Family Functioning, Social Impairment, and Symptoms Among Adolescents with Bipolar Disorder RH: Interpersonal Functioning in Bipolar

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Abstract

Objective—Impaired social functioning is common among youth with bipolar disorder (BD), emerges in multiple settings, and persists over time. However, little is known about factors associated with poor peer and family functioning in the early-onset form of BD. Using a sample of adolescents with BD I or II, we examined which symptoms of BD, including non-specific symptoms such as inattention, aggression, and anxiety/depression, are associated with family functioning (adaptability, cohesion, and conflict) and peer relationship quality.

Method—Adolescents (N=115; 46% male) with BD I and II and their parents were evaluated prior to participation in a multi-site randomized controlled trial. Adolescents had experienced an episode of depression, mania, or hypomania within the previous three months and were not in full remission. Adolescents' problem behaviors were assessed using the parent-rated Child Behavior Checklist (CBCL). Family functioning was assessed via child- and parent-report questionnaires.

Results—Depressive symptoms were associated with lower child-ratings of family functioning. Contrary to hypotheses, moderate mania was associated with better parent-reported family conflict, adaptability, and cohesion. Aggression was associated with poorer family functioning across reporters and measures, even when controlling for the effects of depression, mania, and inattention. None of these symptom clusters were associated with peer functioning.

Conclusions—Aggression was the strongest correlate of family functioning in pediatric BD in this cross-sectional study. Findings speak to the potential value of addressing aggression and family dysfunction in the treatment of youth with BD. Clinical trial registration information— Effectiveness of Family-Focused Treatment Plus Pharmacotherapy for Bipolar Disorder in Adolescents; http://clinicaltrials.gov/; NCT00332098

Keywords

Family relationships; peer relationships; aggression

Introduction

Among the many challenges confronting adolescents with bipolar disorder (BD) is the maintenance of social relationships while managing severe emotional volatility. Similar to adults with BD, youth with BD show substantial impairment in their interpersonal adjustment, including both peer and family relationships.[1] Their family environments are characterized by greater conflict and hostility, and less warmth, cohesion, and adaptability than families of healthy adolescents.[2-4] Interpersonal difficulties are also observed in relationships with same-age peers. In comparison to healthy volunteers and youth with attention-deficit/hyperactivity disorder (ADHD), youth with BD are more likely to report having few or no friends and being teased frequently by peers. Moreover, they are more likely than healthy controls to be rated as having poor social skills.[2-5] Impairments in peer and family relationships predict a worse course of illness for youth with BD.[6-8]

Although deficits in interpersonal functioning worsen during mood episodes, these difficulties are present at mild to moderate levels between episodes, and recovery in social functioning appears to be independent of syndromal and symptomatic recovery.[9-10] Furthermore, limited extant evidence suggests that interpersonal impairments persist even when adolescents are receiving pharmacological treatment.[3] Viewed through this lens, treatment of BD symptoms alone may not be sufficient for improvements in peer or family functioning. Identification of the specific behaviors that contribute to interpersonal impairments among youth with BD may inform the development of treatments specifically targeting social problems.

One study examined the impact of clinical characteristics of BD on broad domains of psychosocial functioning, including the quality of interpersonal relationships.[9] Comorbid ADHD or disruptive behavioral disorders (DBDs), and current levels of manic, depressive, and psychotic symptoms emerged as predictors of poor interpersonal functioning. However, this study did not distinguish between peer and family relationships. Furthermore, only clinician-rated diagnoses were considered as predictors of outcome; the effects of other types of behavioral problems frequently reported by parents of BD youth (e.g., aggression, irritability) were not tested. Given that episodic irritability has been found to be associated with the onset of mania in one longitudinal study of high-risk children, and chronic irritability with the onset of depression, it seems plausible that irritability, negative affect, and aggression may contribute to inter-episode impairment in social relationships among youth with BD.[11]

Studies using the parent-report Child Behavior Checklist (CBCL)[12] have identified three domains of problem behaviors that may be related to the social impairments of youth with BD: anxiety/depression, aggression, and attentional problems. Although depression is a symptom of BD-II, parent-rated anxiety/depression scores on the CBCL are more strongly related to youth self-reports of anxiety than depression, suggesting that this scale is not a specific measure of symptoms directly related to BD.[13] Although these three domains of

symptoms are not specific to BD, studies using the CBCL have found that youth with BD frequently exhibit significant elevations on these three scales.[14,15] In separate lines of research, these three CBCL scales have been linked to difficulties in interpersonal relationships.[2,16-20] However, it is not clear whether these domains are associated with the poor interpersonal functioning observed among youth with BD above and beyond the effects of symptoms of mania and depression. If so, interventions that target diagnostically non-specific problems related to aggression, anxiety, and attention may be useful for improving the quality of social or familial relationships in youth with BD, and in turn improving clinical outcomes.

The current study examined BD symptoms and CBCL clinical scores as predictors of family and peer relationship quality among adolescents with BD entering a multi-site randomized trial of family focused therapy (FFT) and pharmacological management. Patients had experienced an episode of mania, mixed disorder, hypomania or depression in the previous 3 months, and were not in full remission. We hypothesized that high aggression, anxious/depressed symptoms, and attentional problem scores on the CBCL would be associated with poorer family and peer relationships beyond the effects of concurrent manic and depressive symptoms. Further, differences in the predictors of parent-, youth-, and interviewer-rated functioning were explored. We hypothesized that externalizing behavioral problems (e.g., aggression, attentional problems) would be more strongly related to parent-reported social functioning, whereas internalizing problems (i.e., anxiety and depression) would be more strongly related to child-reported social functioning.

Method

Participants

A total of 146 adolescents participated in a three-site randomized clinical trial that was approved by local institutional review boards at the University of Colorado, Boulder, the University of Pittsburgh School of Medicine, and the University of Cincinnati School of Medicine / Cincinnati Children's Hospital. The current study is based on 115 youth whose parents completed a CBCL during a pre-randomization, pretreatment assessment. All children were between the ages of 12 years 0 months and 18 years, 1 month. All youth met diagnostic criteria for bipolar I or II disorder and had experienced a *DSM-IV*-TR[21] manic, hypomanic, or depressive episode in the prior 3 months. If the youth met criteria for a current major depressive episode, he or she had to have experienced a prior *DSM-IV*-TR lifetime manic or hypomanic episode. In addition, participants were required to be at least moderately symptomatic (Kiddie Schedule for Affective Disorders and Schizophrenia [K-SADS] Mania Rating Scale[22] [MRS] 17 and/or Depression Rating Scale[23] [DRS] 16) for at least one week of the previous month. Participants were excluded if they met diagnostic criteria for (a) any substance abuse or dependence disorder in the previous three months; (b) mental retardation, autism, organic central nervous system (CNS) disorder, primary psychotic disorder, a life-threatening eating disorder or other severe medical condition, or (c) were current victims of physical or sexual abuse. Youth who were ineligible were referred to appropriate treatment services.

After undergoing an intake assessment, eligible adolescents were randomly assigned to a 21-session protocol of FFT or a 3-session protocol of enhanced care (brief psychoeducation). The present study focuses on measures collected prior to randomization to study treatments.

Procedures

Referrals were obtained through outpatient psychiatrists, inpatient units, and specialty clinics surrounding the three sites. Potential participants were screened over the phone and

eligible families were invited to an initial laboratory visit. During this visit, parents and adolescents completed informed consent/assent forms, questionnaires, and a series of diagnostic interviews.

Diagnostic assessment

Adolescents' diagnoses were assessed through semi-structured interviews conducted separately with the adolescent and at least one parent. Summary ratings were assigned for each item. Discrepancies between parent and adolescent reports were resolved by interviewing the pair to make a consensus rating. Manic and hypomanic episodes were defined using *DSM-IV*-TR duration and severity criteria. Adolescents were not included unless a board certified study psychiatrist also determined that they met criteria for BD I or II through a separate evaluation conducted with the adolescent and at least one parent.

The primary diagnostic instrument was the K-SADS Present and Lifetime Version (K-SADS-PL).[24] The mood modules of the K-SADS-PL were replaced with the MRS and DRS, which offer more comprehensive coverage of mood symptoms and have a wider range of response options (from 1 to 6 or 7), allowing for more subtle distinctions in symptom severity. Elevated and/or irritable mood ("A" symptoms) were rated only if the mood was a distinct change from the adolescent's baseline (abnormal for the individual participant, as well as abnormal relative to what would be expected for the situation and the participant's stage of development). "B" symptoms were rated as present only if they began or intensified at the same time as the change in mood. Clinicians were trained to identify distinct episodes of manic/hypomanic symptomatology, which was also confirmed in the clinical interview by the board-certified child psychiatrist. We rated symptom severity on the MRS and DRS for two time intervals: the most severely symptomatic week in the past month (to determine current symptom severity), and the most severely symptomatic week in the child's lifetime, prior to the past month (to determine the primary diagnosis). In some cases, an episode that spanned part of the past month could be the most severe lifetime episode, in which case the data from this week were included in the diagnostic decision.

Inter-rater reliabilities based on a subset of 12 participants with an average of 12 raters each (drawn from all three sites) were .89 for DRS scores and .81 for MRS scores.[25] In the treatment and measure development study prior to this trial, interrater reliability between Colorado and Pittsburgh raters was .97 for MRS scores and .89 for DRS scores (intraclass rs).[26]

Parent report of behavior problems

Primary caretakers (mostly mothers) completed the CBCL[12] covering the prior 3 months. Cronbach's alpha was .98 for the 12-item anxious/depressed scale, .98 for the 16-item aggression scale, and .98 for the 9-item attention problems scale.

Family and social functioning

Family functioning in the previous three months was measured using two questionnaires, each administered separately to adolescents and the primary caretaking parent. The Family Adaptability and Cohesion Evaluation Scale II[27] (FACES-II) is a 30-item questionnaire measuring family adaptability (e.g. "Family members discuss problems and feel good about the solutions") and cohesion (e.g. "Family members feel very close to each other"). Parents and adolescents rated each item on a 5-point Likert-type scale. Cronbach's alpha was .90 for the cohesion scale and .80 for the adaptability scale. The Conflict Behavior Questionnaire[28] (CBQ) consists of 20 true-false items measuring conflict within the parent-child relationship. It was completed by the adolescent about each parent and by the primary

caretaking parent about his or her relationship with the adolescent. Cronbach's alpha was .92.

The Adolescent Longitudinal Interval Follow-Up Evaluation-Baseline (A-LIFE) Psychosocial Functioning Schedule[29,30] yields an interviewer rating of the youth's relationships with parents, siblings, and friends, each scored on a scale of 1 (very good) to 5 (markedly impaired). Peer ratings considered both the quantity and quality of friendships. Interviewers also made a global rating of psychosocial adjustment. The reliability of the A-LIFE Psychosocial scales was established in a prior study at the Cincinnati site, where ratings of premorbid psychosocial functioning were reliable at K .75.[10]

Statistical Analysis

To test the first hypothesis, that high aggression, anxious/depressed symptoms, and attentional problem scores on the CBCL would be associated with poorer family and peer relationships beyond the effects of manic and depressive symptoms, we conducted stepwise hierarchical ordinary least-squares regression analyses, testing each measure of relational functioning separately. The first block of each regression model tested the effects of gender, age, current MRS score, and current DRS score on one of the following psychosocial measures: (a) parent- or child-rated family cohesion, adaptability, or conflict scores from the FACES-II or CBQ; (b) interviewer-ratings of parent or sibling relationships on the A-LIFE Psychosocial Schedule; or (c) peer relationship scores and global social functioning scores on the A-LIFE Psychosocial Schedule. The second block of each regression model tested the additional effects of parentrated CBCL anxious/depressed, aggression, and attentional problem scores on family, peer or global functioning scores. Considering each measure individually rather than aggregating across reporters allowed us to test the second hypothesis —that "externalizing" behavioral problems such as aggression and attentional problems would be more strongly related than internalizing problems to parent-reported social functioning, while anxiety and depression scores would be more strongly related to child-reported social functioning.

Results

Sample Characteristics

Participants averaged 15.5 years of age (SD=1.4; see Table 1). All participants met *DSM-IV*-TR criteria for bipolar I (n= 67) or bipolar II (n= 48) disorder. The average age of onset was 11.94 (SD=3.12) for manic/hypomanic episodes and 11.42 (SD= 2.65) for depressive episodes. There were significant group differences in the rate of BD I and II diagnoses by site ($F_{2,146}$= 7.71, p=.001), with the Cincinnati site having a higher percentage of BD I diagnoses (77%) than the Colorado (51%) or Pittsburgh (36%) sites.

Of the 146 participants who entered the randomized treatment study, 115 (53 male, 62 female) youth had parents who completed a pre-treatment CBCL. Youth whose parents completed a pre-treatment CBCL did not differ from those whose parents did not complete a CBCL in gender, age, socioeconomic status, or most severe lifetime level of manic or depressive symptoms (all ps .10). Parents of youth with BD II were less likely to complete the CBCL than parents of youth with BD I (Ξ^2 (1,143)=5.09, p=.02), but there were no significant differences in any CBCL scale score between youth with BD I versus II (all ps .10).

Among youth whose parents completed a CBCL, 53 (46%) had T-scores at or above 70 on the attention problems scale, 68 (59%) had T-scores of 70 or higher on the aggression scale, and 47 (41%) had T-scores at or above 70 on the anxiety-depression scale. As is typical among pediatric bipolar samples (29), there were high rates of comorbidity (see Table 1). At

the time of intake, the majority of youth (65%, Table 1) were taking at least one psychiatric medication. Means, standard deviations, and correlations of all study variables are presented in Table 2.

Parent-Reported Family Functioning

Variables in the first block were not associated with parent-reported conflict on the CBQ. When CBCL scale scores were added into the equation, higher scores on the Aggression subscale were associated with higher levels of parent-reported family conflict (β=.50, SE=.06, 95% CI=.38, .62 p<.001), whereas higher MRS scores predicted less severe conflict (β= −.08, SE=.04, 95% CI=−.15,−.002, p=.04).

Variables in the first block were not significantly associated with parent-reported adaptability on the FACES-II. In the second block, aggression scores were associated with lower levels of family adaptability (β=−.42, SE=.11, 95% CI=−.64,−.20 p<.001), whereas higher MRS scores were associated with greater family adaptability (β=.14, SE=.07, 95% CI=.01, .28, p=.04).

Only MRS scores predicted parent-reported family cohesion scores in the first block (β=.20, SE=.09, 95% CI=.02, .39, p=.03). When CBCL scale scores were added into the model, higher Aggression scores were associated with lower levels of family cohesion (β=−.52, SE=.15, 95% CI=−.82,−.23 p=.001). Higher MRS scores were associated with greater family cohesion (β=.26, SE=.09, 95% CI=.07, .44, p=.007).

Exploratory analyses including a quadratic term in a third block of variables revealed a quadratic association between MRS scores and family reported cohesion (β=.01, SE=.006, p=.03) and adaptability (β=.01, SE=.005, p=.03) but not parent-reported family conflict (β= −.001, SE=.037, p=.75). Parent-reported cohesion and adaptability were highest among families where children experienced moderate levels of manic symptoms.

Child-Reported Family Functioning

Adolescents made separate ratings of the amount of conflict in their relationships with their mothers (n=109) and fathers (n=95). Higher CBCL Aggression scores (β=.21, SE=.09, 95% CI=.04, .38, p=.02) were associated with higher adolescent-reported conflict with mothers. None of these variables were associated with the adolescents' reports of conflict with their fathers.

Variables in the first block were not significantly associated with child-reported adaptability on the FACES-II. Once the CBCL scores were entered into the equation, higher scores on the Aggression subscale (β=−.31, SE=.13, 95% CI=−.59,−.03, p=.03) and higher DRS scores (β=−.23, SE=.09, 95% CI= −.41,−.06, p=.01) were associated with lower levels of family adaptability. Higher scores on the CBCL anxious/depressed subscale were associated with higher family adaptability scores (β=.53, SE=.22, 95% CI=.09, .98, p=.02).

Variables in the first block were not associated with child-reported family cohesion on the FACES-II. CBCL Aggression scores were the only significant predictor of child-reported cohesion, with higher levels of aggression associated with lower levels of child-reported family cohesion (β=−.54, SE=.19, 95% CI=−.92,−.15, p<.01).

Interviewer-Rated Family Functioning

Only CBCL aggression scores were associated with interviewer ratings of the quality of parent-child relationships based on the A-LIFE Psychosocial Schedule (β=.04, SE=.02, 95% CI=.01,.07, p=.005). None of the predictors in the first or second block were significantly

associated with interviewer-rated quality of relationships with siblings on the A-LIFE, although higher aggression scores were nonsignificantly associated with poorer sibling relationships (β=.03, SE=.02, 95% CI=−.01,.06, p=.09).

Peer Functioning and Global Social Adjustment

The regression model did not predict the quality of interpersonal relationships with friends, as measured via the A-LIFE (all ps .10). However, higher CBCL aggression scores were associated with poorer global social functioning (β=.02, SE=.01, 95% CI=.00,.04, p=.047).

Impact of Comorbid Conditions

The primary analyses suggested an association between CBCL aggression scores and family functioning. Given the observed comorbidity (32%-35%) between pediatric bipolar disorder, ADHD, and disruptive behavior disorders (DBDs), we explored the potential association of comorbid conditions with family and peer functioning scores. Current diagnoses of ADHD (n=41) or DBD (n=37) were entered into the first block of each regression equation (along with MRS and DRS scores, age, and gender).

ADHD was associated with sibling relationship quality as rated on the A-LIFE. Even when accounting for the covariates in the second block, a current diagnosis of ADHD was associated with poorer sibling relationships (β=.54, SE=.25, 95% CI=.04,1.04, p=.04).

For all parent-rated and interviewer-rated measures of family environment, as well as child reports of conflict with mothers, the presence of a comorbid DBD was associated with poorer family functioning in the first step of the regression equation. However, when the behavioral problems subscale of the CBCL was added in the second step, the association between DBDs and family functioning became nonsignificant; only the CBCL aggression and MRS scores remained significant predictors. For example, the presence of a comorbid DBD was significantly associated with parent-reported family adaptability in the first step of the regression equation (β=−3.86, SE=1.78, 95% CI=−.7.40,−.32, p=.03). However, in the second step of the equation, this association was non-significant (β=1.85, SE=1.80, 95% CI=−5.43,−1.73, p=.31), while manic symptoms (β=.15, SE=.07, 95% CI= .01, .28, p=.03) and aggression (β=−.38, SE=.12, 95% CI=−.62,−.15 p=.001) retained the pattern of association described above. Aroian's test of mediation[31] indicated that aggression fully accounted for the association between DBD diagnosis and parent-reported family environment scores (e.g., family adaptability TS=−2.47, p=.01). There were no instances in which DBDs were significantly associated with family functioning measures once aggression was entered into the equation.[2]

Impact of Medication Use

Exploratory analyses were conducted to examine the impact of psychiatric medication use on psychosocial functioning by adding a medication variable (presence/absence at study intake) into the first block of each regression equation. Medication status (taking at least one medication [65%] versus no medications [35%]) was not associated with any of the family, peer, or social functioning variables (all p .10). Given the wide variety of medications used (Table 1), our sample size did not permit examination of the effects of particular medication regimens.

Medication usage did not moderate the association between symptoms and parent-reported or interviewer-rated interpersonal functioning. However, medication usage did moderate the association of aggression with child-reported conflict with mother (interaction term β=.36, SE=.17, p=.04), child-reported family cohesion (β=−.99, SE=.37, p=.01), and child-reported family adaptability (β=−.55, SE=.28, p=.05). In each case there was no association of

aggression with child-reported family functioning among children who were not on any medications (all p .80). Among children using at least one medication, CBCL aggression scores were significantly associated with child-reported family functioning (all ps <.01).

Discussion

This study examined factors associated with family and peer functioning among adolescents with BD I and II. The impact of clinician-rated mood symptoms as well as parent-rated aggressive behavior, attentional problems, and anxious/depressed symptoms on multiple measures of family and peer functioning were assessed. We found that parent-rated aggression was consistently related to the quality of family relationships, regardless of whether it was the parent, child, or clinician who was asked about the quality of those relationships, and even when the impact of mood symptoms and comorbid conditions were considered. Mood symptoms were also related to reports of the quality of children's relationships with family members, although these associations varied somewhat by reporter. In contrast, mood symptoms and parent-reported problem behaviors were not associated with interviewer-rated peer functioning.

These findings suggest that, although aggression is not specific to BD, it is strongly related to the quality of family relationships for youth with this diagnosis. Aggression among youth with BD may be characterized by reactive motivations, meaning that it occurs in retaliation to perceived provocation rather than as a pre-planned attempt to gain reward.[32] Because of the cross-sectional design, we could not determine whether aggression occurred in reaction to perceived provocations from family members or whether it was a characteristic of the child that fueled conflict, poor adaptability and low cohesion in families. Nonetheless, a significant body of research suggests that reactive aggression may be especially detrimental to interpersonal functioning in youth, regardless of diagnosis. For example, reactively aggressive youth are less well-liked and more frequently bullied than other types of aggressive youth.[18] Although not specific to youth with BD, the negative consequences of aggression within relationships are likely to be a prevalent concern in this population.

It is not surprising that family relationships suffer when children display aggression, or, conversely, that poor quality relationships within the family may increase the likelihood of aggressive responses by affectively ill children. Indeed, links between child aggression and negative family dynamics are well-documented and typically conceptualized as bi-directional in nature.[33,34] Shared genetic or environmental factors may also contribute to this association.[35] Our findings suggest that aggression contributes to the quality of family functioning above and beyond the symptoms of BD, suggesting that a greater emphasis on assessing and intervening with aggressive behaviors may contribute to the stabilization of the family context following episodes of BD. Aggression is rarely a direct target of the treatment of youth with BD, and has not typically been measured as an outcome in clinical trials. The contribution of family relationships to the maintenance of aggressive behaviors should also be examined. Successful psychotherapeutic or pharmacologic interventions to reduce aggressive behavior may improve the quality of the family environment and reduce stress exposure, potentially improving both the course of illness and quality of life for youth with BD.

Interestingly, medication use moderated the association between aggressive symptoms and child-reported family functioning, but not parent-reported or interviewer-rated interpersonal functioning. Among children who were not on any medications (approximately one third of the sample), there was no association between aggression and children's reports of family functioning. Among children on medication, higher levels of parent-reported aggression were associated with more negative child perceptions of the family environment. It is

possible that children whose aggressive behaviors are strongly associated with disruptions to the family environment are more likely to be placed on medication. However, it is not clear why this association would not extend to parent and observer perceptions of the family environment. Examining the associations between aggression and family functioning when youth with BD are on and off medications (or when their medication regimens change) may help to clarify the directional nature of these associations.

The curvilinear association between current manic symptoms and parent-reported adaptability and cohesion differs from some but not all previous studies.[6,11,36] This association was strengthened when parent-reported aggression was added into the regression equation. Thus, parents' perceptions of the family environment are more positive when adolescents have moderate, but not severe, elevations in symptoms such as elated mood, energy or productivity. Very low or high levels of mania, especially if accompanied by changes in productivity or aggression, may affect familial decision-making, interdependency, or the ability of family members to adapt to external stressors.

Similar to prior research[36], more severe depression on the DRS was associated with poorer child-reported family relationships. Whether this association is a reflection of actual impairment in family functioning or a negative reporting bias is difficult to discern. Interestingly, parent-rated CBCL anxiety/depression scores, which were only moderately correlated with interviewer-based DRS scores, were associated with greater child-reported family adaptability. It is possible that the difference in direction of effect between DRS and CBCL scores reflects the stronger association of the CBCL anxiety/depression scale with child-reported anxiety.[13] Future studies examining the nature of the associations between depression, residual anxiety, and family adaptability at various phases of BD may help to identify targets for treatment.

Neither BD symptoms nor the non-specific symptoms rated on the CBCL (attentional problems, aggression, and negative affect) were associated with interviewer-rated peer functioning. The fact that the A-LIFE uses a single score to represent both quantity and quality of relationships may have limited our ability to detect problems in this domain. Different patterns of association might have been found if the adolescents had rated their own social functioning, or if they had reported on specific peer experiences such as bullying. The effects of aggression on peer relationships may depend on whether or not youth with BD have peer groups where aggression is normative.[37] The association between aggression and peer relationships may also change across adolescent development.[38] Future studies examining peer functioning from the perspectives of multiple reporters, using developmentally-sensitive measures and examining group norms are needed.

Previous research has highlighted the detrimental nature of disruptive behavior disorders such as ODD and CD on the interpersonal functioning of youth with BD.[9] The current results support this pattern across a number of measures of family environment. However, it appears that aggression may be the behavior that accounts for this risk to family functioning, such that other behaviors captured in those diagnoses no longer exert a significant effect on family functioning once the effects of aggression are considered. The fact that the association between ODD/CD symptoms and poor family functioning was mediated by aggression suggests that aggressive behaviors are likely to be important factors in social functioning among many clinical populations, rather than being specific to BD. Comorbid ADHD was not associated with family or peer functioning in this study. Although one study[38] of youth with BD found that comorbid ADHD was associated with poorer parent-child relationship quality, other studies have found no effect of comorbid ADHD on interpersonal functioning when the effects of other disruptive behavior disorders are considered.[9]

Several study limitations are noteworthy. First, the cross-sectional design limits conclusions about the directionality of the reported associations, and bidirectional patterns of influence are likely. Greater disturbances in affect and behavior may contribute to more distressed family relationships, which in turn may lead to poorer psychiatric outcomes and higher levels of problematic behavior. In an 8-year follow-up, lower maternal warmth predicted a faster relapse following recovery from a manic episode among prepubertal and early adolescent bipolar I patients.[6] Poor family functioning is also associated with higher rates of suicidality in BD.[39] Longitudinal studies examining the temporal relationships between changes in family functioning and the long-term outcomes of BD youth are needed.

Source effects must be considered, particularly for the subset of analyses in which parents reported both on CBCL symptoms and family outcomes. The use of youth reports of peer functioning or data obtained from peers or schools may have yielded a different pattern of results. The limited range of A-LIFE scores may have reduced the statistical power to detect associations with other measures that have a broader dispersion of scores. All of the youth in the current study were adolescents, and most were Caucasian and from middle to upper middle class homes. In addition, all of the families in this study were seeking family-based psychosocial treatment (mostly in addition to pharmacotherapy), perhaps because of family discord or because they noted difficulties in their child's psychosocial functioning or level of aggression. Finally, the present study did not include measures of parental diagnoses, making it difficult to assess how parental psychopathology relates to ratings of family functioning or the youth's behavior.[34]

These limitations notwithstanding, the present findings have implications for the measurement and treatment and measurement of psychosocial dysfunction in adolescents with BD. Interventions that mitigate aggression in addition to stabilizing depressive and manic symptoms may have significant effects on familial and social functioning among bipolar youth. The next generation of research on interventions for pediatric bipolar disorder should take a broader view of treatment outcomes, including the ability of these youth to function well in their families, friendships, and broader communities.

Acknowledgments

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Table 1

Demographic and Diagnostic Variables (N=115)

Variable	
Youth Age, mean (SD)	15.5 (1.4)
Gender, n (%)	
Female	62 (54)
Race, n (%)	
Caucasian	98 (85)
Hispanic	11 (9.6)
African American	8 (7.0)
Asian/Pacific Islander	3 (2.6)
Native American	2 (1.7)
Other/Biracial	4 (3.5)
Lives with both natural parents, n (%)	40 (35)
Most Recent Episode, n (%)	
BP I Mania or Hypomania	31 (27)
BP I Mixed	21 (18)
BP I Depressive	16 (14)
BP II Hypomanic	23 (20)
BP II Hypomanic Mixed	8 (7)
BP II Depressive	16 (14)
Comorbid Disorders, n (%)	
ADHD	41 (35)
ODD/CD	37 (32)
Anxiety	31 (37)
Medication Treatment at 1st Evaluation, n (%)	
Any	75 (65)
Mood Stabilizer	35 (30)
Antipsychotic	55 (46)
Antidepressant	19 (16)
Stimulant	18 (14)
Anxiolytic	31 (27)
More than 1 medication	41 (35)

Note: ADHD = Attention-Deficit/Hyperactivity Disorder; BP I = Bipolar I Disorder; BP II = Bipolar II Disorder; CD = Conduct Disorder; ODD = Oppositional Defiant Disorder.

Table 2

Descriptive statistics and correlations.

Variable	Mean, SD	Range	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Gender	(46% male)																		
2. Age	15.5, 1.4	12.9–18.0	.06																
3. Current DRS	33.6, 8.3	0–47	.09	.16															
4. Current MRS	35.6, 7.3	0–52	.17	.03	.05														
5. CBCL Anxiety/ Depression	9.6, 4.5	0–20	.01	–.08	.29*	–.04													
6. CBCL Aggression	17.5, 7.8	0–36	–.06	–.29*	–.04	.16	.25*												
7. CBCL Attention	11.3, 3.9	0–20	–.12	–.05	.06	.11	.36*	.50*											
8. Parent CBO	12.7, 5.7	0–20	–.07	–.13	–.04	–.02	.08	.69*	.38*										
9. Parent–rated Adaptability	43.0, 7.9	21–61	.08	.11	–.09	.12	.01	–.36*	–.12	–.42*									
10. Parent–rated Cohesion	55.0, 10.6	29–76	–.08	.05	–.06	.18	–.08	–.28*	–.05	–.35*	.68*								
11. Child CBO about father	8.0, 6.7	0–20	.18	.22*	.19	.09	.05	.08	.10	.14	–.27*	–.12							
12. Child CBQ about mother	6.5, 6.0	0–20	–.03	.01	.09	.02	–.12	.15	–.05	.26*	–.12	–.21*	.05						
13. Child–rated adaptability	39.7, 10.0	14–62	.09	–.01	–.15	–.10	.14	–.17	–.02	–.18	.22*	.09	–.34*	–.48*					
14. Child–rated cohesion	49.5, 13.3	20–74	.00	–.07	–.10	.02	.06	–.16	.06	–.17	.30*	.36*	–.27*	–.47*	.76*				
15. ALIFE Parents	3.0, 1.0	1–5	.11	–.02	–.05	.05	.08	.34*	.20*	.38*	–.18	–.20	.07	.45*	–.28*	–.38*			
16. ALIFE Siblings	2.9, 1.1	1–5	–.04	–.02	–.03	.18	.11	.25*	.14	.30*	–.06	.00	.02	.07	–.11	–.12	.35*		
17. ALIFE Friendships	2.5, 1.0	1–5	.06	.00	–.04	.16	.13	.07	.04	.01	–.11	.01	.18	–.07	.09	.10	.13	.15	
18. ALIFE Global Social Rating	3.6, 0.7	2–5	–.14	.00	.18	–.01	.18	.26*	.21	027*	–.18	–.14	.17	–.03	.03	.00	15	.12	.23*

Note: ALIFE= Adolescent Life Psychosocial Functioning Schedule; CBCL= Child Behavior Checklist; CBQ= Conflict Behavior Questionnaire; DRS= Depression Rating Scale; MRS= Mania Rating Scale.

*
correlation is significant at p<.05 (2–tailed)