Brief report

Childhood trauma and psychosis—what is the evidence?

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In the last decade, a substantial number of population-based studies have suggested that childhood trauma is a risk factor for psychosis. In several studies, the effects held after adjusting for a wide range of potentially confounding variables, including genetic liability for psychosis. Less is known about the mechanisms underlying the association between childhood trauma and psychosis. Possible pathways include relationships between negative perceptions of the self, negative affect, and psychotic symptoms, as well as biological mechanisms such as dysregulated cortisol and increased sensitivity to stress. Psychotic patients with a history of childhood trauma tend to present with a variety of additional problems, including post-traumatic stress disorder, greater substance abuse, higher levels of depression and anxiety, and more frequent suicide attempts. Initial studies suggest that trauma-specific treatments are as beneficial for these patients as for other diagnostic groups.

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During the past few decades, a large body of research has furthered our understanding of the relationships between early adversity and psychological difficulties later in life. At the heart of this research has been the role of childhood trauma, especially sexual and physical abuse, and, increasingly over the years, emotional abuse and neglect.[1-4] Although a variety of other forms of childhood adversity, such as parental loss, separation, and discord, and bullying, contribute to later psychopathology,[5-6] childhood trauma appears to have particularly powerful and long-lasting effects. After controlling for other psychosocial risk factors, childhood trauma has been associated with the development of most psychiatric disorders, including mood and anxiety disorders, eating disorders, personality disorders, dissociative disorders, and substance dependence.[7-11] Until recently, however, researchers have focussed predominantly on the relationship of childhood trauma to nonpsychotic disorders. The possible reasons for this have been discussed elsewhere.[12] They include a lack of confidence and belief in the utility of intervention in psychotic patients and some uncertainty as to whether patients' reports can be trusted. However, the reliability of psychotic patients' abuse reports has repeatedly been established,[13] and preliminary studies have shown trauma-related interventions to be effective in this group (see below).

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Population-based studies

In the last decade, a substantial number of population-based studies suggested that childhood trauma is also an important risk factor for psychosis *(Table I)*. In almost all of these studies, a history of abuse was related to psychotic symptoms and/or the diagnosis of a psychotic disorder either during adolescence[14-17] or adulthood.[18-24] In a prospective study, Arseneault et al[17] surveyed mothers of 2232 twin children at 5, 7, 10, and 12 years of age concerning exposure to physical maltreatment and accidents and assessed the twins themselves at age 12 to determine experience of psychotic symptoms as part of the Environmental Risk Longitudinal Twin Study (E-Risk). Children who had experienced intentional physical harm (maltreatment) were more likely to report psychotic symptoms at age 12 than those exposed to unintentional physical harm (accidents). These effects held after adjusting for a wide range of potentially confounding variables including genetic liability for psychosis. An even greater risk for psychotic symptoms was found amongst children who experienced both physical abuse from an adult and bullying by peers, indicating a cumulative effect of trauma on psychosis outcomes in early adolescence. In another study, Bebbington et al[23] used data from a health survey of 7353 adults to examine whether unwanted sexual experiences were associated with probable psychotic disorder. Again, psychosis was related to traumatic events in a dose-response fashion, with nonconsensual sexual intercourse evidencing a stronger association than noncontact sexual abuse. The association between sexual abuse and psychosis was also only present amongst women, which replicates previous findings in a clinical population,[25] and suggests further exploration of gender effects in this area is required. Therefore, more robust evidence is mounting to support the role of childhood trauma in the etiology of psychosis. Only one population-based study[26] could not confirm the link between childhood trauma and psychosis. In this prospective study, no increase in schizophrenia was found among adults who had histories of sexual abuse in childhood according to official records. However, a recent study by this group found a relationship between documented abuse and psychosis[21] using a longer follow-up period.

Possible pathways from childhood abuse to psychosis

Less is known about the mechanisms underlying the association between childhood trauma and psychosis. A few studies have indicated that childhood trauma (particularly childhood sexual abuse) may result in even higher rates of psychosis or psychotic symptoms when it occurs together with cannabis use.[27,28] Cross-sectional studies have demonstrated that negative perceptions of the self, anxiety, and depression partially mediated associations between trauma (not always limited to childhood) and psychotic symptoms.[22,29] They suggest strong relationships between negative personal evaluations and low self-esteem, negative affect, and the characteristics of positive symptoms. Lardinois et al[30] found a significant interaction between daily life stress and childhood trauma on both negative affect and intensity of symptoms in patients with psychosis, suggesting that a history of childhood trauma is associated with increased sensitivity to stress. Biological mechanisms such as reduced cortical thickness[31] and dysregulated cortisol[32] following exposure to childhood trauma have also been recently investigated which may well facilitate the development of psychosis. Moreover, gene-environment interactions are likely to play a role in the relationship between childhood trauma and psychosis. In a recent study, Alemany et al[33] found that the relationship between childhood abuse and psychosis was moderated by the BDNF-Val66Met polymorphism. In a sample of 533 students, Met carriers reported more positive psychotic-like experiences when exposed to childhood abuse than did individuals carrying the Val/Val genotype. These preliminary studies provide direction for future exploration, ideally in longitudinal datasets, of the mechanisms that may form the pathway between childhood trauma and psychosis.

Additional psychopathology

One of the most prevalent consequences of childhood abuse is post-traumatic stress disorder (PTSD). While about 3% to 5% of individuals in the general population fulfil a current diagnosis of PTSD (eg, ref 34), the prevalence of the disorder in samples of patients with schizophrenia is 17% to 46% (eg, refs 35,36). Rates of current PTSD in individuals with bipolar disorder range from 11% to 24% (eg, refs 37,38). Psychotic patients with a history of childhood trauma and/or PTSD have a more severe clini-

cal profile compared with those without these experiences. They report more current or lifetime substance abuse,[39,40] higher levels of current depression and anxiety,[41,42] and more dissociative symptoms.[43,44] Childhood sexual abuse has specifically been linked to hallucinations and delusions[20,45] and the content of these positive symptoms may be related to patients' traumatic experiences.[46] Psychotic patients with a history of childhood trauma tend to present with a variety of additional problems, similar to that of other populations with childhood trauma. Victims of abuse report increased levels of suicidal ideation and more frequent suicide attempts.[40] They have also been reported

Authors	Study design	Sample	Measure of association with psychosis
Bebbington et al[22] (UK)	Cross-sectional survey	8580 adults aged 16-74	Sexual abuse vs none: **Adj OR* 2.9 (1.3-6.4)** *Adjusted for interrelationship between other adverse events and depression
Janssen et al[18] (Netherlands)	Prospective cohort	4045 adults aged 18-64	Abuse vs no abuse: BPRS any psychosis **Adj OR* 2.5 (1.1-5.7)** BPRS pathology level **Adj OR* 9.3 (2.0-43.6)** Need-based disorder **Adj OR* 7.3 (1.1-49.0)** * Adjusted for a range of variables, including any other psychiatric diagnosis and psychosis in first-degree relatives
Spataro et al[26] (Australia)	Prospective cohort	3 141 357 adults (mean age 27)	Relative risk of schizophrenic disorder in controls vs schizophrenic disorder in cases with documented sexual abuse: **RR 1.2 (0.7-2.1)**
Whitfield et al[24] (USA)	Cross-sectional survey	17 337 subjects (mean age 57)	Risk of ever having had a hallucination: Emotional abuse: **Adj OR* 2.3 (1.8-3.0)** Physical abuse: **Adj OR* 1.7 (1.4-2.1)** Sexual abuse: **Adj OR* 1.7 (1.4-2.1)** *Adjusted for age, sex, ethnicity, and educational attainment
Lataster et al[14] (Netherlands)	Cross-sectional survey	1290 adolescents aged 12-16	Nonclinical psychotic symptoms: **Adj OR* 4.5 (1.5-13.3)** *Adjusted for age, gender and socioeconomic status
Spauwen et al[15] (Germany)	Prospective cohort	2524 subjects aged 14-24	Narrow psychosis: Any trauma: **Adj OR 1.9* (1.2-3.1)** Sexual abuse: **Adj OR* 1.6 (0.5-5.1)** Physical threat: **Adj OR* 2.1 (1.2-3.9)** Rape: **Adj OR* 2.3 (0.6-9.2)** *Adjusted for gender, socioeconomic status, urbanicity, cannabis use, baseline psychiatric disorders, and psychosis proneness
Shevlin et al[19] (United States)	Cross-sectional survey	5877 adults aged 15-54	Nonaffective psychosis: Physical abuse: **Adj OR* 2.7 (1.1–6.5)** Sexual abuse: OR not reported but non-significant *Adjusted for depression
Kelleher et al[16] (Ireland)	Cross-sectional survey	211 adolescents aged 12-15	Psychotic symptoms: Physical abuse: **Adj OR* 6.0 (1.3-28.0)** Sexual abuse: **Adj OR* 4.2 (0.3-50.5)** *Adjusted for gender and socioeconomic status
Cutajar et al[21] (Australia)	Prospective cohort	5436 adults aged 14-57	Relative risk of schizophrenic disorder in controls vs schizophrenic disorder in cases with documented sexual abuse: **OR 2.6 (1.6-4.4)**

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to be less able to sustain intimacy, and to be more prone to emotional instability.[47] Finally, a history of childhood abuse is associated with worse overall social functioning,[48,49] lower remission rates,[50] and poorer compliance with treatment.[40,51]

Promising treatments for patients with childhood trauma

Initial studies suggest that trauma-specific treatments are as beneficial for patients with psychosis as for other diagnostic groups. Psychotic patients with early and complex trauma can benefit from present-focused treatments with an emphasis on psychoeducation, stabilization, and the development of safe coping skills. Trappler and Newville,[52] for instance, treated 24 patients with chronic schizophrenia and complex PTSD using the first phase of skills training in affect and interpersonal regulation (STAIR).[53] The first phase of this cognitive-behavioral therapy (CBT) program is focussing on skills training in affect and interpersonal regulation. A control group of patients received supportive psychotherapy sessions. After 12 weeks of treatment, the patients in the STAIR group showed significant reductions in Impact of Events Scale scores and positive psychotic symptoms, while no improvement in these was observed in the control group. Furthermore, several case studies and open trials have reported that exposure-based interventions can also be used safely and effectively in patients with psychosis. Frueh et al[54] treated 20 patients with PTSD and either schizophrenia or schizoaffective disorder via an 11-week CBT intervention that consisted of 14 sessions of psychoeducation, anxiety management, and social skills training, as well as 8 sessions of exposure therapy, provided at community mental health centers. Treatment completers showed significant PTSD symptom improvement, maintained at 3-month follow-up. Moreover, significant improvements existed with regard to other targeted domains (eg, anger, general mental health). A further approach to treating PTSD in patients with psychosis was developed by Mueser et al.[55] The 12- to 16-session program combines psychoeducation and breathing retraining with cognitive restructuring to address thoughts and beliefs related to trauma experiences and their consequences. In a recent randomized controlled trial the program was compared with treatment as usual in 108 patients with severe mental illness (39% bipolar disorder, schizophrenia or schizoaffective disorder). At 6-month follow-up, CBT clients had improved significantly more in PTSD symptoms, perceived health, negative trauma-related beliefs, and case manager working alliance.

Conclusions

The evidence for an association between childhood trauma and psychosis is steadily accumulating, and

Shevlin et al[20] (United States)	Cross-sectional survey	2353 adults (mean age 44)	Lifetime experience of visual hallucinations: Physical abuse: **Adj OR* 3.2 (1.5-7.1)** Rape: **Adj OR* 3.4 (1.7-6.8)** Lifetime experience of auditory hallucinations: Physical abuse: **Adj OR* 4.56 (2.0-10.6)** Rape: **Adj OR* 3.0 (1.4-6.3)** *Adjusted for gender, age, urbanicity, marital status, educational attainment, employment, and substance dependence
Arseneault et al[17] (UK)	Prospective cohort	2232 children aged 12	Psychotic symptoms: Physical abuse: **Adj RR* 2.5 (1.5-4.2)** *Adjusted for gender, socioeconomic deprivation, and IQ
Bebbington et al[23] (UK)	Cross-sectional survey	7353 adults aged 16 or over	Probable psychosis: Any sexual abuse: **Adj OR* 3.2 (1.3-7.6)** *Adjusted for age, social class, ethnicity, educational attainment, household income, and family structure

Table I. Population-based studies investigating the association between childhood abuse and psychosis. Adj, adjusted for confounders. OR, odds ratio; RR, relative risk
Adapted from ref 56: Morgan C, Fisher H. Environment and schizophrenia: environmental factors in schizophrenia: childhood trauma-a critical review. *Schizophr Bull.* 2007;33:3-10. Copyright © Oxford University Press, 2007

exploration of potential mechanistic pathways has begun. Emerging findings from longitudinal studies and demonstration of a dose-response relationship in others suggest a role of childhood trauma in the development of psychosis. The relative influence of other variables in this relationship, however, warrants further investigation. Independent from the question of causality, childhood trauma and PTSD are frequent in patients with psychosis and severely affect course and outcome. More research is therefore needed to further develop and evaluate appropriate treatments for psychotic patients suffering from the consequences of childhood trauma. Nevertheless, the existing trials suggest that patients with psychotic disorders can benefit from both present-focused and trauma-focused treatments, despite severe symptoms, suicidal thinking, and vulnerability to hospitalizations. ❑

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Trauma infantil y psicosis: ¿cuál es la evidencia?

En la última década un significativo número de estudios poblacionales han sugerido que el trauma infantil constituye un factor de riesgo para la psicosis. En algunos estudios, los efectos se mantienen después de ajustar un gran número de variables potencialmente confundentes, incluyendo el componente genético de la psicosis. Los mecanismos que están a la base de la asociación entre trauma infantil y psicosis son poco conocidos. Las posibles vías incluyen relaciones entre percepciones negativas del yo, afecto negativo y síntomas psicóticos, así como mecanismos biológicos de una falta de regulación del cortisol y de un aumento en la sensibilidad al estrés. Los pacientes psicóticos con historia de trauma infantil tienden a presentar una variedad de problemas adicionales, incluyendo el trastorno por estrés postraumático, un mayor abuso de sustancias, niveles más altos de depresión y ansiedad, e intentos suicidas más frecuentes. Los estudios iniciales sugieren que terapias específicas para el trauma son tan beneficiosas para estos pacientes como para otros grupos diagnósticos.

Psychose et traumatisme de l'enfance, quels arguments?

Ces 10 dernières années, un certain nombre d'études de population ont observé que les traumatismes de l'enfance constituaient des facteurs de risque de psychose. Dans plusieurs études, les effets se sont maintenus après ajustement sur une vaste série de variables confondantes potentielles, y compris la vulnérabilité génétique à la psychose. Nous en connaissons moins sur les mécanismes à l'origine de l'association entre traumatisme de l'enfance et psychose. Différentes possibilités englobent des liens entre les perceptions négatives de l'individu, les affects négatifs et les symptômes psychotiques, ainsi que les mécanismes biologiques comme les troubles du cycle du cortisol et la sensibilité accrue au stress. Les patients psychotiques ayant des antécédents de traumatisme de l'enfance ont tendance à présenter des difficultés additionnelles, à type de l'état de stress post-traumatique, d'abus de substance, de prévalence augmentée de dépression et d'anxiété et de multiplication de tentatives de suicide. Les premières études suggèrent que les traitements spécifiques des traumatismes sont bénéfiques pour ces patients comme pour les autres groupes diagnostiques.

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