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To cite this article: Katherine Holshausen, Christopher R. Bowie & Kate L. Harkness (2016) The Relation of Childhood Maltreatment to Psychotic Symptoms in Adolescents and Young Adults With Depression, Journal of Clinical Child & Adolescent Psychology, 45:3, 241-247, DOI: 10.1080/15374416.2014.952010

To link to this article: http://dx.doi.org/10.1080/15374416.2014.952010

Published online: 20 Nov 2014.
The Relation of Childhood Maltreatment to Psychotic Symptoms in Adolescents and Young Adults With Depression

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This study examined the relation between a history of maltreatment and the presence of psychotic symptoms in a community sample of adolescents and young adults with major depressive disorder. One hundred and twenty-nine depressed adolescents and young adults (M = 16.02 years, 77% female, 92% White) were recruited through community advertisement and clinician referral. Clinical diagnoses and psychotic symptoms (i.e., hallucinations and delusions) were assessed using a structured diagnostic interview. Childhood maltreatment was assessed using a contextual interview and standardized rating system. Logistic regression analyses examined the relation between childhood maltreatment and psychotic symptoms. As hypothesized, individuals with psychotic symptoms were significantly more likely to report a history of severe sexual maltreatment than those without psychotic symptoms (Wald = 5.44, odds ratio = 3.86, p = .020), 95% confidence interval [1.24, 12.01]. Further, those with psychotic symptoms were more likely to report being the victims of more than one type of maltreatment than those without, \( \chi^2 (2) = 6.66, p = .036 \) (\( \Phi = .23; 40\% \) vs. 16\%). Results held upon adjusting for overall level of depression symptoms. A history of severe sexual maltreatment is related to a severe presentation of major depressive disorder even in the initial onset of the syndrome in adolescence and young adulthood. These findings underscore the importance of early assessment of both depression and maltreatment history to implement interventions that have the potential to prevent the emergence of psychotic psychopathology in young people at risk.
& Gaillard, 1995; Holowaka et al., 2003), which is up to tenfold above the population risk (Bebbington et al., 2011). Indeed, rates of childhood maltreatment are higher in adult psychotic disorders than in any other diagnostic category (Bebbington et al., 2004).

Childhood maltreatment is a stronger predictor of psychopathology onset in adolescence than in adulthood (Brown, Cohen, Johnson, & Smailes, 1999), and adolescence is a key developmental period for the emergence of severe mental illnesses like MDD (Kessler, Avenevoli, & Merikangas, 2001). Prodromal psychotic symptoms presenting in adolescent MDD may progress into schizophrenia in adulthood (Woods et al., 2009). Despite the importance of this developmental period for establishing risk for later psychosis, the relation of childhood maltreatment to the emergence of psychotic symptoms in childhood and adolescence has received very little empirical attention. Studies with children have found a significant relation of maltreatment history to dissociation (Putnam, 1996) and thought disorder (Toth, Pickreign Stronach, Rogosch, Caplan, & Cicchetti, 2011), which is independent of early psychopathology, IQ, and genetic susceptibility (Arseneault et al., 2011). Further, in a sample of adolescent inpatients queried specifically about sexual abuse, Haley, Fine, and Marriage (1988) found that those with psychotic features were more likely than those without to have this abuse history. However, to our knowledge, there has been no empirical evaluation of the relation of childhood maltreatment to a psychotic presentation in nonhospitalized, community-dwelling adolescents with MDD. This is an important question as, if supported, it could point to a subgroup of adolescents with a history of maltreatment who should be targeted for especially rigorous intervention and prevention efforts.

The primary purpose of the current study was to evaluate the relation between histories of sexual, physical, and emotional abuse and/or neglect and psychotic symptoms in a sample of community-dwelling adolescents with MDD. Consistent with the adult literature, we hypothesized that adolescents with psychotic symptoms would be more likely to report a history of childhood maltreatment, particularly sexual abuse, than those without. Studies have shown that maltreatment is particularly predictive of psychosis when it is repeated or prolonged (Janssen et al., 2004; Shelvin, Dorahy, & Adamson, 2007). Therefore, we further hypothesized that adolescents with psychotic symptoms would have more abuse comorbidities than those without.

METHOD

Participants

Participants included 129 adolescents and young adults aged 12 to 21 (M = 16.11, SD = 1.71) recruited from local high schools or referred from mental health agencies in a midsized city in Ontario, Canada, as part of two larger, related studies investigating the relation of stress and depression (see Harkness, Lumley, & Truss, 2008; Harkness, Stewart, & Wynne-Edwards, 2011). All participants in the current report met criteria for a current episode of MDD (Diagnostic and Statistical Manual of Mental Disorders [DSM–IV]; American Psychiatric Association, 1994). Exclusion criteria included the presence of schizophrenia, schizoaffective disorder, bipolar disorder, conduct disorder, substance dependence, developmental disability, or medical disorders causing depression.

Our initial sample included 386 adolescents. Sixty-seven individuals were excluded because they met criteria for an exclusionary diagnosis, and 146 were excluded because they were part of a nondepressed control group not relevant to the current report. Further, 15 participants declined to participate in the childhood maltreatment interview, and 29 did not have sufficiently detailed diagnostic data to code psychotic symptoms, leaving 129 usable cases. The final sample did not differ from participants with missing data in terms of any demographic or clinical characteristics (all ps > .10).

Measures

Diagnostic

The present and lifetime child and adolescent version of the Schedule for Affective Disorders and Schizophrenia (K-SADS; Kaufman, Birmaher, Brent, Rao, & Ryan, 1996) was administered to all participants as part of their participation in the current study to determine DSM–IV Axis I diagnoses, including diagnosis of MDD. Interviewers were licensed clinical psychologists or advanced graduate students in clinical psychology who underwent intensive gold-standard status training (Grove, Andreasen, McDonald-Scott, Keller, & Shapiro, 1981). Training entailed watching interviews performed by reliable interviewers and subsequently performing interviews with a gold-standard rater observing. Trainees were required to match diagnoses on at least three consecutive interviews before being deemed “reliable.” All cases were reviewed with the senior author. Two raters independently rated 15 of the K-SADS tapes in this sample and achieved 87% agreement for a depression diagnosis (see, e.g., Harkness et al., 2008). Psychotic symptoms were queried in the K-SADS Psychosis screen and lifetime supplement. For this study, psychotic symptoms were defined as lifetime presence of auditory and/or visual hallucinations and/or delusions, or present evidence of incoherence or marked loosening of associations; these did not have to occur during mood disturbance. Present catatonic
behavior and flat/grossly inappropriate affect were assessed but would not meet criteria for “psychotic symptoms” as stand-alone symptoms.

Symptom

The 21-item self-report Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) measured severity of depression symptoms. Items are scored on a 4-point scale (0–3) with higher scores indicating greater severity. The BDI-II is the most widely used measure of depression severity in adolescents and has excellent psychometric properties (e.g., DeVylder et al., 2014). The standardized internal consistency estimate in this sample was .91.

Childhood Maltreatment

The Childhood Experience of Care and Abuse Scale (CECA; Bifulco, Brown, & Harris, 1994) is a retrospective semistructured contextual interview designed to assess parental care. Variables assessed in the current study included (a) emotional abuse—hostility or coldness directed toward the child and/or neglect of the child’s material and/or emotional needs, (b) physical abuse—violence directed toward the child, and (c) sexual abuse—nonconsensual sexual contact by any perpetrator. Interviews were audio recorded. Each variable was rated on a 4-point severity scale (1 = marked, 2 = moderate, 3 = some, 4 = little/none) by raters unaware of participants’ diagnoses and symptoms, using a standardized manual, which lists hundreds of examples and rating rules (see Bifulco et al., 1994). Interviewers and raters received intensive training and ongoing supervision by the senior author. Interrater reliabilities ranged from $k = .86–1.0$.

Distributions of the CECA variables are typically skewed, with relatively few marked or moderate ratings (Bifulco et al., 1994). Therefore, each maltreatment variable was dichotomized into severe (marked or moderate) and nonsevere (some/little or none) levels. Percentages of participants with each type of abuse were as follows: sexual abuse ($n = 19$, 15%), physical abuse ($n = 30$, 23%), and emotional abuse ($n = 32$, 25%). As is typical, there was co-occurrence among the abuse types (see McGee, Wolfe, Yuen, Wilson, & Carnochan, 1995). Of the 53 participants with any form of abuse, seven (13%) reported both sexual and physical, nine (17%) reported both sexual and emotional, 19 (36%) reported both physical and emotional, and five (9%) reported all three.

Procedure

Potential participants completed a brief telephone screen to assess inclusion and exclusion criteria. Upon arrival for the study, participants, and a parent/guardian if younger than age 18, signed informed consent/assent forms. The K-SADS and BDI-II were administered first, along with other measures irrelevant to the current analyses. The CECA was administered 1 to 2 weeks later to reduce participant burden. Participants were compensated $40. This study was approved by the Queen’s University Research Ethics Board.

Data Analytic Plan

Preliminary analyses examined the relation of primary study variables to demographic and clinical characteristics. We used logistic regression models to test the first hypothesis that a history of severe sexual or physical or emotional maltreatment would be significantly associated with the presence of psychotic symptoms. Models included overall depression severity to account for the expectation that maltreatment portends a more severe depression. We used chi-square tests to examine our second hypothesis that those with psychotic symptoms would be more likely to report more than one type of maltreatment than those without.

RESULTS

Descriptive Characteristics of the Sample

Twenty participants (15.5%) reported psychotic symptoms (all were hallucinations and/or delusions). Table 1 presents the demographic and clinical characteristics of the sample stratified by the presence or absence of psychotic symptoms. Groups did not differ significantly in age, sex, ethnicity, socioeconomic status, age at onset of MDD, total number of previous episodes, or presence of a comorbid diagnosis. Further, all of the following models were robust when accounting, separately, for any of the previous demographic or clinical covariates. For example, individuals with psychotic symptoms had significantly higher BDI scores than those without, $t(127) = 2.60, p = .010, d = .47$.

Fifty-three (41%) participants reported a history of severe maltreatment. The average age of onset of maltreatment was 9.91 ($SD = 4.09$) and average duration was 6.64 years ($SD = 4.77$). Eight participants had been historically placed in a foster care institution (e.g., group home), and one was in such an institution at the time of

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1 Eleven participants in the study were diagnosed with comorbid posttraumatic stress disorder, which involves reexperiencing and intrusive recollection that may mask as psychotic symptoms. However, the presence of posttraumatic stress disorder (PTSD) was not differentially distributed across the groups with versus without psychotic symptoms, $\chi^2(1) = 1.27, p = .261$, and the primary results presented next were robust when controlling for comorbid PTSD, specifically. Results of these analyses are available by request.
the study. In no case did these adolescents experience any maltreatment in their foster care institution. Adolescents in foster care were significantly more likely than those not in foster care to report a history of sexual maltreatment, $\chi^2(1) = 8.45, p = .004, \phi = .26$; and physical maltreatment, $\chi^2(1) = 7.36, p = .007, \phi = .24$; but not emotional maltreatment, $\chi^2(1) = 2.46, p = .117, \phi = .14$. Further, those in foster care were significantly more likely than those not in foster care to report psychotic symptoms, $\chi^2(1) = 7.75, p = .005, \phi = .25$.2

Relation of Childhood Maltreatment History to Psychotic Symptoms

The model examining the relation of severe sexual maltreatment and psychotic symptoms was significant, $\chi^2(2) = 11.61, p = .003$. Over and above the significant contribution of overall depression severity, Wald = 5.00, odds ratio (OR) = 1.05, $p = .025$, 95% confidence interval (CI) [1.00, 1.10], those with severe sexual maltreatment were close to 4 times more likely to endorse psychotic symptoms than those without, Wald = 5.44, OR = 3.86, $p = .020$, 95% CI [1.24, 12.01].

The model examining the relation of severe physical maltreatment and psychotic symptoms was also significant, $\chi^2(2) = 8.67, p = .013$, and again depression severity emerged as a significant predictor, Wald = 4.98, OR = 1.05, $p = .026$, 95% CI [1.00, 1.09]. However, despite a borderline significant zero-order relation between severe physical maltreatment and the presence of psychotic symptoms, $\chi^2(1) = 3.72, p = .054, \phi = .17$, the parameter estimate for physical maltreatment did not emerge significant in the multivariate model including depression severity, Wald = 2.23, OR = 2.22, $p = .136$, 95% CI [.78, 6.32].

### TABLE 1

Descriptive Characteristics of the Sample by Depression Group

<table>
<thead>
<tr>
<th></th>
<th>No Psychotic Symptoms(a)</th>
<th>Psychotic Symptoms(b)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong> M (SD)</td>
<td>16.18 (1.73)</td>
<td>15.70 (1.60)</td>
<td>.245</td>
</tr>
<tr>
<td><strong>Sex n (%)</strong></td>
<td></td>
<td></td>
<td>.342</td>
</tr>
<tr>
<td>Female</td>
<td>82 (75)</td>
<td>17 (85)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>27 (25)</td>
<td>3 (15)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity n (%)</strong></td>
<td></td>
<td></td>
<td>.334</td>
</tr>
<tr>
<td>White</td>
<td>99 (91)</td>
<td>16 (80)</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>1 (1)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>2 (1)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>First Nations</td>
<td>2 (2)</td>
<td>1 (5)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>5 (5)</td>
<td>3 (15)</td>
<td></td>
</tr>
<tr>
<td><strong>Socioeconomic Status</strong> M (SD)</td>
<td>3.59 (1.85)</td>
<td>3.80 (1.73)</td>
<td>.627</td>
</tr>
<tr>
<td><strong>BDI Score</strong> M (SD)</td>
<td>25.93 (11.65)</td>
<td>33.45 (13.03)</td>
<td>.010</td>
</tr>
<tr>
<td><strong>Age at First Onset of Depression</strong> M (SD)</td>
<td>13.26 (3.04)</td>
<td>13.15 (2.78)</td>
<td>.884</td>
</tr>
<tr>
<td><strong>No. of Depressive Episodes</strong> M (SD)</td>
<td>1.68 (1.23)</td>
<td>1.60 (1.67)</td>
<td>.797</td>
</tr>
<tr>
<td><strong>Comorbidity n (%)</strong></td>
<td></td>
<td></td>
<td>.096</td>
</tr>
<tr>
<td>Yes</td>
<td>60 (55)</td>
<td>15 (75)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>49 (45)</td>
<td>5 (25)</td>
<td></td>
</tr>
<tr>
<td><strong>Specific Comorbidities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysthymia</td>
<td>8 (7)</td>
<td>1 (5)</td>
<td></td>
</tr>
<tr>
<td>Panic Disorder</td>
<td>6 (6)</td>
<td>2 (10)</td>
<td></td>
</tr>
<tr>
<td>Simple Phobia</td>
<td>7 (6)</td>
<td>3 (15)</td>
<td></td>
</tr>
<tr>
<td>Social Phobia</td>
<td>18 (17)</td>
<td>5 (25)</td>
<td></td>
</tr>
<tr>
<td>OCD</td>
<td>5 (5)</td>
<td>2 (10)</td>
<td></td>
</tr>
<tr>
<td>PTSD</td>
<td>8 (7)</td>
<td>3 (15)</td>
<td></td>
</tr>
<tr>
<td>GAD</td>
<td>14 (13)</td>
<td>3 (15)</td>
<td></td>
</tr>
<tr>
<td>Eating Disorder</td>
<td>5 (5)</td>
<td>2 (10)</td>
<td></td>
</tr>
<tr>
<td>Substance Disorder</td>
<td>8 (7)</td>
<td>4 (20)</td>
<td></td>
</tr>
<tr>
<td>ODD</td>
<td>3 (3)</td>
<td>1 (5)</td>
<td></td>
</tr>
<tr>
<td>ADHD</td>
<td>4 (4)</td>
<td>1 (5)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Socioeconomic status was defined using the Hollingshead Rating of Social Position (Hollingshead, 1975), a 7-point rating of occupation. Higher scores indicate a lower social position. The comorbidity frequencies do not add up to the total because several participants had more than one comorbid disorder. Of those with substance abuse disorders, the majorities were abusing alcohol or cannabis. BDI = Beck Depression Inventory; OCD = obsessive compulsive disorder; PTSD = posttraumatic stress disorder; GAD = generalized anxiety disorder; ODD = oppositional defiant disorder; ADHD = attention deficit/hyperactivity disorder.

\(a\) n = 109.

\(b\) n = 20.
Similarly, the model examining the relation of severe emotional abuse and/or neglect to psychotic symptoms was significant, \( \chi^2(2) = 6.70, p = .035 \), with depression severity emerging as a significant predictor, Wald = 5.49, \( OR = 1.05, p = .019, 95\% CI [1.01, 1.10] \). However, emotional maltreatment was not a significant predictor over and above depressive symptoms, Wald = .17, \( OR = 1.25, p = .679, 95\% CI [0.43, 3.63] \).

Child Maltreatment Comorbidity and Psychotic Symptoms

The relation of psychotic symptoms to maltreatment comorbidity (0, 1, or > 1 types of maltreatment) was significant, \( \chi^2(2) = 6.66, p = .036, \phi = .23 \). Adolescents with psychotic symptoms were more than twice as likely than those without to report two or more forms of maltreatment (40% vs. 16%), whereas symptom groups did not differ in terms of reporting only one form of maltreatment (20% vs. 22%).

DISCUSSION

In a sample of adolescents and young adults with MDD, those with psychotic symptoms were almost 4 times as likely to report a history of severe sexual maltreatment, and, although not statistically significant, were over twice as likely to report a history of physical maltreatment, than those without. These associations were specific to psychotic symptoms as they held when adjusting for overall depression severity. Further, individuals with psychotic symptoms were more than twice as likely to experience more than one type of severe maltreatment than those without. These results implicate severe maltreatment as a strong developmental correlate of the early onset of psychotic symptoms in MDD.

Our findings are consistent with literature demonstrating a link between sexual maltreatment and psychosis in adolescents (Haley et al., 1988) and adults (Shelvin et al., 2007) that is evident across the psychosis phenotype, including subthreshold psychotic experiences (Freeman & Fowler, 2009), affective psychoses (Gaudiano & Zimmerman, 2010), and schizophrenia (Cutajar et al., 2010). The current results are novel and expand upon previous literature by indicating that the relation of sexual, and to a lesser extent physical, maltreatment to psychotic symptoms is evident even in a nonhospitalized community sample of young people with MDD in the initial stage of their illness. Taken together with previous literature, these results indicate a transdiagnostic relation of sexual maltreatment to psychosis that is evident across the lifespan.

The mechanisms underlying the relation of maltreatment to psychotic symptoms were not the primary focus of the current study, although a number of complementary mechanisms are possible. On the one hand, given the close temporal distance between current age and the age of the experience of sexual maltreatment, the psychotic symptoms endorsed by the adolescents in our sample may be transitory and extreme reactions to the trauma of maltreatment that are not predictive of a negative psychosis trajectory. Morrison, Read, and Turkington (2005) proposed that psychotic symptoms might represent a maladaptive response to trauma analogous to PTSD. Indeed, psychotic-like experiences in childhood and adolescence can be relatively normative (Keller et al., 2006), add little to the prognosis of psychosis (Schreier, 1999), and may disappear at follow-up (Dominguez, Wichers, Lieb, Wittchen, & van Os, 2011). On the other hand, others suggest that self-reported attenuated psychotic symptoms are forerunners of full-blown psychotic disorders (Werbeloff et al., 2012). Prospective longitudinal studies are necessary to determine the trajectory of symptoms associated with maltreatment history.

Longitudinal studies are also necessary to elucidate the temporal relation between maltreatment and psychotic symptoms. Most of the participants with psychotic symptoms reporting sexual maltreatment reported experiencing rape during adolescence, perpetrated by someone outside of the family. For most, these experiences predated the onset of their current MDD episode. However, for six participants, the sexual maltreatment occurred during the current episode. Therefore, it is possible that individuals’ characteristics, and/or the familial-genetic context in which psychotic symptoms emerge, increase risk for sexual victimization. Further, given the strong history of abuse comorbidity in those with psychotic symptoms, a toxic family environment of abuse may set the stage, independently, for the emergence of psychotic symptoms and risk for sexual victimization.

Limitations

The current results should be interpreted in light of several limitations. First, the small number of individuals with psychotic symptoms in this sample prevented us from examining further moderators of the aforementioned effects. For example, although age was not significantly associated with the primary variables of interest, and results were robust when adjusting for age, there may still be significant developmental moderators of the relation of childhood maltreatment to psychotic symptoms that require further research, preferably in longitudinal designs. Second, this was an ethnically homogenous volunteer community sample, and results may not generalize to patient samples or samples with greater diversity. Therefore, replication in such samples is required.
Third, this study did not include a clinician-rated interview measure of depression severity. Nevertheless, diagnoses were made according to DSM–IV criteria using a well-validated clinical interview (K-SADS), and the self-report BDI-II has excellent psychometric properties (e.g., DeVylder et al., 2014).

Finally, the CECA is a retrospective assessment of childhood experience and may be biased by depressive mood state (Gerlma, Kramer, Scholing, & Emmelkamp, 1994). However, the CECA incorporates mechanisms to address respondent and rater bias, including (a) encouraging participants to tell narratives about their childhood experience, priming autobiographical memory; (b) utilizing trained raters unaware of depression status who apply anchored definitions and ratings of experience to manualized examples to ensure standardization; and (c) only querying about behavioral details of participants' experiences and not subjective reactions. Comprehensive reviews find that mood bias is minimized in retrospective reports of childhood maltreatment when reporting is behaviorally anchored using a system such as the CECA (e.g., Brown, Craig, Harris, Handle, & Harvey, 2007; Hardt & Rutter, 2004), even in individuals with psychosis (Fisher et al., 2009). Further, in the current sample unselected for maltreatment history, utilizing interview self-report is preferable to documented reports (e.g., police reports, protective services records) because such documented reports underestimate the prevalence of abuse in the community (London, Bruck, Ceci, & Shuman, 2005). Further, children of socioeconomic disadvantage are overrepresented in the pool of documented cases, thus missing the full range of individuals with abuse histories (Drake, Lee, & Jonson-Reid, 2009). Nevertheless, future research confirming the results seen here in a sample specifically selected by their documented abuse history is warranted.

Implications for Research, Policy, and Practice

In summary, in a community sample of adolescents and young adults with MDD, those with psychotic symptoms were significantly more likely to report a history of severe sexual abuse, and abuse comorbidity, than those without. Many of these participants were untreated and in their first episode of MDD. Therefore, these results suggest that sexual maltreatment may be a particularly potent developmental correlate of a severe early manifestation of MDD that has the potential to progress to full-blown psychosis. As such, these results add to others in the literature in emphasizing the importance of early assessment and identification of both depression and maltreatment history to better identify risk of negative prognoses and offset the often lifelong suffering associated with psychotic disorders.

FUNDING

This study was supported by a New Investigator Award awarded to K. Harkness from the Sick Kids Foundation, as well as by an Operating Grant awarded to K. Harkness from the Ontario Mental Health Foundation. Data related to differences in histories of maltreatment among those with and without psychotic features, but not duration, comorbidity status, or age at onset, were presented by K. Holshaussen in a poster format at the Society for Research in Psychopathology Conference in September 2011.

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