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Sexual Risk Behavior Among Youth With Bipolar Disorder: Identifying Demographic and Clinical Risk Factors

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Abstract

Objective—This study aims to document rates of sexual activity among youth with bipolar spectrum disorder (BD), and to examine demographic and clinical factors associated with first sexual activity and sexual risk behavior over follow-up.

Method—The sample was drawn from the Course and Outcome of Bipolar Youth (COBY) study of 413 youth ages 7–17 at baseline who met criteria for BD via the Schedule for Affective Disorders and Schizophrenia for School-Aged Children (K-SADS). Psychiatric symptoms over follow-up were assessed using the Adolescent Longitudinal Interview Follow-Up Evaluation (ALIFE). Sexual behavior and level of sexual risk (e.g., unprotected sex, multiple partners, and/or partners with known sexually transmitted infections [STIs]) were assessed by trained evaluators using the ALIFE Psychosocial Functioning Scale (PSF). Analyses were conducted in relation to first sexual behavior over follow-up, and then to subsequent sexual behaviors, for a mean 9.7 (SD=3.2) years.

Results—Sexually active COBY youth (n=292/413; 71%) were more likely female, using substances, and not living with both parents. Consistent with findings among healthy youth, earlier first sexual activity in the sample was significantly associated with low socioeconomic status

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(SES), female sex, comorbid disruptive behavior disorder, and substance use. As with healthy youth, sexual risk behavior over follow-up was significantly associated with Non-Caucasian race, low SES, substance use, and history of sexual abuse. Among those COBY youth who were sexually active, 11% reported sexual assault or abuse, 36% reported becoming pregnant (or significant other becoming pregnant), and 15% reported having at least one abortion (or significant other having an abortion) over follow-up. Hypomanic symptoms over follow-up were temporally associated with greatest risk for sexual risk behavior.

Conclusion—Demographic and clinical factors may help identify youth with BD at significantly greatest risk for sexual activity and sexual risk behavior. Attending to sexual risk behaviors in this population is warranted.

Keywords

bipolar disorder; sexual risk behavior; sexual activity

INTRODUCTION

Given that nearly half of US high school students report being sexually active,[1] sexual risk behaviors including lack of contraceptive use, acquisition of sexually transmitted infections (STIs), and unplanned pregnancies and abortions among youth are of great public health import.

One subgroup of youth who engage in risky sexual behaviors at elevated rates is youth with psychiatric disorders, particularly those with externalizing disorders.[2,3] Youth in psychiatric care are as much as three times more likely to report early sexual debut and risky sex (multiple partners and inconsistent condom use), and have four times greater risk of contracting STIs.[4] Females in psychiatric care report early pregnancy at a rate three times higher than healthy youth.[5] While prior cross-sectional studies implicate mood, anxiety, disruptive, personality, and substance use disorders specifically in sexual risk behaviors,[3,6,7] little is known about the temporal association between specific psychiatric disorders among youth and sexual risk behavior. Greater understanding of this association could inform prevention strategies for those at greatest risk.

Youth with bipolar spectrum disorder (BD) may be especially vulnerable considering both manic and depressive episodes are associated with sexual risk behavior. Youth in psychiatric care who display subthreshold hypomania symptoms are more likely than youth with other psychiatric disorders to be sexually active, engage in unprotected sex, have two or more sexual partners, and test positive for an STI.[8,9] Furthermore, specific symptoms of mania – namely hypersexuality and impulsivity – are, in general, associated with greater sexual risk among youth.[4,9,10] Depressive symptoms among youth are associated with earlier sexual debut,[11,12] which is in turn linked to greater risk for STIs, and unplanned pregnancy.[13,14] Studies among adults yield similar conclusions: those with BD are more likely to contract STIs,[15] and report more unplanned pregnancies/abortions in their lifetime.[16]

Yet prior studies are predominantly retrospective and have not examined the temporal association between sexual risk behaviors and mood symptoms. Prospectively examining the

temporal association of mood symptoms and sexual risk behavior among youth with BD is essential to identifying mood-dependent risk, and informing effective prevention and intervention approaches for this population.

For the first time in the literature, the current study aims to prospectively document sexual activity among youths with BD and explore sexual risk behavior (e.g., unprotected sex, multiple partners, non-monogamous partners, and partners with known STIs) and its association with demographic and clinical risk factors. Using data from the longitudinal, multi-site Course and Outcome of Bipolar Youth (COBY) study, we examined sexual activity and risk behavior, from first sexual activity in the study through follow-up (mean 9.7 years, SD=3.2; median=10.7). We hypothesized: 1) Age to first sexual activity and sexual risk behavior over follow-up would be associated with clinical (e.g., BD subtype, age of onset) and demographic factors (e.g., sex, race); and 2) Over follow-up, sexual risk behavior would be temporally associated with hypomanic and depressive symptoms.

METHOD

A detailed description of the methodology employed in the COBY study has been described previously.[17,18] The current analyses include 413 youth ages 7–17 who met criteria at baseline for *DSM-IV* bipolar I (BP-I) or -II, or operationally defined not otherwise specified (BP-NOS)[18] via the Kiddie Schedule for Affective Disorders and Schizophrenia for School-Aged Children – Present and Lifetime Version (K-SADS-PL).[19] Participants were primarily recruited from outpatient clinics (68%) at the three study sites and were enrolled independent of current mood state or treatment status. Youths with schizophrenia, IQ<70, autism, and mood disorders secondary to substances, medications, or medical conditions were excluded.

Procedure

Each study site's institutional review board (IRB) approved the study prior to enrollment of any participant, and youths and their parents/primary caretakers provided written informed assent and consent after receiving a complete description of the study procedures.

Diagnostic Evaluation—At baseline, youths and parents/primary caretakers were interviewed for current and lifetime psychiatric disorders using the K-SADS-PL[19]; the Kiddie Mania Rating Scale (K-MRS)[20] and depression section of the K-SADS-P[21] were utilized to yield additional information on mood symptom severity. Research staff trained to reliability on the diagnostic evaluations conducted all assessments; child psychiatrists or psychologists confirmed diagnoses. The overall KSADS-PL kappa coefficients for psychiatric disorders were ≥0.8; intraclass correlation coefficients (ICCs) for the K-MRS and the KSADS-P depression section were ≥0.95.

Illness Severity—Changes in psychiatric symptoms over follow-up were assessed retrospectively using the Adolescent Longitudinal Interview Follow-Up Evaluation (ALIFE), [22] which yields excellent reliability and external validity.[23,24] Week-by-week symptom ratings were attained using this instrument's Psychiatric Status Rating Scales (PSR), which use numeric values operationally linked to *DSM-IV* criteria. Interviewers gathered

information about *DSM-IV* criteria, rated severity of any comorbid diagnoses for which participants previously met full criteria (where 1=no symptoms, 2=subthreshold *DSM-IV* symptoms; 3=full threshold *DSM-IV* criteria), and rated any new diagnoses for which participants met threshold criteria. Consensus scores incorporated all available data from youths and parents; in the event of conflicting information, summary ratings were guided by clinical judgment. PSR consensus ratings were confirmed by a child psychiatrist/psychologist subsequent to the interview. ICCs for ALIFE syndromal/subsyndromal mood disorders were ≥0.75.

Medications—Weekly ratings of psychotropic drugs prescribed, dosing, and adherence were obtained via the ALIFE Psychotropic/Auxiliary Drugs/Electroconvulsive Therapy Treatment Schedule.

Demographics—Socioeconomic status (SES) was ascertained using the Hollingshead four-factor criteria.[25] Pubertal status was assessed using the Self-Rating Scale for Pubertal Development[26]; this scale was completed by parents for children age 7–9, and thereafter by children themselves (with assistance if needed) at all follow-ups.

Sexual Functioning—Monthly sexual functioning ratings were collected using the ALIFE Psychosocial Functioning Scale (PSF), yielding the following domains: sexual orientation (0=No information/unsure; 1=Heterosexual; 2=Homosexual; 3=Bisexual), frequency of sexual activities (1=At least three times weekly; 2=At least once a week; 3=At least once a month; 4=Never [i.e., not at all in the past month]; 5=No information), number of partners (1=One; 2=More than one; 3=No information/Not applicable), and level of sexual risk (1=Practices safe sex: Uses protection against STIs and unwanted pregnancy; 2=Engages in moderate risk sexual behavior: Any unprotected sex without a desire to conceive or other moderate risk sexual behavior, e.g., unprotected sex with a partner presumed, but not confirmed, to be monogamous; 3=Engages in high risk sexual behavior: Includes any unprotected sex with a monogamous partner or other high risk behavior, e.g., unprotected sex with a monogamous partner known to have an STI; 4=No information). Evaluators were instructed to take into account all potentially risky sexual behaviors when providing their “level of sexual risk” rating, and all ratings were reviewed with an attending psychiatrist/psychologist to yield a consensus score. Sexual activity ratings were dichotomized each month over follow-up (i.e., sexually active [score ≤3] or not sexually active [score of 4 or 5]). ICCs for the PSF were ≥0.94.

Sexual Trauma—Past history of sexual trauma/abuse was assessed at study intake, as well at every follow-up, via the Traumatic Events form derived from the K-SADS-PL. The measure also yields data on timing of the event (i.e., follow-up month), enabling temporal specificity over follow-up.

Pregnancy and Abortion—Items documenting pregnancy and abortion in the year preceding follow-up were extracted from the self-report Life Events Checklist (LEC, for participants <18)[27] and Life Experiences Survey (LES, for participants >18),[28] completed at each assessment.

Family Environment—Family environment over the past 3 months was assessed using the parent and child Family Adaptability and Cohesion Scale-II self-reports (FACES-II)[29] and the parent and child Conflict Behavior Questionnaire self-reports (CBQ).[30]

Data Analysis

First Sexual Activity Over Follow-Up—We used Cox proportional hazard models to analyze age continuously (i.e., month of follow-up) of first sexual activity in the study, controlling for age at intake. From this model, the demographic variables theorized to potentially confound the effects of clinical predictor variables on outcome (i.e., sex, race, SES, age of BD onset, BD subtype, and history of sexual abuse) were first analyzed independently; we controlled for those significant at $p<.10$ in subsequent models (i.e., only sex, SES, and history of sexual abuse). We fit a single Cox regression model to analyze the effects of clinician-rated presence of threshold comorbid disorder via the PSR (specifically attention-deficit/hyperactivity disorder [ADHD], disruptive behavior disorder [DBD], anxiety, substance use disorder [SUD], and nicotine dependence) since last assessment on age of first sexual activity; as such, ORs for each comorbid condition controlled for presence of other comorbid conditions. Similarly, we used separate Cox regression models to analyze the effect of self-/parent-rated family functioning (i.e., CBQ and FACES) on age of first sexual activity.

Sexual Risk—Proportional-odds cumulative logistic regression models were used to model level of sexual risk over follow-up, beginning with the first month the participant endorsed sexual activity. All models were estimated via the generalized estimating equations (GEE) method.[31] We first analyzed the variables theorized to confound the association of predictor variables on outcome (i.e., sex, race, SES, age of BD onset, BD subtype, history of sexual abuse, and sexual orientation) independently, controlling for age at intake; we controlled for those that were significant ($p<.1$; i.e., race, SES, and history of sexual abuse) in all subsequent models. We fit a single proportional odds cumulative logistic regression model associating threshold comorbid disorders (ADHD, DBD, anxiety, SUD, and nicotine dependence) and level of sexual risk, controlling for month of follow-up. Because the PSF scores yield only monthly ratings, interpretation of any temporal relationship between symptomatology and sexual risk was limited to this timeframe. Therefore, we examined the association of comorbid disorders in the prior month with sexual risk behavior in the month following.

We used PSR scores to analyze each participant's predominant subsyndromal mood state (i.e., depressed, manic, well, mixed) over each month of follow-up. For example, a participant who was predominantly (greatest percentage of weeks) asymptomatic in a particular month was categorized as "well" for that month. If mood symptoms were equally present during the month (e.g., 2 weeks with hypomanic and 2 weeks with depressive symptoms), the predominant symptoms during the last week of the month (the most temporally proximal to the month in which sexual risk was measured) was used to categorize the month. Weeks were labeled "mixed" when both mania and depression were rated at or above subthreshold levels during the same week. We examined mood state within a previous month in relation to sexual risk in the month following. We generated a single

regression model to make pairwise comparisons of predominant mood state with level of sexual risk, controlling for potential confounding variables, month of follow-up, and use of psychotropic medication (due to potential for sexual side effects). We used this same method to examine for association between sexual assault over follow-up and mood state.

We then used separate regression models to analyze the effect of family functioning (CBQ and FACES) on level of sexual risk, also controlling for potential confounding variables, month of follow-up, and use of psychotropic medication.

RESULTS

Demographics/Participant Illness Characteristics

The sample includes 413 youth, on average 12.6 years (SD=3.3) at baseline; 42% lived with both biological parents. Participants were middle class (mean SES=3.4, SD=1.2) and 82% Caucasian. At baseline, 59% (n=244) met criteria for BP-I, 7% (n=28) for BP-II, and 34% (n=141) for BP-NOS[18]; the average age of illness onset was 9.2 years (SD=4.1). At baseline, participants met criteria for a mean of 1.9 (SD=1.3) additional current Axis I diagnoses via the ADS.

Over follow-up, participants were interviewed a mean of 11.9 times (SD=6.5), on average every 0.76 years (SD=0.5) for a mean 9.7 years (SD=3.2). The mean time between follow-up assessments was 9.1 months (SD=6.2).

Sexual Activity—292 (71%) participants were sexually active over follow-up. They were older (and later Tanner stage), more likely to be female, less likely to live with both biological parents, older at BD onset, more likely to endorse past sexual abuse and SUD over the follow-up period, and had longer mean follow-up time than non-sexually active participants (Table 1, ps<.05).

Most sexually active participants (n=207, 71%) reported sexual activity “at least three times weekly” in one or more months over follow-up; 24% (n=70) reported sexual activity “at least once per week,” and 5% (n=15) “at least once per month.” More than half (n=155, 54%) had >1 sexual partner in at least one month of follow-up. Mean age of first sexual activity in the study was 17.3 (SD=2.2; range 12.4–23.6; females 17.0 [SD=2.1], males 17.6 [SD=2.2]) years; during this first month, participants identified as heterosexual (84%, n=245), homosexual (3%, n=10), bisexual (11%, n=31), or provided no information about their sexual orientation (2%, n=5). Models of demographic, clinical, and family environment predictors can be found in Table 2.

Association With Demographic Variables—Female sex and lower SES were associated with younger age of first sexual activity over follow-up (ps<.1), while race was not (p>.05).

Association With Clinical Variables—Age of BD onset, BD subtype, and history of sexual abuse were not associated with age of first sexual activity over follow-up (ps>.05). Controlling for presence of other comorbid disorders and demographic confounders,

presence of DBD (HR=1.349, p=.0455), SUD (HR=2.13, p=.0003), and nicotine dependence (HR=2.396, p<.0001) were each independently associated with earlier first sexual activity over follow-up, whereas symptoms of ADHD and anxiety were not (both ps>.05). Only SUD and nicotine dependence remained associated with earlier first sexual activity after also controlling for the child's use of any psychotropic medication since last assessment (ps<.05).

Association With Family Environment—Better family functioning (by both parent and child report) was associated with lower risk of sexual activity (ps<.05). FACES Adaptability and Cohesion subscales were both significant (ps<.05), whereas overall (and subscale) CBQ scores were not. These results did not change after controlling for the child's use of psychotropic medication since last follow-up visit.

Sexual Risk—Most sexually active participants (n=192, 66%) reported engaging in sexual risk behavior (i.e., PSF sexual risk subscore ≥2) in at least one month over follow-up (28% [n=82] high-risk; 38% [n=110] moderate risk).

Association With Demographic Variables—Non-Caucasian race and lower SES were associated with greater sexual risk (ps<.05), while sex was not.

Association With Clinical Variables—History of sexual abuse was associated with level of sexual risk (OR=1.51, p=.0082), while age of BD onset and BD subtype were not. After controlling for threshold comorbid disorders, demographic confounders, and follow-up month, only the presence of threshold SUD symptoms in the previous month remained associated with level of sexual risk (OR=1.78, p<.0001). After also controlling for use psychotropic medication during the previous month, SUD remained associated with level of sexual risk (p<.05). In sub-analyses dividing SUD into alcohol versus non-alcohol, we found only alcohol abuse/dependence was associated with level of sexual risk (OR=1.87, p<.0001).

Association With Mood State—Participants with predominantly hypomanic symptoms during the previous month were more likely to endorse sexual risk behavior than participants who were predominantly depressed or well during the previous month (Table 3; ps<.01). While sexual risk was more likely to occur after mixed versus depressed months (OR=1.55, p=.009), there was no difference following predominantly depressed versus well months (OR=0.87, p=.2121), predominantly mixed versus well months (OR=1.36, p=.0732), or predominantly mixed versus hypomanic months (OR=1.0, p=.9956). The results did not change after controlling for psychotropic medication use during the previous month. There was no significant association (p=.86) between sexual assault over follow-up and presence of any manic symptoms during the following month.

Association With Family Environment—Better family functioning (by both parent and child report) was associated with lower level of sexual risk (ps<.05). Both the FACES Adaptability (OR=0.96, p=.0003) and Cohesion subscores (OR=0.98, p=.0016) were associated with lower level of sexual risk. These results did not change after controlling for psychotropic medication use during the previous month.

Sexual Trauma—Over follow-up, 11% (n=33) of sexually active participants reported one or more sexual assault/abuse events.

Pregnancies and Abortions—Over follow-up, 36% of sexually active participants (n=106) reported becoming pregnant (or their girlfriend/significant other becoming pregnant) at least once. 15% of participants (or their girlfriend/significant other) (n=45) reported having at least one abortion.

DISCUSSION

To our knowledge, this is the first study to longitudinally assess sexual behavior in a sample of youth with BD and examine its temporal association with mood symptoms. As hypothesized, among COBY youth, first sexual activity over follow-up is associated with demographic (female, low SES) and clinical (comorbid DBD, SUD, and nicotine dependence) variables, similar to findings among healthy youth.[11,32–35] Sexually active participants are more likely older and at later pubertal stages, female, not living with both biological parents, older at BD onset, using substances, and more likely to have a history of sexual abuse than non-sexually active youth. Indeed, sexual risk behavior is prevalent in the sample, with two-thirds of sexually active youth with BD reporting sexual activities above minimal risk, and one-third reporting pregnancy. Among COBY youth, sexual risk behavior is associated with non-Caucasian race, low SES, history of sexual abuse, and symptoms of SUD, consistent with the normative literature.[35–38] As predicted, mood symptoms, and specifically symptoms of hypomania, temporally precede sexual risk behavior.

Females with BD reported younger age at first sexual activity in the study than males with BD. This result directly contrasts with normative data gathered through the Youth Risk Behavior Survey (YRBS), in which males reported earlier sexual debut.[39] The discrepancy may be explained by limited racial and ethnic diversity within COBY; YRBS data suggest African American and Hispanic youth report a younger age of first sexual activity than youth of other races.[39] We found no difference between males and females in level of sexual risk, though several studies indicate females are likely to concede to their partners in important sexual decisions,[40,41] and psychiatric symptoms such as depression and mania/hypomania may further impair judgment.[42] Delineation of specific sexual risk behaviors (e.g., condom use) may yield more conclusive results regarding sex differences in risk behaviors among youth with BD.

Our analyses suggest hypomanic symptoms are associated with greatest risk for sexual risk behavior (greater than depressed, mixed, and euthymic) within this population. Previous studies have established an association of hypomanic symptoms with sexual risk behavior among youth,[4,9,10] but to our knowledge, this is the first to identify risk specifically associated with hypomanic symptoms immediately preceding sexual risk behavior. The current study therefore provides insight into vulnerable periods for sexual risk over the course of BD illness among youth.

In keeping with the literature,[43] we found that history of sexual abuse was prevalent (19%; n=55) at intake and was associated with earlier sexual activity over follow-up, and higher

level of sexual risk. Traumatic sexual abuse/assault events continued over follow-up (11%, n=33). Of note, a prior study documented an association between mood symptoms and victimization by peers among adolescents receiving psychiatric care, although this was not specific to youth with a BD diagnosis.[44] As such, documentation of sexual abuse may help clinicians identify youth at risk for later sexual risk behavior and victimization.

Given the high rate of comorbidity in pediatric BD, we examined the association between common comorbidities (ADHD, DBD, anxiety, SUD, nicotine dependence) and sexual risk behavior. Current literature has associated symptoms of ADHD with sexual risk behavior,[10] yet these symptoms were not associated with age at first sexual activity or level of sexual risk in our study. Given overlap in symptoms between ADHD and BD, it is possible that in the presence of early-onset BD symptoms, the variance accounted for by comorbid ADHD in predicting sexual risk behavior is less significant. We found no association of anxiety symptoms and first sexual activity or level of sexual risk over follow-up, consistent with prior findings.[4] Symptoms of DBD were not associated with sexual risk in our sample, yet comorbid DBD symptoms were a strong predictor of first sexual activity over follow-up, as has been demonstrated previously.[33] Therefore, youth with BD and concurrent DBD may be at particularly elevated risk for earlier sexual activity. As in prior studies,[4,9,45] SUD was strongly associated with both first sexual activity over follow-up and level of sexual risk. We hypothesize that the strong association of comorbid SUD and sexual risk behavior may be linked to impaired decision making abilities under the influence, and/or lack of parental monitoring in the environment in which substances are used. SUD should be closely monitored as a potent predictor of sexual risk behavior.

Our study highlights the potential protective function of family environment against sexual risk behaviors. In families reporting high cohesion and adaptability, youth are less likely to participate in risky sexual behavior. Clinicians may promote the protective potential of family relationships and identify patients for whom more targeted intervention may be required.

We identify several limitations of the current study. Ratings of sexual functioning are retrospective and therefore subject to errors in estimation and recollection. For this reason, ratings of sexual behavior, number of partners, or sexual frequency may not accurately estimate actual sexual risk within the sample. Furthermore, sexual behavior was assessed via clinical interview, which may result in under-reporting due to social desirability as compared with automated methods.[46] Additionally, the PSF sexual risk categories do not characterize specific sexual behaviors, so there may be variability in participants' perceived definitions of "high risk" behavior. However, assessors used specific anchors for sexual risk to standardize ratings. Future research examining sexual risk behavior in this population may consider measures specific to the sexual risk literature.

While several participants reported pregnancy/abortion over follow-up, the self-report measures used did not reliably document number of pregnancies or abortions per individual, or the age/month at which these events occurred. Further examination of the temporal association of pregnancy/abortion and mood symptoms is warranted.

The study was naturalistic, and therefore psychiatric treatment varied within the sample. While we did control for psychotropic medication usage in our analyses, we did not assess adherence to medication regimens. Thus, we cannot determine what role medication plays in sexual risk behavior in this sample. Similarly, we did not examine participation in psychotherapy to determine if such treatment may impact sexual risk behavior.

Finally, the COBY sample was recruited primarily from outpatient university centers, and was predominantly Caucasian, so generalizability of the results remains uncertain. Additionally, youth with BP-II were underrepresented in our sample, potentially limiting power to find differences between BD subtypes.

Overall, the results suggest demographic and clinical factors are associated with risk for earlier sexual activity in the study, and sexual risk behavior among youth with BD. Clinicians treating youth with BD should inquire regularly about sexual behavior. Females from low-SES families with DBD and SUD may be at elevated risk for engaging in sexual activities at a young age. Non-Caucasian youth from low SES families who also report SUD or history of sexual abuse may be at greater risk for sexual risk behavior. Patient-focused discussion of sexual behavior may aid in the prevention of more long-term repercussions such as unplanned pregnancy, or acquisition of STIs. The protective nature of strong familial relationships may also be incorporated into treatment. Furthermore, ongoing discussion of patient life goals may provide individualized motivation for practicing safer sex.

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Lay Summary

In this study, we examined rates of sexual activity and sexual risk behavior in a sample of youth diagnosed with bipolar disorder and followed through young adulthood. We found that 71% of youth in the sample were sexually active over follow-up. Among sexually active youth, we documented high rates of sexual assault (11%), pregnancy (36%), and abortion (15%) over follow-up. Periods with hypomanic symptoms were temporally associated with sexual risk behavior.

Clinical Guidance

- Clinicians treating youth with bipolar disorder should consider assessing for sexual activity and sexual risk behavior in routine clinical practice.
- Discussion of sexual behavior may include focus on prevention of unwanted outcomes that occur at elevated rates in this population, including sexual assault and unplanned pregnancy.
- Clinicians should be particularly alert to sexual risk behaviors during periods of active hypomanic symptoms for youth with bipolar disorder.

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Table 1

Sample Demographic and Clinical Characteristics at Intake and Over Follow-Up

Characteristic	Sexually Active (n=292)		Non-Sexually Active (n=121)		Test Stat	df	p-value
At intake							
	Mean	**SD**	**Mean**	**SD**	**t-stat**	**df**[a]	
Age (y)	13.5	3.1	10.5	2.7	10	253	**<.0001**
Hollingshead SES	3.4	1.2	3.4	1.3	0.1	211	.9029
Age of bipolar onset (y)	10.0	4.1	7.3	2.9	7.5	307	**<.0001**
	n	**%**	**n**	**%**	**Chi-sq**	**df**	
Sex (Female)	151	52	40	33	12	1	**.0005**
Race (Caucasian)	241	83	98	81	0.7	1	.7099
Petersen Pubertal Status[c]							
Status I	48	20	39	46	39.9	2	**<.0001**
Status II or III	58	25	31	37			
Status IV or V	132	55	14	17			
Living situation at intake (both biological parents)	118	40	56	46	0.3	1	**.0324**
BD subtype							
BP-I	179	61	65	54	5.8	2	.0546
BP-II	23	8	5	4			
BP-NOS	90	31	51	42			
Prescribed psychotropic medications	259	89	109	90	0.2	1	.6812
History of sexual abuse	41	14	5	4	8.5	1	**.0036**

Characteristic	Sexually Active (n=292)		Non-Sexually Active (n=121)		Test Stat	df	p-value
Male	17	42	2	40			
Females	24	58	3	60			
Over follow-up							
	Mean	**SD**	**Mean**	**SD**	**t-stat**	**Satterthwaite**	
Length of follow-up (y)	10.4	2.2	7.7	4.2	6.6	147	**<.0001**
	n	**%**	**n**	**%**	**Wald chi-sq**	**df**	
Comorbid axis I diagnoses (lifetime)							
Anxiety disorder	195	67	77	64	0.2	1	.6429[b]
ADHD	198	65	95	79	0.02	1	.8966[b]
DBD	183	63	78	64	2.1	1	.1473[b]
SUD	153	52	4	3	30.1	1	**<.001**[b]

Note: Boldface data reflect statistical significance at $p<.05$. ADHD = attention-deficit/hyperactivity disorder; BD = bipolar disorder; BP-I = bipolar I disorder; BP-II = bipolar II disorder; BP-NOS = bipolar disorder not otherwise specified; DBD = disruptive behavior disorder; SES = socioeconomic status; SUD = substance use disorder.

[a] Approximated using Satterthwaite method

[b] Controlling for age at end of follow-up

[c] Missing data from 91 participants

Table 2

Effect of Demographic, Clinical, and Family Functioning Variables on Sexual Activity

	First Sexual Activity Over Follow-Up[a]			Sexual Risk[b]		
Demographic Variable	**HR**	**p-value**	**95% CI**	**OR**	**p-value**	**95% CI**
Biological sex (Female)	1.68	**<.0001**	(1.31, 2.15)	1.08	.5659	(0.83, 1.41)
Race (Caucasian)	0.91	.5705	(0.66, 1.25)	0.59	**.0004**	(0.44, 0.79)
SES (Hollingshead)	0.84	**.0004**	(0.76, 0.92)	0.90	**.0116**	(0.82, 0.98)
Clinical Variable						
Age of bipolar onset	1.01	.6651	(0.97, 1.05)	1.03	.0643	(0.998, 1.06)
BD subtype		.2493[c]			.6573[c]	
History of sexual abuse	1.39	.0512	(0.99, 1.94)	1.51	**.0082**	(1.11, 2.06)
Comorbid Axis I Diagnosis						
ADHD	0.763	.052	(0.58, 1.00)	0.96	.7982	(0.72, 1.28)
DBD	1.349	**.0455**	(1.01, 1.81)	1.22	.1993	(0.90, 1.65)
Anxiety	1.151	.3185	(0.87, 1.52)	1.10	.4298	(0.87, 1.40)
SUD	2.13	**.0003**	(1.42, 3.20)	1.78	**<.0001**	(1.41, 2.24)
Nicotine dependence	2.396	**<.0001**	(1.57, 3.65)	1.05	.7011	(0.83, 1.33)
Family Functioning Variable						
CBQ Parent Total Score	1.02	.1854	(0.99, 1.05)	1.02	.1113	(0.99, 1.05)
CBQ Child Total Score	1.01	.3544	(0.98, 1.04)	1.01	.3902	(0.99, 1.03)
FACES Parent Total Score	0.98	**.0104**	(0.97, 0.996)	0.99	**.05**	(0.98, 1.00)
FACES Child Total Score	0.99	**.006**	(0.98, 0.996)	0.99	**.0069**	(0.98, 0.997)

Note: Boldface data reflect statistical significance at $p<.05$. ADHD = attention-deficit/hyperactivity disorder; BD = bipolar disorder; CBQ = Conflict Behavior Questionnaire; DBD = disruptive behavior disorder; FACES = Family Adaptability and Cohesion Scale-II; SES = socioeconomic status; SUD = substance use disorder.

[a] Individual Cox Proportional Hazard Models: covariates for models using comorbid diagnoses include biological sex, SES, and history of sexual abuse.

[b] Proportional-odds cumulative logistic regression models via the GEE method, controlling for age: covariates for models using comorbid diagnoses include race, SES, age of BD onset, and history of sexual abuse.

[c] P value from omnibus test.

Table 3

Manic/Hypomanic and Mixed Mood Symptoms Are Associated With Subsequent Sexual Risk (in the Following Month)

Predominant Mood Symptoms	OR	*p* Value[a]	95% CI for OR
Depressed vs. well	0.87	.2121	(0.71, 1.08)
Manic/hypomanic vs. well	1.36	**.0077**	(1.08, 1.70)
Mixed vs. well	1.36	.0732	(0.97, 1.89)
Manic/hypomanic vs. depressed	1.55	**.0008**	(1.20, 2.01)
Mixed vs. depressed	1.55	**.009**	(1.12, 2.16)
Mixed vs. manic/hypomanic	1	.9956	(0.71, 1.40)

Note: Boldface data reflect statistical significance at $p<.05$. OR = odds ratio.

[a]Single regression model controlling for age, race, socioeconomic status, age of bipolar onset, and history of sexual abuse, as well as use of psychotropic medication.