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## Prevalence and Correlates of Physical and Sexual Abuse in Children and Adolescents with Bipolar Disorder

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### Abstract

**Objective**—Adult bipolar disorder (BP) has been associated with lifetime history of physical and sexual abuse. However, there are no reports of the prevalence of abuse in BP youth. The objective of this study was to examine the prevalence and correlates of physical and/or sexual abuse among youth with BP spectrum disorders.

**Methods**—446 youths, ages 7 to 17 years (12.7±3.2), meeting DSM-IV criteria for BP-I (n=260), BP-II (n=32) or operationalized definition of BP-NOS (n=154) were assessed using the Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime version (K-SADS-PL). Abuse was ascertained using the K-SADS.

**Results**—Twenty percent of the sample experienced physical and/or sexual abuse. The most robust correlates of *any* abuse history were living with a non-intact family (OR=2.6), lifetime history of posttraumatic stress disorder (PTSD) (OR=8.8), psychosis (OR=2.1), conduct disorder (CD) (OR=2.3), and first-degree family history of mood disorder (OR=2.2). After adjusting for confounding demographic factors, *physical* abuse was associated with longer duration of BP illness, non-intact family, PTSD, psychosis, and first-degree family history of mood disorder. *Sexual* abuse was associated with PTSD. Subjects with *both* types of abuse were older, with longer illness duration, non-intact family, and greater prevalence of PTSD and CD as compared with the non-abused group.

**Limitations**—Retrospective data. Also, since this is a cross-sectional study, no inferences regarding causality can be made.

**Conclusion**—Sexual and/or physical abuse is common in youth with BP particularly in subjects with comorbid PTSD, psychosis, or CD. Prompt identification and treatment of these youth is warranted.

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## Keywords

Bipolar disorder; physical abuse; sexual abuse; children and adolescents

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## Introduction

History of childhood physical and/or sexual abuse is common in adults with bipolar disorder (BP) (Leverich et al., 2002). Studies of adults with BP have shown that in comparison with BP subjects without history of childhood physical or sexual abuse, those with abuse have earlier age of BP onset, and greater prevalence of rapid cycling, suicide attempts, comorbid anxiety disorders, posttraumatic stress disorder (PTSD), substance use disorders, and personality disorders (Brown et al., 2005; Garino et al., 2005; Leverich et al., 2002).

The main limitation of these studies is the retrospective self-report of the childhood abuse by BP adults and consequently the possibility of recall bias in either direction, yielding false positives and/or negatives (Della Femina et al., 1990; Fergusson et al., 2000; Widom et al., 2004). A study in which childhood abuse is ascertained more closely in time to the experience and both the subjects and their caregivers are interviewed to determine abuse history may have the advantage of minimizing recall bias. Yet, to our knowledge, no studies of the prevalence of physical and sexual abuse have been reported in children and adolescents with BP. Moreover, improved knowledge regarding correlates of, and putative risk factors for, abuse has the potential to inform prevention and early-identification strategies, particularly important given the projected negative outcomes associated with early-onset BP and abuse.

The aim of this study was to examine the prevalence and correlates of physical and sexual abuse in a large sample of children and adolescents with BP spectrum disorders. Based on the adult literature we hypothesized that children and adolescents with a history of physical and sexual abuse would present significantly higher rates of PTSD, conduct disorder, substance abuse and suicide attempts.

## Methods

Four hundred forty-six youth, ages 7 to 17 years and 11 months ( $12.7 \pm 3.2$ ), fulfilling DSM-IV (APA, 1994) criteria for BP-I ( $n=260$ ), BP-II ( $n=32$ ) and study operationalized definition of BP-not-otherwise specified- (NOS) ( $n=154$ ) (Birmaher et al., 2006) were recruited from outpatient and inpatient units and to a lesser degree from advertisement and referrals from other physicians at the University of Pittsburgh, Brown University, and University of California Los Angeles (UCLA). Each University's institutional review board approved the study. Confidentiality has been strictly maintained.

Details of the assessment of these subjects have been reported elsewhere (Axelson et al., 2006; Birmaher et al., 2006). Briefly, parents/primary caregivers were interviewed about their children and subjects were assessed directly using the Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime version (KSADS-PL) (Kaufman et al., 1997) by a trained research clinician. All cases were staffed by a child psychiatrist or psychologists.

## Physical and sexual abuse assessment

Prevalence of lifetime physical and sexual abuse was evaluated using the specific questions from the PTSD section of the KSADS-PL (separately to caregivers and children).

Specific questions for physical abuse included: “When your parents got mad at you, did they hit you? Have you ever been hit so that you had bruises or marks on your body, or were hurt in some way? What happened?” Physical abuse was considered if bruises were sustained on more than one occasion, or if more serious injury was sustained.

To determine sexual abuse, the following questions were asked: “Did anyone ever touch you in your private parts when they shouldn't have? What happened? Has someone ever touched you in a way that made you feel bad? Has anyone who shouldn't have ever made you undress, touch you between the legs, make you get in bed with him/her, or make you play with his/her privates?” Sexual abuse was considered if isolated or repeated incidents of genital fondling, oral sex, or vaginal or anal intercourse were reported.

Appropriate clinical and judicial interventions were carried out for children who reported abuse.

### Caregivers' assessment

Parents were interviewed at intake about their personal psychiatric history using the Structured Clinical Interview (SCID) for DSM-IV. Parents were also interviewed about their first and second degree psychiatric family history using the Family History Screen (FHS) (Weissman et al., 2000). Socioeconomic status was measured using the Hollingshead four-factor scale (Hollingshead, 1975).

### Statistical Analyses

Statistical analyses were performed using the Statistical Package for the Social Science Version 14 (SPSS). Demographic, clinical, and family variables were compared between subjects with and without abuse using chi-square tests or Fisher exact tests for categorical variables, and t-tests for continuous variables. Thereafter, any comparisons significant at  $p < 0.15$  were entered in multiple logistic regression analyses with history of any abuse as the dependent variable. Finally, the variables that remained significantly associated with history of abuse were entered in a new logistic regression analysis to determine specific associations to sexual, physical or both types of abuse, with non-abuse as the refereed value. All statistics were two-tailed, and significance was set at  $p\text{-value} \leq 0.05$ . Odds ratios (OR) and confidence intervals (CI) were computed.

## Results

### Prevalence and demographics

About one-fifth of the sample, (92/446, 20.6 %) reported lifetime history of physical and/or sexual abuse. Of these, 40/446 (9%) reported physical abuse only, 30/446 (7%), sexual abuse only, and 22/446 (5%) reported both physical and sexual abuse. We also analyzed children (<12 y/o) and adolescents ( $\leq 12$  y/o) separately. There were differences between the rates of any abuse between children and adolescents (16% vs. 24%, respectively,  $\chi^2=4.1$ ,  $p=0.04$ ). Specifically for children, 17/32 (8.6%) reported sexual abuse, 12/32 (6.1%) reported physical abuse and 3/32 (1.5%) reported both physical and sexual abuse. For adolescents, 13/60 (5.2%) reported sexual abuse, 28/60 (11.2%) reported physical abuse and 19/60 (7.6 %) reported both types of abuse.

As shown in Table 1, compared to the non-abused group, the abused group was significantly older, from lower SES backgrounds, and less likely to live with an intact family (for all,  $p \leq 0.05$ ). There were no significant sex or race differences between the abused and non-abused subjects. However, the prevalence of females was significantly greater in the sexually abused group as compared to the non-abused group (59.6% vs. 45.2 %,  $\chi^2 = 3.8$ ,  $df=1$ ,  $p=0.05$ ).

## Clinical characteristics and comorbidity

As shown in Table 1, in comparison with the non-abused group, the abused group had greater duration of BP illness, and had significantly greater lifetime prevalence of suicide attempts, psychosis, posttraumatic stress disorder (PTSD), conduct disorder (CD), and any substance use disorder (all  $p$  values  $<0.01$ ). There were no significant differences in the rates of abuse among the different subtypes of BP.

## Family history

The abused group was more likely to have first-degree family history of conduct disorder, substance abuse and mood disorder than the non-abused group (Table 1, for all,  $p \leq 0.01$ ). There were no significant between-group differences in the rates of second degree psychiatric family history.

## Logistic regression analyses

We computed logistic regression analyses in which abuse was the dependent variable, and clinical variables significant at  $p < .15$  from the univariate analyses (described above) were the independent variables, and covariates included age, SES and duration of BP illness (Table 2). Seven variables remained significantly associated with history of physical and/or sexual abuse: older age (OR=1.15, 95% CI 1.03–1.3), longer duration of illness (OR=1.1, 95% CI 1.03–1.2), non-intact family (OR=2.6, 95% CI 1.4–5), lifetime PTSD (OR=8.8, 95% CI 3.1–25.1), psychosis (OR=2.1, 95% CI 1.2–3.6), conduct disorder (OR=2.3, 95% CI 1.1–4.8), and first-degree family history of mood disorders (OR=2.2, 95% CI 1.1–4.4). In addition, there was a significant age by living situation (i.e., intact versus non-intact family) interaction such that only abused subjects who were older than the median age of the group (12.8 y.o) were less likely to live with both biological parents than non-abused subjects (12.7% vs. 55.4%,  $\chi^2 = 30.5$ ,  $p < 0.001$ ).

## Abuse subtypes

As stated above, the abused group consisted of subjects with physical, sexual and both types of abuse. In order to explore which variables were specifically associated with each individual type of abuse, a multinomial logistic regression analysis was performed. As depicted in Table 3, after adjusting for significant differences in demographic (age, sex, race and living situation) among the 3 abuse subgroups, physical abuse was independently associated with longer duration of BP illness, non-intact family, greater lifetime prevalence of PTSD and psychosis, and greater prevalence of first degree family history of a mood disorder (for all,  $p \leq 0.04$ ). In contrast, the only variable significantly associated with sexual abuse was PTSD ( $p = 0.003$ ). Finally, history of both types of abuse was significantly associated with older age, longer duration of the illness, non-intact family, and greater rates of PTSD and conduct disorder (all  $p$ -values  $\leq 0.03$ ).

## Discussion

To our knowledge this is the first study examining the lifetime prevalence and demographic, clinical and family correlates of physical and/or sexual abuse in children and adolescents with BP spectrum disorders. About one in five subjects had physical and/or sexual abuse. The most robust correlates of any abuse history in this sample of BP youth were non-intact family, PTSD, CD, psychosis and first degree family history of mood disorder.

As compared with the non-abused group, physical abuse was significantly associated with longer duration of BP illness, living with a non-intact family, higher rates of PTSD and psychosis, and first-degree relatives with mood disorder. Sexual abuse was only associated

with greater prevalence of PTSD. Having both types of abuse was associated with older age, longer duration of the illness, non-intact family, and greater prevalence of PTSD and CD.

Before discussing the above-noted results it is important to note the limitations of the study. First, although the data was collected during childhood or adolescence, the possibility of retrospective recall bias remains. For example, abuse at a very early age may be more likely to be forgotten. Also parents and their children may not report the abuse because of embarrassment or desire to protect the perpetrator (Fergusson et al., 2000). Second, since this is a cross-sectional study, we cannot infer causality or relationship between two variables in time. It is possible that individuals who have been abused are at higher risk for developing psychiatric disturbance. Alternatively, individuals who have BP may be at higher risk for abuse as a result of exposure to higher risk situations. Third, the implications of lifetime abuse on the course and outcome of BP were not evaluated. However, we are prospectively following the sample, which will allow a more precise estimate of the association between abuse and clinical course and outcome in BP youths. Fourth, this study did not systematically assess for severity or frequency of abuse, relationship of the subject to the perpetrator identified, family history of abuse and other forms of abuse such as emotional abuse. Finally, no psychiatric control group was included. Thus, we cannot conclude that abuse is more common in BP youth than in other childhood psychiatric disorders.

To our knowledge, there are no studies of sexual/physical abuse in BP children and only one study has examined the prevalence of sexual and physical abuse in sample of youth ( $n=165$ ) ages 6 to 17 years old with other non-BP psychiatric disorders (Ford et al., 2000). In this study, the rates of physical and/or sexual abuse were 10 % for adjustment disorders, 36% for ADHD and 66% for ODD. However, due to important differences in methodology between this and our study, we were not able to compare the result. Similar to the rates of any abuse in the adolescents with BP, epidemiological studies have also shown approximately 20% prevalence of sexual and physical abuse in adolescents (Diaz et al., 2002; Hussey et al., 2006; May-Chahal and Cawson, 2005). However, it is important to note that in contrast to our study, some of these studies defined physical assault more broadly (e.g., being “slapped, hit or kicked) (Hussey et al., 2006).

Our results are similar to those recently reported by the Stanley Foundation Bipolar Network (SFBN) in adults with BP (Leverich et al., 2002). For example, after adjusting for age, subjects with history of any abuse showed longer duration of illness as compared to those without abuse. Also, similar to the SFBN finding that half of the adults with any abuse history were both physically and sexually abused, in our sample about 35 % of the children and adolescents reporting physical abuse were also sexually abused, and about 42% of children and adolescents sexually abused were also physically abused (Leverich et al., 2002). However, in contrast with the adult literature, we did not find that earlier age of BP onset was associated with a higher prevalence of abuse and there were no sex differences in the sexual and physical abuse group compared to the non-abused group, (Leverich et al., 2002). Also, the rates of childhood sexual and physical abuse in youth with bipolar disorder found were about half of the rates reported in the BP adult literature (20% vs. 45%) (Brown et al., 2005; Leverich et al., 2002). Possible explanations for these differences include age with adults having increased likelihood of abuse, recall bias, different methods of assessing abuse (questionnaire vs. semi structured interview), and/or the inclusion of patients with adult-onset bipolar who for obvious reasons were not included in our sample.

The finding that any type of abuse is independently significantly associated with PTSD converges with data from youth in the general population (Widom, 1999). The lifetime prevalence of PTSD among any abused youth in the present study was 20%, similar to the PTSD rates (20%–35%) reported in BP adults with history of childhood physical or sexual

abuse (Goldberg and Garno, 2005; Leverich et al., 2002). A recent study reported high rates of PTSD (38%) mainly due to sexual abuse in a small sample of adolescents with BP when compared with adolescents with major depressive disorder (14%) and non-affective controls (4%) (Dilsaver et al., 2007). The prevalence of sexual abuse in this study was not reported precluding comparisons with our results.

The finding that psychosis is independently significantly associated with any abuse also converges with previous findings from the general population (Janssen et al., 2004) and from subjects with schizophrenia (Read et al., 2005). Similar to our results, recent findings from the National Comorbidity Survey indicate a significant independent association between physical abuse and psychosis (OR=2.7) (Shevlin et al., 2007). The odds ratio reported in that study were similar in magnitude to those found in the association between physical abuse and psychosis in the COBY sample. However, findings on the association between abuse and psychosis in adults with BP are mixed (Brown et al., 2005; Garno et al., 2005; Hammersley et al., 2003; Leverich et al., 2002).

As has been suggested in the “traumagenic neurodevelopmental model”, (Read et al., 2001) early trauma may negatively affect the developing brain. Specifically, hyper-responsivity of the hypothalamic-pituitary-adrenal (HPA) axis may result in altered dopaminergic and serotonergic system function. This model may explain why bipolar children who have been abused are more likely to present psychotic symptoms as compared to those who have not been abused.

Consistent with findings from community and clinical studies (Livingston, 1987; Luntz and Widom, 1994; Widom, 1989) comorbid conduct disorder was associated with history of abuse in BP youth. Future prospective studies from the COBY sample will be able to inform about the direction of this association.

Studies have shown that sexual abuse appears to mediate the transmission of suicide attempt in the offspring of mood disordered suicide attempters (Brent et al., 2002). Also substance abuse has been associated with sexual and physical abuse (Leverich et al., 2002). However, after adjusting for between-group differences in demographic and clinical factors, we did not find significant differences in the rates of suicide attempts and substance abuse. However, it is important to note that the average age of our sample was around 12 and consequently many subjects have not yet passed the timeframe for increased risk of substance abuse or suicidal attempts. Prospective follow up of the COBY sample will also indicate whether or not abuse is a predictor of suicide attempts and/or substance abuse.

Finally, bipolar youth with history of any abuse were more likely to have family history of mood disorders, substance abuse, and conduct disorder in their first-degree relatives as compared with the non-abused group. After logistic regression analysis family history of mood disorder in first-degree relatives remained associated with history of any abuse. These results are comparable to those reported in pediatric community and clinical samples (Chaffin et al., 1996; Kaufman et al., 1998; Kim-Cohen et al., 2006). Furthermore, our results concur with those reported in the SFBN among adults with BP finding a higher family history of mood disorder, substance abuse, and other non-affective disorders in first-degree relatives in abused BP subjects (Leverich et al., 2002).

To summarize, present findings highlight the need for careful assessment of abuse in youth with bipolar spectrum disorders, as well as the importance of early identification and intervention and preventative measures for those at risk (Post and Leverich, 2006). Prospective studies are necessary to fully understand the impact that abuse may have in the course and outcome of early-onset BP. These studies will also help to identify risk factors or paths of vulnerability for abuse among BP youth.



## References

- Axelson D, Birmaher B, Strober M, Gill MK, Valeri S, Chiappetta L, Ryan N, Leonard H, Hunt J, Iyengar S, Bridge J, Keller M. Phenomenology of children and adolescents with bipolar spectrum disorders. *Arch Gen Psychiatry* 2006;63:1139–1148. [PubMed: 17015816]
- Birmaher B, Axelson D, Strober M, Gill MK, Valeri S, Chiappetta L, Ryan N, Leonard H, Hunt J, Iyengar S, Keller M. Clinical course of children and adolescents with bipolar spectrum disorders. *Arch Gen Psychiatry* 2006;63:175–183. [PubMed: 16461861]
- Brent DA, Oquendo M, Birmaher B, Greenhill L, Kolko D, Stanley B, Zelazny J, Brodsky B, Bridge J, Ellis S, Salazar JO, Mann JJ. Familial pathways to early-onset suicide attempt: risk for suicidal behavior in offspring of mood-disordered suicide attempters. *Arch Gen Psychiatry* 2002;59:801–807. [PubMed: 12215079]
- Brown GR, McBride L, Bauer MS, Williford WO. Impact of childhood abuse on the course of bipolar disorder: a replication study in U.S. veterans. *J Affect Disord* 2005;89:57–67. [PubMed: 16213029]
- Chaffin M, Kelleher K, Hollenberg J. Onset of physical abuse and neglect: psychiatric, substance abuse, and social risk factors from prospective community data. *Child Abuse Negl* 1996;20:191–203. [PubMed: 8734549]
- Della Femina D, Yeager CA, Lewis DO. Child abuse: adolescent records vs. adult recall. *Child Abuse Negl* 1990;14:227–231. [PubMed: 2340430]
- Diaz A, Simantov E, Rickert VI. Effect of abuse on health: results of a national survey. *Arch Pediatr Adolesc Med* 2002;156:811–817. [PubMed: 12144373]
- Dilsaver SC, Benazzi F, Akiskal HS, Akiskal KK. Post-traumatic stress disorder among adolescents with bipolar disorder and its relationship to suicidality. *Bipolar Disord* 2007;9:649–655. [PubMed: 17845281]
- Fergusson DM, Horwood LJ, Woodward LJ. The stability of child abuse reports: a longitudinal study of the reporting behaviour of young adults. *Psychol Med* 2000;30:529–544. [PubMed: 10883709]
- Ford JD, Racusin R, Ellis CG, Daviss WB, Reiser J, Fleischer A, Thomas J. Child maltreatment, other trauma exposure, and posttraumatic symptomatology among children with oppositional defiant and attention deficit hyperactivity disorders. *Child Maltreat* 2000;5:205–217. [PubMed: 11232267]
- Garno JL, Goldberg JF, Ramirez PM, Ritzler BA. Impact of childhood abuse on the clinical course of bipolar disorder. *Br J Psychiatry* 2005;186:121–125. [PubMed: 15684234]
- Goldberg JF, Garno JL. Development of posttraumatic stress disorder in adult bipolar patients with histories of severe childhood abuse. *J Psychiatr Res* 2005;39:595–601. [PubMed: 16019032]
- Hammersley P, Dias A, Todd G, Bowen-Jones K, Reilly B, Bentall RP. Childhood trauma and hallucinations in bipolar affective disorder: preliminary investigation. *Br J Psychiatry* 2003;182:543–547. [PubMed: 12777347]
- Hollingshead, AB. Four-factor index of social status. New Haven, Connecticut: Yale University Sociology Department; 1975.
- Hussey JM, Chang JJ, Kotch JB. Child maltreatment in the United States: prevalence, risk factors, and adolescent health consequences. *Pediatrics* 2006;118:933–942. [PubMed: 16950983]
- Janssen I, Krabbendam L, Bak M, Hanssen M, Vollebergh W, de Graaf R, van Os J. Childhood abuse as a risk factor for psychotic experiences. *Acta Psychiatr Scand* 2004;109:38–45. [PubMed: 14674957]
- Kaufman J, Birmaher B, Brent D, Dahl R, Bridge J, Ryan ND. Psychopathology in the relatives of depressed-abused children. *Child Abuse Negl* 1998;22:171–181. [PubMed: 9589172]
- Kaufman J, Birmaher B, Brent D, Rao U, Flynn C, Moreci P, Williamson D, Ryan N. Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL): initial reliability and validity data. *J Am Acad Child Adolesc Psychiatry* 1997;36:980–988. [PubMed: 9204677]
- Kim-Cohen J, Caspi A, Rutter M, Tomas MP, Moffitt TE. The caregiving environments provided to children by depressed mothers with or without an antisocial history. *Am J Psychiatry* 2006;163:1009–1018. [PubMed: 16741201]
- Leverich GS, McElroy SL, Suppes T, Keck PE Jr, Denicoff KD, Nolen WA, Altschuler LL, Rush AJ, Kupka R, Frye MA, Autio KA, Post RM. Early physical and sexual abuse associated with an adverse course of bipolar illness. *Biol Psychiatry* 2002;51:288–297. [PubMed: 11958779]

- Livingston R. Sexually and physically abused children. *J Am Acad Child Adolesc Psychiatry* 1987;26:413–415. [PubMed: 3597298]
- Luntz BK, Widom CS. Antisocial personality disorder in abused and neglected children grown up. *Am J Psychiatry* 1994;151:670–674. [PubMed: 8166307]
- May-Chahal C, Cawson P. Measuring child maltreatment in the United Kingdom: a study of the prevalence of child abuse and neglect. *Child Abuse Negl* 2005;29:969–984. [PubMed: 16165212]
- Post RM, Leverich GS. The role of psychosocial stress in the onset and progression of bipolar disorder and its comorbidities: the need for earlier and alternative modes of therapeutic intervention. *Dev Psychopathol* 2006;18:1181–1211. [PubMed: 17064434]
- Read J, Perry BD, Moskowitz A, Connolly J. The contribution of early traumatic events to schizophrenia in some patients: a traumagenic neurodevelopmental model. *Psychiatry* 2001;64:319–345. [PubMed: 11822210]
- Read J, van Os J, Morrison AP, Ross CA. Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatr Scand* 2005;112:330–350. [PubMed: 16223421]
- Shevlin M, Dorahy MJ, Adamson G. Trauma and psychosis: an analysis of the National Comorbidity Survey. *Am J Psychiatry* 2007;164:166–169. [PubMed: 17202562]
- Weissman MM, Wickramaratne P, Adams P, Wolk S, Verdelli H, Olfson M. Brief screening for family psychiatric history: the family history screen. *Arch Gen Psychiatry* 2000;57:675–682. [PubMed: 10891038]
- Widom CS. The cycle of violence. *Science* 1989;244:160–166. [PubMed: 2704995]
- Widom CS. Posttraumatic stress disorder in abused and neglected children grown up. *Am J Psychiatry* 1999;156:1223–1229. [PubMed: 10450264]
- Widom CS, Raphael KG, DuMont KA. The case for prospective longitudinal studies in child maltreatment research: commentary on Dube, Williamson, Thompson, Felitti, and Anda (2004). *Child Abuse Negl* 2004;28:715–722. [PubMed: 15261466]

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**Table 1**  
Demographic, clinical characteristics and family history of probands.

	Any Physical or Sexual abuse N=92	Non-abuse N=354	stat	DF	P
<b>Demographics</b>					
Age	13.4±3.1	12.5±3.3	t=2.3	444	0.02
Sex (%Female)	45 (50)	164 (48.9)	$\chi^2=0.2$	1	0.6
Race (% Caucasian)	70 (76.1)	293 (82.8)	$\chi^2=2.1$	1	0.1
SES	3.2±1.1	3.5±1.2	t=1.9	444	0.05
Intact family	18 (19.6)	167 (47.2)	$\chi^2=22.9$	1	<0.001
<b>Clinical Characteristics</b>					
BP onset age	9±3.8	9.3±4	t=0.6	443	0.6
Duration of the illness	5.7±3.2	4.1±2.8	t=4.8	444	<0.001
BP diagnosis					
BP I	62 (67.4)	198 (55.9)			
BP II	5 (5.4)	27 (7.6)	FET	2	0.2
BP NOS	25 (27.2)	129 (36.4)			
Psychosis	36 (39.1)	86 (24.3)	$\chi^2=8.1$	1	0.004
Suicide attempt	39 (42.4)	95 (26.8)	$\chi^2=8.4$	1	0.004
Suicidal ideation	76 (82.6)	261 (73.7)	$\chi^2=3.1$	1	0.08
Self injury Behavior	42 (45.7)	125 (35.9)	$\chi^2=2.9$	1	0.08
Psychiatric Hospitalization	55 (59.8)	175 (49.6)	$\chi^2=3.05$	1	0.08
ADHD	56 (60.9)	212 (59.9)	$\chi^2=0.03$	1	0.9
ODD	40 (43.5)	136 (38.4)	$\chi^2=0.78$	1	0.4
Anxiety Disorders	43 (46.7)	129 (36.4)	$\chi^2=3.3$	1	0.07
PTSD	19 (20.7)	8 (2.3)	$\chi^2=43.4$	1	<0.001
Substance abuse	19 (20.7)	21 (5.9)	$\chi^2=19.4$	1	<0.001
Conduct Disorder	24 (26.1)	32 (9)	$\chi^2=19.32$	1	<0.001
<b>1<sup>st</sup> degree relatives</b>					
Mood disorder	71 (83.5)	237 (70.1)	$\chi^2=6.2$	1	0.01
Anxiety	46 (54.1)	168 (49.7)	$\chi^2=0.53$	1	0.5
Conduct disorder	30 (35.3)	52 (15.4)	$\chi^2=17.2$	1	<0.001
Substance abuse	37 (43.5)	90 (26.6)	$\chi^2=11.7$	1	0.008

	Any Physical or Sexual abuse N=92	Non-abuse N=354	stat	DF	p
Schizophrenia	3 (3.5)	2 (0.6)	FET	1	0.06
Suicide attempt/completion	23 (27.1)	71 (21)	$\chi^2=1.44$	1	0.2
<b>2<sup>nd</sup> degree relatives</b>	<b>n=82</b>	<b>n=336</b>			
Mood disorder	55 (67.1)	243 (72.3)	$\chi^2=0.9$	1	0.3
Anxiety	33 (40.2)	162 (48.2)	$\chi^2=1.7$	1	0.2
Conduct disorder	19 (23.2)	76 (22.6)	$\chi^2=0.01$	1	0.9
Substance Abuse	37 (45.1)	157 (46.7)	$\chi^2=0.07$	1	0.8
Schizophrenia	4 (4.9)	17 (5.1)	FET	1	1
Suicide attempt/completion	24 (29.3)	108 (32.1)	$\chi^2=0.25$	1	0.6

FET= Fisher exact Test.

**Table 2**  
Adjusted Odds ratio of the variables associated with history of abuse in children and adolescents with bipolar disorder.

Variable	OR	95% CI	Wald $\chi^2$	df	p
Age	1.15	1.03–1.3	5.9	1	0.015
Duration of illness	1.12	1.03–1.2	6.27	1	0.01
Non-Intact Family	2.6	1.4–5	8.68	1	0.003
PTSD	8.8	3.1–25.1	16.72	1	<0.001
Conduct disorder	2.3	1.1–4.8	4.5	1	0.03
Psychosis	2.1	1.2–3.6	6.25	1	0.01
1 <sup>st</sup> degree relative with mood disorder	2.2	1.1–4.4	4.41	1	0.04
Non-intact Family $\times$ age	1.3	1.1–1.6	9.23	1	0.002

Current age, SES and duration of the illness entered as covariates. Goodness of fit test (HL  $\chi^2=4.19$ ,  $p=0.84$ )

**Table 3**

Specific association among physical, sexual or combined abuse and variables associated with abuse.

Variable	Adjusted OR (95% CI)		
	Physical Abuse N=40	Sexual Abuse N=30	Both types of abuse N=22
Age	1.1 <sup>d</sup> (0.9–1.2)	0.9 <sup>d</sup> (0.8–1.04)	1.3 <sup>c</sup> (1.1–1.7)
Duration of the illness	1.1 <sup>c</sup> (1–1.3)	1.1 <sup>d</sup> (0.9–1.3)	1.2 <sup>c</sup> (1.04–1.4)
Non-intact Family	4.2 <sup>b</sup> (1.5–11.7)	1.3 <sup>d</sup> (0.6–3.1)	7.1 <sup>c</sup> (1.5–33.9)
PTSD	10.4 <sup>a</sup> (3.2–34.4)	7.8 <sup>b</sup> (2–30.4)	5.1 <sup>c</sup> (1.2–22.4)
Conduct disorder	1.7 <sup>d</sup> (0.6–4.9)	2.1 <sup>d</sup> (0.7–6.2)	3.8 <sup>c</sup> (1.3–11.5)
Psychosis	2.3 <sup>c</sup> (1.1–5)	1.9 <sup>d</sup> (0.8–4.2)	2.1 <sup>d</sup> (0.7–5.9)
1 <sup>st</sup> degree relative with mood disorder	3.4 <sup>c</sup> (1.1–10.6)	2 <sup>d</sup> (0.7–5.5)	1.4 <sup>d</sup> (0.4–4.4)

<sup>a</sup> p < 0.001.<sup>b</sup> p < 0.01.<sup>c</sup> p < 0.05.<sup>d</sup> Odds ratio not significantly different from 1 (p > 0.05).