores. EE was examined in separate models from family cohesion and adaptability. In each of these models, the independent variables were youths' longitudinal PSR mood symptoms, the family variable(s) (either EE or family cohesion and adaptability), and their interaction.

3. Results

3.1. Participant characteristics

A total of 203 caregivers of 127 high-risk youth provided data on parental distress. The caregivers consisted of 118 mothers, 80 fathers, 3 grandmothers, 1 stepmother, and 1 other relative. Because mothers were the most consistent caregivers, and to maximize sample size while maintaining independence of observations, we only examined mothers' EE and distress data. Self-reports of distress from fathers were completed inconsistently, with only 67 reports available at baseline, 14 by the end of year 2, and 2 fathers in the final 6 (of 48 possible) study months. As a result, the data became too sparse for the statistical models to converge and produce reliable results.

The mothers had a mean age of 44.3 years ($SD = 6.3$) and were predominantly non-Hispanic Caucasian ($n = 77$; 65.2%). Almost half ($n = 62$; 52.5%) of the youths' biological parents were married at study entry. Of the 118 mothers, 63 (53.4%) had a diagnosis of bipolar I or II disorder. Longitudinal data for SCL-90 ratings were available for 109 (of 127) mothers at baseline, 87 at 4 months, 66 at 8 months, 64 at 12 months, 38 at 24 months, 19 at 36 months, and 10 at 48 months (median follow-up = 105.9 weeks, $SD = 64.0$). The mothers' mean baseline rating on the SCL-90 global distress index was 153.3 ($SD = 41.46$; range: 90–265).

Due to high levels of attrition at later study time-points, Little's Missing Completely at Random (MCAR) Test was conducted on the study's primary variables (i.e., parent SCL-90 ratings, youths' PSR depressive and mania symptoms, youth mood instability and suicidal ideation). The MCAR test indicated variables were missing at random ($X^2(39) = 42.25$, $p = 0.33$). Additionally, the length of time (in weeks) participants were in the study did not relate to the study's primary variables at baseline or the changes in these variables from pre- to post-treatment. Similarly, youths' age, race, ethnicity, gender, and family's socioeconomic status did not relate to the length of time families were in the study. See Table 1 for a more detailed outline of the sample characteristics.

3.2. Baseline maternal distress and illness characteristics

Youths' mood diagnosis (MDD or OSBD) and mothers' own diagnosis (bipolar I/II disorder vs. non-bipolar) were unrelated to baseline levels of maternal distress ($F(1, 85) = 0.89$, $p = 0.35$; $F(1, 85) = 2.52$, $p = 0.12$, respectively). Youths' baseline PSR depressive and manic severity scores (rated on 1–6 and 1–8 scales) were also unrelated to baseline maternal distress ratings ($b = 1.66$, $SE = 4.55$, $p = 0.72$; $b = 7.33$, $SE = 6.48$, $p = 0.26$, respectively).

3.3. Longitudinal ratings of maternal distress

We examined the effects of treatment group, time and their interaction on maternal SCL-90 scores over time. Levels of maternal distress on the SCL-90 decreased by an average of 0.41 points per study interval ($SE = 0.13$; $F(1, 151.2) = 15.48$, $p = 0.001$). There was no main effect of treatment group ($F(1, 151.2) = 2.47$, $p = 0.12$) nor an interaction between treatment group and time on maternal distress scores ($F(1, 151.2) = 0.20$, $p = 0.66$). Despite the lack of a baseline relationship, mothers with a BD I or II diagnosis had greater distress scores over time compared to mothers without BD I or II ($F(1, 114.5) = 4.82$, $p = 0.03$). Youths' primary mood diagnosis (OSBD vs. MDD) did not predict maternal distress scores over time ($F(1, 119.0) = 0.34$, $p = 0.56$). Youths' comorbidities of anxiety and externalizing disorders (i.e., ADHD, oppositional defiant disorder, and conduct disorder) at baseline did not predict maternal distress over the course of the study either ($F(1, 117.3) = 2.70$, $p = 0.10$; $F(1, 118.8) = 0.11$, $p = 0.75$).

Mothers who reported more distress over the course of the study had offspring who were more depressed during the same study intervals ($b = 5.86$, $SE = 1.22$, $p < 0.001$). Youths' PSR manic/hypomanic symptoms were unrelated to mothers' concurrent SCL-90 distress scores ($b = -0.28$, $SE = 2.52$, $p = 0.91$; see Fig. 1).

Secondary analyses examined the relationship between youths' mood lability (using the parent-rated CALS) and suicidal ideation (child-rated SIQ) with maternal distress scores in concurrent intervals. Controlling for PSR depression and mania, both mood lability and suicidal ideation were associated with maternal distress scores in the same follow-up intervals ($b = 0.48$, $SE = 0.14$, $p < 0.001$; $b = 7.72$, $SE = 3.58$, $p = 0.03$, respectively). PSR depression scores were still associated with maternal distress in the same intervals when CALS and SIQ scores were covaried ($b = 3.05$, $SE = 1.42$, $p = 0.03$).

3.4. Direction of effect between youth mood and maternal distress

We next examined the lagged association between youths' mood symptoms and maternal distress scores at successive follow-up visits. Youths' PSR depressive symptoms predicted increases in maternal distress scores at successive follow-ups ($b = 7.37$, $SE = 3.98$, $p = 0.02$), whereas manic/hypomanic symptoms did not ($b = 8.81$, $SE = 7.18$, $p = 0.22$). However, maternal distress scores did not predict youths' PSR depression scores ($b = 0.003$, $SE = 0.002$, $p = 0.10$) or manic symptom scores ($b = -0.0002$, $SE = 0.001$, $p = 0.76$) in successive intervals.

Secondary analyses examined the effect of youths' mood lability and suicidal ideation on successive maternal distress, controlling for PSR depression and mania. Only youths' mood

lability scores predicted future maternal distress scores ($b = 0.53$, $SE = 0.16$, $p = 0.001$). Overall PSR depression scores were no longer associated with maternal distress scores at successive follow-ups when CALS and SIQ scores were covaried ($b = -0.77$, $SE = 1.59$, $p = 0.63$).

3.5. Expressed emotion, family functioning, and maternal distress

High EE mothers reported higher levels of baseline distress on the SCL-90 than low EE mothers ($F(1, 78) = 4.37$, $p = 0.04$), although they were not different over the follow-up ($F(1, 106.7) = 1.19$; $b = 7.56$, $SE = 6.92$, $p = 0.28$). EE interacted with youths' PSR depression symptoms such that, compared to low-EE mothers, there was a stronger association in high EE mothers between youths' depression scores in one interval and mothers' distress scores in the next interval ($F(1, 162.6) = 10.56$; $b = 8.95$, $SE = 2.75$, $p = 0.001$). EE did not interact with youths' manic symptom severity in predicting successive maternal distress scores ($F(1, 96.4) = 0.89$; $b = -5.01$, $SE = 5.38$, $p = 0.35$). Mothers' mood diagnosis did not moderate the association between EE and their distress scores in successive intervals.

We also examined whether the way mothers perceived the family environment (cohesion and adaptability on the FACES-II) was associated with their reports of psychological distress. Higher maternal ratings of family cohesion were associated with lower ratings of maternal distress in the same intervals ($b = -0.92$, $SE = 0.23$; $p < 0.001$) but not distress in future follow-up intervals ($b = 0.19$, $SE = 0.26$; $p = 0.47$). Mothers' perceptions of family adaptability were unrelated to their same-interval distress scores ($b = 0.04$, $SE = 0.34$; $p = 0.90$) although adaptability scores predicted decreased maternal distress scores over time ($b = -0.94$, $SE = 0.39$; $p = 0.02$).

4. Discussion

Among families enrolled in a randomized trial of family therapy, we examined the longitudinal relationships between maternal distress and clinical symptoms of their youth with a mood disorder. Mothers' levels of distress decreased over time independently of their assigned treatment condition. Depressive symptom severity and, more strongly, mood lability in youths were associated with greater maternal distress at both concurrent and future timepoints; however, maternal distress did not predict increases in youth depressive symptoms or mood lability. Mothers rated high in EE had more distress than those rated low-EE at baseline. Further, the association between youths' depressive symptoms and maternal distress scores over time was stronger in mothers rated high-EE than in those rated low-EE. Mothers' ratings of family functioning (i.e., greater perceived cohesion) were associated with lower concurrent maternal distress ratings, whereas perception of family adaptability predicted lower distress ratings at follow-up.

Whereas many studies have examined the effects of parent factors on youths' psychiatric and functional outcomes (e.g., Burstein et al., 2010; Kim and Miklowitz, 2004), relatively little work has examined the bidirectional effects of children's mood states and parents' levels of psychological distress. Findings from this study indicate that youths' depressive mood severity represents an important risk factor for later maternal distress. Interestingly, beyond

overall depressive severity, youths' mood lability was the strongest predictor of mothers' distress ratings. Possibly, the disruptive effects of their offspring's changing moods – which may take the form of sudden outbursts of anger or crying spells - are more distressing to parents than inactivity, low mood, anhedonia, or suicidal ideation in the offspring.

Mothers had higher SCL-90 scores throughout the study compared to norms from unscreened community adults samples (Derogatis and Cleary, 1977; Todd et al., 1997). This observation suggests that the persistence of youths' irritability and mood lability over time has a significant effect on mothers' stress and possibly, overall psychopathology. Thus, working to treat youths' mood symptoms to remission may have psychological health benefits for both the child and parent. It is noteworthy that in this trial, maternal distress ratings decreased over time. It is unclear whether reductions in maternal distress would have occurred outside the context of a treatment trial where youth received psychosocial interventions and, when appropriate, pharmacological maintenance.

This study's findings extend upon a previous study in adolescents with BD I or II indicating that high-EE parents are more psychologically distressed than low-EE parents, regardless of the parents' mood diagnosis (Millman et al., 2018). High EE is often associated with negative attributions about the offspring's symptom behaviors (Hooley, 2007). It may be helpful for high EE parents to seek additional means that can help them reconsider their attributions and take a less blaming stance about their youths' illness. For example, cognitive-behavioral therapy (CBT) could be used to help parents reappraise their attributions about their youth's illness/behaviors. Caregiver-only family-focused therapy, which assists caregivers in managing their youths' illness, may also enhance symptomatic improvement among both patients and caregivers (Perlick et al., 2018). While caregivers may be accurately perceiving their family member's behavior, high EE methods of communicating about this behavior to the patient (e.g., via criticism) do not foster helpful dialogue or behavioral change in the patient (Miklowitz and Chambless, 2015).

While mothers' perceptions of greater family cohesion were associated with lower levels of concurrent maternal distress, greater family adaptability (flexibility in tolerating change and managing conflicts) was associated with lower levels of future maternal distress. Recurrences of mood disorders can be quite destabilizing to family environments (Axelson et al., 2011; Birmaher, 2014). This may in part be due to an optimism bias (DeJoy, 1989; Sharot, 2011), in which families believe that a mood relapse will not happen to their child even though it is common for others. While FFT has been shown to lead to greater improvements in family cohesion compared to a briefer psychoeducation, its effects on adaptability are less clear (O'Donnell et al., 2020). To improve adaptability, parents may benefit from training in parasympathetic responding (commonly achieved through breathing and meditation exercises), which can be effective in improving emotional self-regulation associated with flexibility and adaptability (Segerstrom and Nes, 2007).

There is strong evidence that full threshold manic symptoms in patients are associated with significant burden and distress in caregivers (Ogilvie et al., 2005; Van der Voort et al., 2007). Because we were examining a high-risk sample, the hypomanic and manic symptoms we observed were all in the subclinical range. It appears that hypomanic symptoms

characteristic of youth with family histories of BD (i.e., the OSBD subgroup) are not as distressing to mothers as the more impairing depressive symptoms that may occur in either OSBD or MDD.

4.1. Limitations

Ratings of maternal distress, youths' mood instability, and family functioning were each based on self-report measures. While self-report can provide important information regarding an individual parent's perception of family or child functioning, there was no objective third-party rating of these functioning variables. For example, we did not assess whether parents were in a mood episode when they completed their distress ratings at each follow-up. Study-eligible youth had at least one first- or second-degree relative diagnosed with BD I or II, including a large proportion (53.4%) being mothers. It is possible that mood states would have influenced their ratings of distress. As such, ratings of maternal distress in this study may reflect parent's mood state. Recall and hindsight bias are limitations of the study's measurement of youths' mood states, which assessed outcomes retrospectively over periods of up to 6 months.

Results of this study must be understood within the context of a treatment trial. Study participants were engaged in a randomized trial of family therapy, so this study was not designed to determine the causal relationship between mood symptoms in youth and distress among caregivers. Only 19 youth in the sample converted to BD I or II at follow-up (Miklowitz et al., 2020). This sample was too small to reliably evaluate whether maternal distress was associated with illness conversion. Additionally, fathers were not examined in these analyses due to limitations of the study's sample. Future studies should examine whether the study's findings replicate in fathers who are caregivers of offspring with mood difficulties, and whether the parent's role in the household (i.e., primary vs. secondary caregiver) moderate the strength of these relationships. Finally, by the end of the second year of follow-up, data were available on only one-third of the participants, and less than 10% were available at the end of the four years. A benefit of repeated-measures mixed effects models is that they can use all available data to estimate model parameters; however, it is not clear how the results may have been affected by participant attrition.

5. Conclusions

This study represents a secondary data analysis of a randomized clinical trial of family intervention for youth at high risk for bipolar disorder (Miklowitz et al., 2020). Maternal distress was strongly affected by the offspring's depressive severity and, more strongly, mood lability both concurrently and prospectively. Future research should explore the contextual variables that influence parents' distress, such as being a single-parent or financial burdens. The association between EE and maternal distress deserves additional investigation. It remains unclear whether attributions that underlie EE correlate with distress levels, and secondarily whether those attributions change naturalistically or can be modified through over the course of patients' illness or lifetime. Finally, treatment focused on the well-being of the parent may improve the health of the child as well. Together, it is

important that interventions for youth with mood difficulties consider the distress of the entire family unit, including caregiver burden as well as the youths' psychiatric symptoms.

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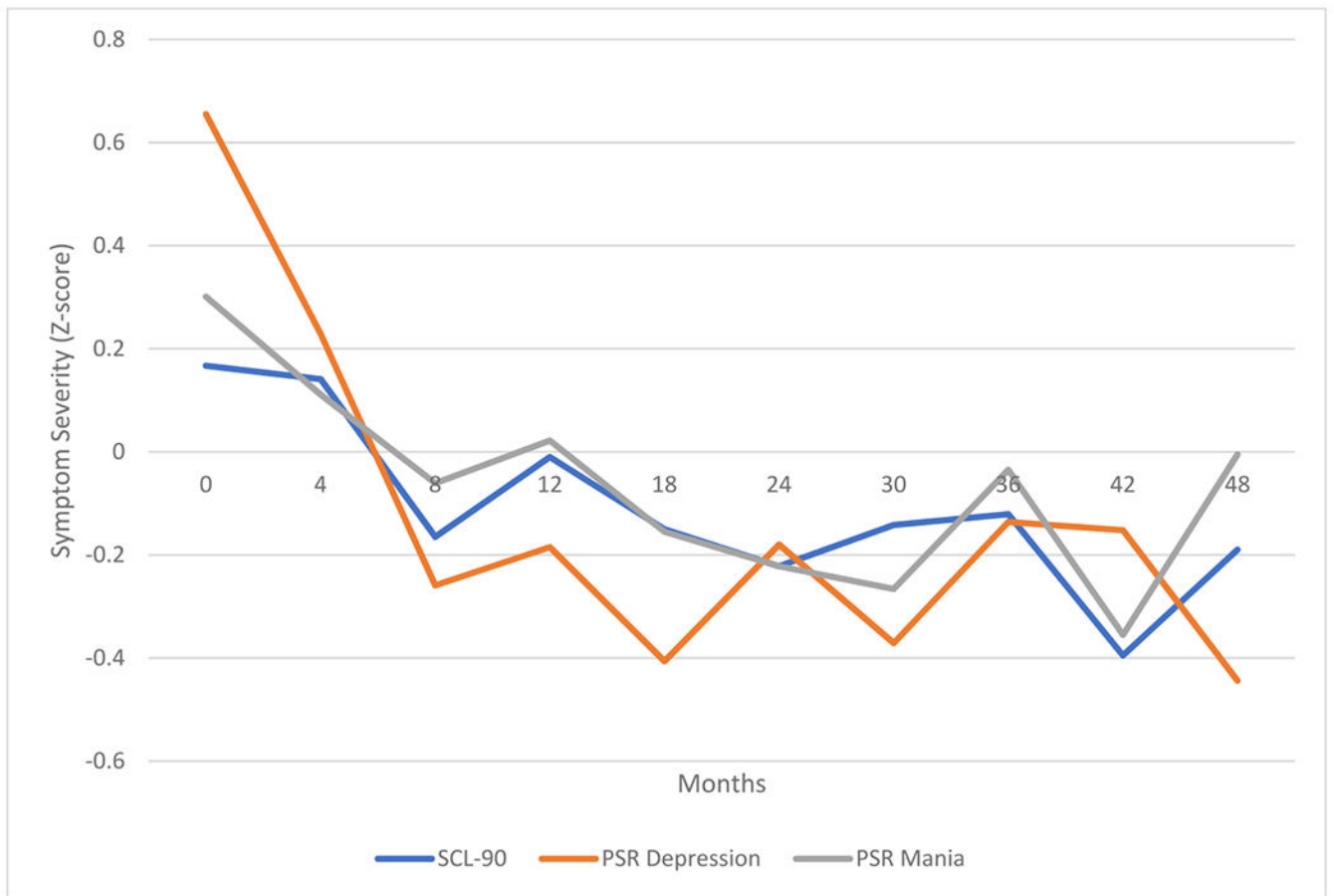


Fig. 1. Z-scores of Longitudinal Maternal distress and Youth Mood Symptom Severities. SCL-90 = Mother-rated Symptom Checklist-90; PSR Depression = Youths' Psychiatric Status Ratings of depression as rated by independent evaluators on the Adolescent Longitudinal; PSR Mania = Youths' Psychiatric Status Ratings of manic or hypomanic symptom severity as rated on the ALIFE.

Table 1

Demographics and illness history features of high-risk youth (N = 118).

	Mean	SD
Age, years	13.1	2.6
Socioeconomic status (Hollingshead SES)	46.2	9.6
Young Mania Rating Scale	12.4	7.4
Children's Depression Rating Scale	47.4	14.5
Children's Affective Lability Scale	48.9	15.4
Suicidal Ideation Questionnaire	36.3	22.4
	N	%
Female sex	79	66.9
Race, nonwhite	22	18.6
Hispanic ethnicity	20	16.9
Youth diagnoses		
Major depressive disorder	68	57.6
Bipolar disorder, not otherwise specified	50	42.4
Anxiety disorders	73	61.9
Externalizing disorders (ADHD, ODD, CD)	56	47.5
Mood polarity at study entry		
Major depression, no or subthreshold hypomania	100	84.7
Hypomania, no or subthreshold depression	7	5.6
Subthreshold depression and hypomania	11	9.3
Youths' baseline psychopharmacology		
Antidepressant	40	33.9
Anticonvulsant	16	13.6
Antipsychotic	28	23.7
Anxiolytic	3	2.5
Lithium	1	0.8
Stimulant	20	16.9
Family composition		
Both biological parents, intact family	62	52.5
Both biological parents, joint custody	11	9.3
One biological parent without stepparent	21	17.8
One biological parent plus stepparent	20	16.9
Grandparent or other relative	4	3.4
Mother's EE status (n = 109)		
High EE	63	57.8
Low EE	46	42.2
Family history of bipolar disorder		
Youth with first-degree relatives only	73	61.9
Youth with second-degree relatives only	1	0.8

	Mean	SD
Youth with first- and second-degree relatives	24	20.3

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