

Childhood Trauma and Psychotic Disorders: a Systematic, Critical Review of the Evidence

Sarah Bendall¹⁻³, Henry J. Jackson^{2,3}, Carol A. Hulbert³,
and Patrick D. McGorry²

²ORYGEN Research Centre, 35 Poplar Road, Parkville, Victoria 3056, Australia; ³Department of Psychology, The University of Melbourne, Parkville 3056, Australia

There is controversy over whether childhood trauma (CT) is a causal factor in the development of psychosis. This review aims to identify and critically analyze the association between CT and psychotic disorders. Studies investigating CT and psychotic disorder were identified by searches of electronic databases and manual searches of references lists, and 46 studies were identified. Forty studies had no control group, only psychiatric control groups, or unmatched, nonpopulation control groups and thus had methodologies that were inadequate to determine the relationship between CT and psychosis. Six studies used appropriate control groups. Three studies found an association between CT and psychosis, 2 found potentially real associations that failed to reach statistical significance, and 1 found no association, tentatively suggesting a relationship between CT and psychotic disorders. Several methodological problems were found in the studies in the review, including the highest quality studies, which limit the strength of the conclusions that can be drawn from them. These were lack of statistical power, lack of attention to moderating or mediating variables, the way in which CT was measured, and the use of cross-sectional research designs. These problems, some of which may be unavoidable in CT research, suggest the need for new and innovative methodologies in the investigation of CT and psychosis. Directions for further research are explored.

Key words: abuse/sexual/physical/emotional/schizophrenia/psychosis

A significant proportion of people with psychotic disorders report traumatic experiences in childhood, such as sexual and physical abuse, and there is a lengthy history of published clinical case studies whose authors suggest

that these traumatic experiences may play a causal role in psychosis.¹ The role of childhood trauma (CT) in the development of psychosis has a direct impact on those with psychotic disorders and their families: coming to an understanding of why a person has developed psychosis is often a fundamental part of a young person's adjustment to a first episode of psychosis²; and past incarnations of this debate have led to empirically unsubstantiated labels such as the "schizophrenogenic mother."³ Establishing the empirical basis of the relationship between CT and psychotic disorders is therefore essential for those with psychosis and their families, clinicians, and researchers.

Research into the etiology of psychotic disorders increasingly shows a complex interaction between genetic and environmental factors.^{4,5} CT has been found to be an etiological factor in other psychiatric disorders,⁶ but the relationship between CT and psychotic disorders remains unclear because much of the research in the area has suffered from a lack of methodological rigor.⁷ Past reviews have concluded a relationship between CT and psychosis without making an in-depth assessment of those methodological flaws,⁸⁻¹⁰ and the most recent review of the area, which did focus on the methodological issues, did not include all relevant studies.⁷ The aim of this review was to systematically collect and critically evaluate the evidence for an association between CT and psychotic disorder.

Method

Study Inclusion Criteria

Studies investigating CT and psychotic disorder in any group of individuals were included in the study. Psychotic disorder was defined broadly as including the diagnoses of schizophrenia, schizoaffective disorder, schizophreniform disorder, psychosis not otherwise specified, first-episode psychosis, delusional disorder, depression with psychotic features, and bipolar disorder with psychotic features. Definitions of CT are inherently problematic. CT was defined in this review only by the description used in the individual studies. CT was defined as child physical abuse (CPA), child sexual abuse (CSA), child emotional abuse, and childhood neglect. No attempt

¹To whom correspondence should be addressed; tel: +61-3-9342-2986, fax: +61-3-9387-3003, e-mail: sbendall@unimelb.edu.au.

was made to define CT according to any specific criteria, such as severity of abuse or age of occurrence. Excluded from the review were (1) studies where adult and CT were not reported separately; (2) studies of CT in people with serious mental illness, only some of whom had a diagnosis of psychosis; (3) studies where a continuous rather than a discrete measure of CT was utilized; and (4) studies where CT was not measured in all participants. One researcher was contacted to determine whether there was any overlap in samples in different studies, and overlapping studies were excluded. Studies that used patient file audits to determine CT were included only if the study described a method to ensure that CT data were included in every patient file.

Study Acquisition

Initial searches were conducted on PsychINFO (from 1806 to November 2006), Medline (from 1966 to November 2006), and EMBASE (from 1980 to November 2006) databases. The search terms “psychosis,” “schizophrenia,” “hallucinations,” “delusions,” and “psychotic” were used to capture studies of psychosis. The terms “CT,” “child abuse,” “neglect,” “posttraumatic stress disorder (PTSD),” and “incest” were used to capture CT. This search yielded 1242 studies. These studies were screened for inclusion in the review and excluded if they did not assess for psychosis and CT or if they met any of the 4 exclusion criteria described previously. The reference lists of the included studies were searched, and cited reference and author searches were also conducted.

Results

Forty-six studies were found that met the review criteria. Thirty-eight of these were studies of the prevalence of CT in groups with a psychotic disorder, and 8 studies measured the prevalence of psychosis in groups with CT.

CT in People With Psychosis

Thirty-eight of the 46 studies found in the search were studies of the prevalence of CT in groups with a psychotic disorder. Twenty-six of these studies retrospectively measured the prevalence of self-reported CT in a sample of people with a psychotic diagnosis, without comparison to other groups. They are summarized in table 1. Results from the studies are shown in the last 3 columns of table 1. The CT column includes the studies that reported a combined prevalence of CSA and CPA, with some also including childhood emotional abuse and neglect. The CSA and CPA columns report prevalence of the specific traumas. Results for men and women are reported separately, if available. The prevalence of reported CT ranged between 28% and 73%. CSA prevalence ranged from 13% to 61%. Reports of CPA ranged from 10% to 61%. These data are characterized by extreme variability

in the reporting of all types of CT in groups with psychotic disorders. This variability may be due to real differences in the prevalence figures for the surveyed groups. Alternatively, it may be a methodological artifact associated with the assessment of trauma: CT was measured retrospectively, assessed using different measures, and collected via different methods, such as semistructured interviews and questionnaires. These problems are discussed in detail later.

Many of the studies in table 1 have been cited in support of the hypothesis that CT is a causal factor in psychosis,^{8–10} and, on the face of it, the variable but high prevalence of CT in the studies in the table do appear to be suggestive of an association. However, it is not possible to infer an association without comparison to a control group because CT occurs in a significant minority of people in the general population. It must be established that CT occurs more frequently in people with psychotic disorders than it does in the general population in order to determine an association between CT and psychotic disorders. Establishing the prevalence of CT in the population is prone to the same difficulties as the measurement of trauma in clinical groups,³⁷ and prevalence figures reported in the general population are highly variable.³⁸ However, if the same methods of defining and measuring CT are used in both groups (so any measurement biases are applied to both groups equally), then, while the absolute prevalence in either group may be contentious, the relative prevalence is valid and can be used to determine an association between CT and psychotic disorders.

CT in People With Psychosis Compared With Control Groups

Twelve studies investigated retrospectively reported CT in groups with psychotic disorders compared with one or more control groups. These are summarized in table 2. Seven of the 12 studies compared prevalence of CT in groups with psychosis with groups with other psychiatric diagnoses.^{39–45} Three studies employed both a psychiatric and a nonclinical control group.^{46–48} Two studies compared psychosis groups with nonclinical controls.^{49,50}

In the first 10 studies shown in table 1, which employed psychiatric control groups, there was no consistent pattern to the prevalence of CT in psychotic compared with psychiatric groups. The studies comparing CSA in psychosis to depression are illustrative of this: CSA was found to be more prevalent in psychosis than depression,⁴⁰ less prevalent,⁴⁴ and of similar prevalence.⁴⁵ These studies are difficult to interpret because a clinical control group methodology does not adequately address the question of the association between CT and psychosis. As previously discussed, for an association to be established between CT and psychosis, CT must be reported at a greater level in people with psychosis than in a normal

Table 1. Studies of the Frequency of Childhood Trauma in Groups With Psychosis

Study	N	Method of Assessment 1. Psychosis Diagnosis 2. Trauma	Sample	% of Sample With		
				CT	CSA	CPA
Beck and van der Kolk ¹¹	26	1. Patient file audit 2. Patient file audit	Inpatient women with chronic psychosis	—	46	—
Goff <i>et al</i> ¹²	61	1. SCID 2. LEQ	Outpatients with chronic psychosis	44 (w: 48, m: 42)	—	—
Greenfield <i>et al</i> ¹³	38	1. SCID 2. LEQ	Inpatients with first-episode psychosis	53	29	45
Ross <i>et al</i> ¹⁴	83	1. DIS 2. DDIS	Inpatients with schizophrenia	45 (w: 43, m: 53)	25 (w: 42, m: 16)	31 (w: 42, m: 47)
Trojan ¹⁵	96	1. Not reported 2. Authors' questionnaire	Inpatients with schizophrenia or "manic-depressive psychosis"	—	26 (w: 27, m: 24)	—
Darves-Bornoz <i>et al</i> ¹⁶	64	1. Not reported 2. Authors' interview	Inpatient women with schizophrenia	—	36	—
Heads <i>et al</i> ¹⁷	102	1. Patient file audit 2. Patient file audit	Inpatients with severe schizophrenia with a history of violence	—	20 (w: 49, m: 6)	36 (w: 52, m: 28)
Lysaker <i>et al</i> ¹⁸	54	1. SCID 2. CSTQ	Outpatients with schizophrenia or schizoaffective disorder	—	35	—
Neria <i>et al</i> ¹⁹	426	1. SCID 2. Consensus from research and clinical interviews	First-episode psychosis	32 (w: 44, m: 24)	—	—
Scheller-Gilkey <i>et al</i> ²⁰	40	1. SCID 2. CTES	Outpatients with schizophrenia or schizoaffective disorder	53	—	—
Shaw <i>et al</i> ²¹	45	1. CIDI 2. Authors' interview	Inpatients with acute psychosis	—	—	13
Gearon <i>et al</i> ²²	54	1. SCID 2. TLEQ	Outpatient women with schizophrenia or schizoaffective disorder	—	61	48
Offen <i>et al</i> ²³	26	1. Not reported 2. Authors' questionnaire	Outpatients with psychotic disorders with hallucinations	—	35 (w: 71, m: 26)	—
Resnick <i>et al</i> ²⁴	47	1. SCID 2. THQ-R	Outpatients with schizophrenia	—	36 (w: 47, m: 18)	—
Compton <i>et al</i> ²⁵	18	1. SCID 2. CTQ-SF	Inpatients with first-episode psychosis	—	50	61
Lysaker <i>et al</i> ²⁶	37	1. SCID 2. CAQ	Outpatient men with schizophrenia or schizoaffective disorder	—	38	—
Braehler <i>et al</i> ²⁷	14	1. Not reported 2. CTQ	Outpatients with schizophrenia	50	—	—
Hardy <i>et al</i> ²⁸	75	1. Not reported 2. THQ	Inpatients and outpatients with nonaffective psychosis	—	18	—
Hlastala and McClellan ²⁹	75	1. SCID 2. SCID and DICA-R	Inpatients and outpatients with early-onset psychosis	62	—	—
Kilcommons and Morrison ³⁰	32	1. Not reported 2. THQ	Outpatients with schizophrenia-spectrum disorder	—	13	10

Table 1. Continued

Study	N	Method of Assessment 1. Psychosis Diagnosis 2. Trauma	Sample	% of Sample With		
				CT	CSA	CPA
Lysaker et al ³¹	65	1. SCID 2. CEQ	Outpatient men with schizophrenia or schizoaffective disorder	—	28	—
Lysaker et al ³²	30	1. SCID 2. CAQ	Outpatient men with schizophrenia or schizoaffective disorder	—	40	—
Neria et al ³³	109	1. SCID 2. CIDI	Inpatients with first-episode bipolar disorder with psychosis	28	—	—
Schenkel et al ³⁴	40	1. Authors' interview 2. Patient file audit	Inpatients with schizophrenia or schizoaffective disorder	45	—	—
Kim et al ³⁵	100	1. Not reported 2. Authors' interview	Inpatient women with schizophrenia	—	37	34
Schafer et al ³⁶	30	1. SCID 2. CTQ	Inpatient women with psychosis	73	37	—

Note: CT, childhood trauma; CSA, child sexual abuse; CPA, child physical abuse; SCID, Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders*; LEQ, Life Experiences Questionnaire; DIS, Diagnostic Interview Schedule; DDIS, Dissociative Disorders Interview Scale; CSTQ, Childhood Sexual Trauma Questionnaire; CTES, Childhood Traumatic Events Scale; CIDI, Composite International Diagnostic Interview; TLEQ, Traumatic Life Events Questionnaire; THQ-R, Trauma History Questionnaire-Revised; CTQ-SF, Childhood Trauma Questionnaire-Short Form; CAQ, Childhood Abuse Questionnaire; CTQ, Childhood Trauma Questionnaire; THQ, Trauma History Questionnaire; DICA-R, Diagnostic Interview for Children and Adolescents-Revised; CEQ, Childhood Experiences Questionnaire; m, men; w, women.

control group, a comparison that cannot be made using a clinical control group. This is illustrated by the study that used both clinical and nonclinical control groups,⁴⁶ more inpatients with psychosis had CT (38%) compared with a general population control (10%) but fewer than the nonpsychotic inpatients (49%). This study supports an association between CT and psychosis because the group with psychosis reports more CT than the general population control regardless of the comparison with the nonpsychotic inpatients.

Five studies compared prevalence of CT in people with psychosis with a nonclinical group.^{46–50} These are summarized at the end of table 2. Most of these studies found that those with psychosis reported more CT than nonclinical controls,^{46,47,49,50} while one found no significant differences.⁴⁸ However, in an adequate control group methodology, the control group utilized must reflect either the characteristics of the psychosis group in all respects (ideally) apart from the diagnosis of psychosis (a matched control) or the general population in an epidemiological study (a population control). Three of the studies used neither a matched nor a general population comparison group,^{47–49} making it difficult to draw conclusions about differences in CT between people with psychotic disorders and the wider population.

Two studies used appropriate control groups, and both found a greater prevalence of CT in the group with psychotic disorders. One used a matched control group.⁵⁰ This study compared 17 married people with schizoaffective disorders with a control group ($n = 52$) consisting of their partners, married couples with diabetes, and healthy individuals matched to the schizoaffective group on the basis of age and gender. The groups were not significantly different from each other on the basis of education, employment, family income, or home ownership. A significantly greater ($P = .0003$) prevalence of CSA was found in the schizoaffective disorder group (47%) than in the combined control groups (6%). The other study used a population control⁴⁶ and compared the prevalence of CSA in a group of inpatients with psychosis ($n = 34$) with that reported in a population survey taken a decade earlier. Thirty-eight percent of those with schizophrenia reported CSA, compared with 10% in the population sample. The same questions regarding CT were used in both studies, but a self-report questionnaire was used in the psychosis group⁴⁶ and a structured interview with the controls.⁵¹ This difference in methodology may have affected the trauma reported because confidential self-report measures are known to yield a greater number of reported abuse histories than other reporting

Table 2. Studies of the Frequency of CT in Groups With or Without Psychosis

Study	Measures 1. Psychosis Diagnosis 2. Trauma	Sample Source	Psychotic Sample (<i>n</i>)	Comparison Sample(s) (<i>n</i>)	% With CT in		% With CSA in		% With CPA in	
					P	C	P	C	P	C
Emslie and Rosenfeld ³⁹	1. Not reported 2. Patient file audit	Consecutively admitted, female, child, and adolescent inpatients	Inpatient girls with severe psychosis (10)	Inpatient girls with severe nonpsychotic disorders (16)	—	—	10	50	—	—
Haley et al ⁴⁰	1. DISC 2. Not reported	Consecutively admitted, adolescent inpatients	Adolescents with depression with psychotic features (15)	Adolescents with depression without psychotic features (18)	—	—	67	11*	—	—
Ross et al ⁴¹	1. Patient file audit	Outpatients	Schizophrenia (20)	MPD (20) Panic disorder (20) Eating disorder (20)	—	—	10	80*	25	75*
Fink and Golinkoff ⁴²	2. DDIS 1. SCID 2. DDIS	Outpatients referred from psychotherapists	Schizophrenia (11)	BPD (11) MPD (16)	—	—	9	64*	18	64*
Nurcombe et al ⁴³	1. Patient file audit 2. Patient file audit	Adolescent inpatients	Schizophrenia, schizophreniform disorder, or dissociative hallucinosis (22)	PTSD (13)	—	—	55	77	41	23
Wexler et al ⁴⁴	1. Patient file audit 2. Patient file audit	Outpatients	Schizophrenia (217)	Depression (212)	19	36	—	—	—	—
Friedman et al ⁴⁵	1. SCID 2. Authors' questionnaire	Outpatients	Schizophrenia (22)	Anxiety (160) Depression (19)	—	—	32 (w: 78, m: 0)	19 NS 43 NS	32	39 NS 40 NS
Wurr and Partridge ⁴⁶	1. Patient file audit 2. Authors' questionnaire or interview	Consecutively admitted inpatients and population sample	Schizophrenia and related psychoses (34)	Nonpsychotic inpatients (86) Nonclinical controls (2019)	—	—	38 (w: 44, m: 31)	49	—	—
Honig et al ⁴⁷	1. CIDI 2. Authors' questionnaire	Outpatients and nonpatients (all with hallucinations)	Schizophrenia (18)	Dissociative disorder (15) Hallucinatory nonpatients (15)	83	86	17	57*	61	67
Convoy et al ⁴⁸	1. Not reported 2. Authors' questionnaire	Inpatients with psychosis or "alcoholism" Outpatients with "neuroses" Nonpsychiatric controls	Psychosis (100)	"Neuroses" (100) "Alcoholism" (100) Nonpsychiatric controls (100)	—	—	16	20 NS	—	—
								15 NS		
								11 NS		

Table 2. Continued

Study	Measures 1. Psychosis Diagnosis 2. Trauma	Sample Source	Psychotic Sample (n)	Comparison Sample(s) (n)	% With CT in			% With CSA in			% With CPA in		
					P	C	P	C	P	C	P	C	
Friedman and Harrison ⁴⁹	1. Authors' interview 2. Authors' interview	Inpatient women and women nonpsychiatric controls	Schizophrenia (20)	Nonpsychiatric controls (15)	—	—	60	—	—	—	—	—	—
Nettelbladt et al ⁵⁰	1. Authors' interview 2. Authors' interview	Married people with diabetes, schizoaffective disorder, their partners, and married healthy controls	Schizoaffective disorder (17)	Combined nonpsychotic groups (54)	—	—	47	—	—	6*	—	—	—

Note: Abbreviations are explained in the first footnote to table 1. P, psychosis; C, comparison; DISC, Diagnostic Interview for Children; MPD, multiple personality disorder; BPD, borderline personality disorder; PTSD, posttraumatic stress disorder.
* $P < .05$; NS, not statistically significant at .05.

methods.⁵² A matched control group would have been more appropriate than a population control group in this small sample. Nevertheless, despite some methodological limitations and small numbers, both these studies support an association between psychosis and CT.

Psychosis in Groups With CT

If a relationship exists between CT and psychotic disorders, not only should CT be reported in those with psychosis but also psychosis should be reported in those with CT. Eight studies investigated psychotic disorders in groups of people who had experienced CT and are summarized in table 3. Four of the studies used a clinical sample for comparison. The results were mixed with 2 studies finding greater prevalence of psychosis in the CT group^{53,55} and 2 finding less in the CT group.^{54,56} As with the studies with clinical controls in table 2, these studies do little to answer the question of an association between CT and psychosis because the comparison groups consisted of people with other psychiatric disorders and cannot be extrapolated to the wider population.

Four studies compared the prevalence of psychotic disorders in people who had experienced CT with the prevalence of psychotic disorders in people who had not experienced CT.^{6,56-58} One of these was a retrospective, epidemiological study conducted with 3132 adults.⁵⁸ Respondents were interviewed regarding their experience of childhood sexual abuse and their psychiatric diagnoses. Although there was a 10-fold difference in prevalence of psychosis in the CT group compared with controls (3% vs 0.3%), this was not statistically significant. This may have occurred because of low numbers in the CT and psychosis group.

Three further studies employed a follow-up design. One study assessed 61 children aged between 5 and 10 years, with documented experiences of child maltreatment, and who were recruited through a court and a pediatric outpatient clinic.⁵⁷ They were compared with 35 nonmaltreated children recruited from the same pediatric clinic, matched on the basis of age, gender, ethnicity, and family income. Nine percent of the maltreated children had a diagnosis of psychosis compared with none of the nonmaltreated children. There appeared to be errors in the statistical analysis of this data, and our own analysis suggests that there are no statistically significant differences between the proportions ($P = .08$). However, the low numbers in the study may have increased the chances of not detecting a difference when one truly existed. All but one of the children with psychosis also had a diagnosis of PTSD. Authors noted that the psychotic symptoms described by the children were hallucinations reminiscent of the trauma experienced and not negative symptoms, bizarre delusions, or thought disorder.

The second follow-up study examined the impact of CSA on various psychiatric disorders in adulthood using

Table 3. Studies of the Frequency of Psychosis in Groups With and Without CT

Study	Measures 1. Psychosis Diagnosis 2. Trauma	Total sample (<i>n</i>)	Type of Trauma in (<i>n</i>)		% of Psychosis in		Psychosis Type
			CT Group	Comparison Group	CT Group	Comparison Group	
Brown and Anderson ⁵³	1. Patient file audit 2. Patient file audit	Consecutively admitted inpatients (1019)	CSA or CPA (166)	No CSA or CPA (853)	2	12	Schizophrenia, delusional disorder
Pribor and Dinwiddie ⁵⁴	1. DIS 2. Authors' interview	Women in therapy (75)	CSA by a family member (52)	No CSA or CPA (23)	4	0*	Schizophrenia/form
Cohen et al ⁵⁵	1. DICA-R or clinical consensus 2. Not reported	Consecutively admitted adolescent inpatients (105)	CSA or CPA (70)	No CSA or CPA (35)	6	14	Psychosis
Briere et al ⁵⁶	1. Not reported 2. Patient file audit	Women admissions to a psychiatric emergency room (93)	CSA (49) CPA (39)	No CSA (44) No CPA (54)	53 49	25 33	Psychosis
Famularo et al ⁵⁷	1. DICA-C and DICA-P 2. DICA-C and DICA-P	Children in court or outpatient pediatric clinic (96)	Documented maltreatment (61)	No maltreatment (35)	9	0 NS	Psychosis
Stein et al ⁵⁸	1. DIS 2. Authors' interview	Random adult sample (3132)	CSA (82)	No CSA or adult sexual abuse (2601)	3	0.3 NS	Schizophrenia spectrum
Janssen et al ⁵⁹	1. CIDI 2. Authors' interview	Random adult sample screened for lifetime absence of any psychotic symptoms 3 years previously (4045)	CA (412)	No CA (3595)	0.9	0.1*	Psychosis
Spataro et al ⁶	N/A—data extracted from Victorian Psychiatric Case Register and Victorian Sexual Abuse Register	Adults born between 1950 and 1991 in Victoria, Australia (3 141 357)	Children on Victorian State sexual abuse register (1612)	Not on sexual abuse register as children (3 139 745)	0.8	0.7 NS	Schizophrenic disorders

Note: Abbreviations are explained in the first footnote to table 1. DICA-C and DICA-P, Diagnostic Interview for Children and Adolescents—Child and Parent versions; CA, childhood abuse.

**P* < .05; NS, not statistically significant at .05; NA, not applicable.

data from 2 statewide databases in Victoria, Australia.⁶ The records of 1612 sexually abused children were matched with the Victorian Psychiatric Case Register (VPCR) in order to determine any subsequent diagnoses of psychiatric disorders as adults. These findings were compared with the prevalence of psychiatric disorder in the general population calculated from the VPCR. There was no statistically significant difference between the prevalence of psychotic disorders in the sexually abused group (0.8%), compared with the general population (0.7%, relative risk: 1.2, 95% confidence interval [CI]: 0.7–2.1). However, several factors identified by the authors may have reduced the validity of the results. The average adult age of the group sexually abused as children, in the 20s, was less than the peak time for development of psychotic disorders, whereas the control group was, on average, older. The control group was not screened for the absence of CSA, so inevitably the results of some people with CSA were included in the CSA-negative group. The article also described other data collection problems inherent in the design. For example, people who gave false names, moved out of Victoria, or changed their names between registration on the CSA database and the VPCR also meant that data matching could not take place. A substantial proportion of the women, who made up 82% of the CSA group, may have changed their names after marriage preventing matching to their childhood records. The authors rightly state that there are powerful systematic biases against finding a difference in the study. This suggests that the finding of no association between CSA and psychosis in this study may not be highly robust.

The third follow-up study investigated the relationship between the development of positive psychotic symptoms at pathological levels and retrospectively reported CT.⁵⁹ Adult participants ($n = 4045$) were interviewed by phone regarding their mental health problems, including psychosis and CT. Those without hallucinations and delusions were assessed 3 years later for the presence of positive symptoms. Participants who had reported abuse were 7 times more likely to have a need for care for a pathological level of hallucinations and delusions (based on Brief Psychiatric Rating Scale and Camberwell Assessment of Need scores; odds ratio [OR]: 7.3, 95% CI: 1.1–49.0), after adjusting for sociodemographic and mental health factors (eg, psychotic symptoms in first-degree relatives, drug use, age, and education). A limitation of this study was that most people in the sample were older than early adulthood, the age that psychotic symptoms are mostly likely to occur for the first time.⁶⁰ Those who had already become psychotic during the peak age range were excluded from the study, so the people with a psychotic disorder in the study were not representative of all people with psychosis. For example, the people who developed psychosis later than the average age of onset may have developed a different kind of psychosis

specifically induced by trauma. Despite these limitations, a strong association was found between CT and subsequent development of a psychotic disorder.

These 4 studies are among the 6 methodologically strongest studies in the review. One found evidence of a relationship between CT and psychosis,⁵⁹ 2 found a potentially real difference that failed to reach significance,^{57,58} and the fourth had systematic biases that may have prevented finding any differences.⁶ Taken together, these studies provide some tentative evidence of an association between CT and psychosis. They also highlight the difficulty of designing studies with sample sizes large enough to have the statistical power to gain significant results. Another problem with these studies is that they did not consider moderating or mediating factors. Most studies in the review made assumptions about the unifactorial nature of CT, when it is known that childhoods involving trauma are more likely to involve adverse social factors such as social deprivation and difficult relationships with parents,^{61,62} which may contribute to psychotic disorders. Janssen et al⁵⁹ were the only researchers to address this, finding that the inclusion of factors such as psychotic symptoms in first-degree relatives, drug use, age, and education reduced the OR for developing psychotic disorders between CT and non-CT groups from 11.5 to 7.3. Thus, some of the contribution to psychosis initially attributed to child abuse was due to other factors. However, because those factors only partially reduced the OR, CT was found to be an independent risk factor.

CT and Psychosis Diagnosis

Psychosis is a general descriptor that encompasses several specific psychiatric diagnoses, and it is possible that CT is only associated with some of these diagnoses. The tables show that there are no obvious differences in the prevalence of CT experienced by patients with different psychosis diagnoses, which vary widely between studies. For example, people with first-episode psychosis reported a prevalence of CT of between 28% and 53%^{13,19,25,33} compared with people with schizophrenia, who reported a prevalence of CSA or CT of between 9% and 83%.^{14,16,17,24,27,42,44,45,47,49}

Two studies directly compared the prevalence of CT in different diagnostic categories of psychosis. One study investigated CT in 3 groups of young people with severe, early-onset psychotic disorders: one with schizophrenia ($n = 27$), one with bipolar disorder with psychotic features ($n = 22$), and one with atypical psychotic symptoms characterized by hallucinations and delusions ($n = 20$).²⁹ While the prevalence of CT was relatively high in all groups, those with atypical psychosis had significantly more CT and PTSD than the groups with schizophrenia or bipolar disorder. Another study investigated 3 groups of adolescents in a psychiatric hospital: one group with schizophrenia or schizophreniform disorder ($n = 10$),

one with PTSD ($n = 13$), and one with “dissociative hallucinosis,” a term used by the authors to describe a post-traumatic disorder in children characterized by dissociation and hallucinations ($n = 12$).⁴³ None of the adolescents with schizophrenia had CSA, but all those with dissociative hallucinosis had CSA, as did most of those with PTSD. These studies suggest that atypical psychosis, rather than schizophrenia, may be more associated with CT, although the numbers of participants were small. The authors of these studies have proposed that, in some adolescents, hallucinations and delusions may be part of posttraumatic symptom sequelae.

The Type of Trauma Experienced

Of the 46 studies in the review, 16 reported the prevalence of CT, 32 reported CSA, and 14 reported CPA (some studies reported more than one type of abuse). The large number of studies reporting only on CSA illustrates the greater attention paid to CSA than other forms of CT. It has been suggested that CSA specifically may play a causative role in the development of psychosis.^{11,31} Of the 10 studies that reported on both CSA and CPA, 6 reported less CSA than CPA,^{13,14,17,25,42,47} 4 reported more CSA than CPA,^{22,30,35,43} and one study reported the same amount.⁴⁵ These results are difficult to interpret because CSA and CPA occur at different rates in the population⁶³ and no study in this review compared both CSA and CPA in people with psychotic disorders to CSA and CPA in a nonclinical control group. Therefore, there is no evidence to suggest that CSA is specifically associated with psychosis.

Gender, Psychosis, and CT

While several studies reported on CT in groups of men only or women only, only 9 studies compared the prevalence of CT, CSA, or CPA in men and women with psychotic disorders. In the 3 studies where CT in men and women are reported separately, 2 reported higher prevalence in women^{12,19} and one lower prevalence in women.¹⁴ In the 7 studies comparing prevalence of CSA in men and women, women had a higher prevalence of CSA than men,^{14,17,24,45,46} which is to be expected because girls report more sexual abuse than boys in the general population.^{38,64} In the 2 studies of CPA, one found higher prevalence in men¹⁴ and the other in women.¹⁷ No study compared prevalence of any type of CT in groups with psychosis with gender-matched general population control groups, so no conclusions can be drawn about whether CT is more associated with psychosis in either gender.

Discussion

The lack of adequate control groups has severely limited the conclusions that can be drawn from the reviewed studies, with only 6 studies able to adequately address the association between CT and psychosis.^{6,46,50,57–59} Of these,

3 found an association between CT and psychosis,^{46,50,59} 2 found potentially real differences that failed to reach significance,^{57,58} and the last had systematic methodological biases⁶ that could explain the lack of association. The methodological differences between these studies preclude quantification of any association by meta-analysis. Nonetheless, these studies present preliminary evidence of an association between CT and psychosis, but one that must be seen in light of the following methodological problems. These are the ways in which CT was measured and the use of cross-sectional research designs.

The Measurement of Trauma

There were several problems with the measurement and hence conceptualization of CT in the reviewed studies. Forty-four of the 46 studies relied on retrospective self-reports of CT, which may have been contaminated by memory errors or biases. Inaccuracy of retrospective reports of CT may be a particular problem in psychosis because people with psychosis have difficulties with reality testing,³¹ but there is no empirical research into the accuracy of trauma reports made by individuals with psychosis, and only one published case study of an individual whose memories of CT were found to be delusional after she had recovered.⁶⁵ However, a prospective study of childhood abuse would be ethically impossible because the discovery of child abuse would necessitate its reporting, thus potentially distorting the “natural course” of the abuse and its consequences. Two studies in the review utilized documented cases of childhood abuse,^{6,57} and thus avoided the problems of retrospective reporting. However, objective evidence of abuse is present in only a minority of child abuse cases, and hence, the children in these studies are a nonrepresentative subset of abused children.⁶⁶ In the absence of an optimal method to gain reports of childhood abuse, research into CT must continue to work within these practical and ethical confines.

Few studies in the review used the same measures for assessing trauma, and different measures typically assessed different aspects and/or severity of trauma, making comparisons between studies problematic. For example, the Childhood Trauma Questionnaire (CTQ) includes the item: “Someone threatened to hurt me or tell lies about me unless I did something sexual with them”⁶⁷ within the sexual abuse category, but the Life Experiences Questionnaire⁶⁸ assesses actual physical contact within their sexual abuse measure. Both measures were used in some of the studies in the review. Additionally, many studies used the authors’ own method for determining trauma, which further complicates interpretation of data because the definitions of trauma were often not clear.

Studies in the review also used different methods of trauma assessment, which have been found to lead to different rates of disclosure of abuse. Confidential self-report measures yielded twice the number of abuse histories than

general questions asked in a psychiatric intake interview in inpatient women.⁵² Furthermore, objective, specific questions (eg, “I was severely beaten by my parent(s)”) rather than general questions (eg, “My parents’ use of discipline was reasonable”) in trauma scales led to more accurate recall of physical maltreatment in a group of men whose experiences of physical discipline by their parents had been observed when they were children.⁶⁹

Cross-Sectional Research Design. The cross-sectional design used by most studies failed to take into account different potential causal pathways of CT and psychotic disorders. In much research on CT and psychosis, it is assumed that the trauma precedes the psychopathology, but other hypotheses are possible, based on evidence of developmental abnormalities in children who later develop psychotic disorders.⁴ Children with social developmental difficulties may be more vulnerable to victimization by predatory abusers, who target socially isolated children. Alternatively, those children may be more difficult to parent, which may lead to greater physical or emotional abuse. The epidemiological study of Janssen et al⁵⁹ was the only study in the review to establish the presence of CT before the onset of hallucinations and delusions. However, because many of the suspected precursors to schizophrenia are general developmental abnormalities,⁴ rather than psychotic symptoms, establishing their absence at the time of assessment of CT is difficult. The lack of longitudinal research is a serious limitation of this body of research because credible hypotheses exist for causality in either direction. It is also possible that causality is bidirectional, with CT being a causal factor in psychosis and the developmental abnormalities preceding psychosis being a risk factor for childhood victimization.

Directions for Further Research. This review shows the importance of attention to the methodology of studies of CT and psychosis and highlights the need for appropriate control groups in order to establish meaningful associations between CT and psychosis. While large-scale prospective studies would provide the most robust results, they pose ethical problems, are expensive, can take many years, and, owing to small numbers in their psychosis and CT group, could still lack statistical power. Innovative methodologies may be able to investigate the relationship in different ways, such as empirically testing theorized relationships between CT and psychosis.⁷ For example, in a group with schizophrenia, diurnal cortisol secretion was found to be different in those with CT compared with those without CT, supporting the theory that CT is associated with schizophrenia through hypothalamic-pituitary-adrenal axis dysregulation.²⁷ The possibility that CT is associated with an atypical form of psychosis characterized by hallucinations and delusions^{29,43,57} suggests that psychosis diagnosis and symp-

tomatology should be investigated more thoroughly. Despite the focus of many previous studies on CSA, there is no evidence that CSA is a more important stressor than any other type of trauma, and future research should use validated trauma measures that include objective-specific questioning of child physical, sexual, and emotional abuse and neglect, such as the CTQ.⁶⁷ Studies should also assess for and analyze other factors that may impact on the relationship between CT and psychosis, such as substance abuse, family environment, and educational attainment. These analyses would help to elucidate the way in which these variables moderate and mediate each other, an area that has received little attention thus far. Further research in these directions will help to clarify the association between CT and psychosis tentatively suggested by the studies discussed in this review.

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