

Childhood psychological trauma and psychosis

A commentary on 'The relationship between trauma and beliefs about hearing voices: a study of psychiatric and non-psychiatric voice hearers' by Andrew *et al.* (2008)

L. Krabbendam*

Department of Psychiatry and Neuropsychology, South Limburg Mental Health Research and Teaching Network, EURON, Maastricht University, Maastricht, The Netherlands

Received 7 December 2007; Revised 10 December 2007; Accepted 24 December 2007; First published online 7 February 2008

Key words: Childhood trauma, cognitive models, positive symptoms, psychosis.

Introduction

There is little doubt that the frequency of self-reported developmental trauma is increased in individuals with psychotic disorder (Read *et al.* 2005). However, until recently the literature could provide little information as to the causality of the relationship between trauma and psychosis. All evidence was based on small studies, the majority using a correlational design and lacking adequate control for potential mediating variables. This has changed with the publication of seven large and well-controlled population-based studies (Bebbington *et al.* 2004; Janssen *et al.* 2004; Spataro *et al.* 2004; Whitfield *et al.* 2005; Spauwen *et al.* 2006; Scott *et al.* 2007; Shevlin *et al.* 2007a), six of which provided support for a role of developmental trauma in the development of psychotic symptoms (Bebbington *et al.* 2004; Janssen *et al.* 2004; Whitfield *et al.* 2005; Spauwen *et al.* 2006; Scott *et al.* 2007; Shevlin *et al.* 2007a).

Evidence for a role for trauma in psychosis

In the only study not supporting the relationship (Spataro *et al.* 2004) cases of abuse were drawn from official record data, in contrast to the other studies, all of which used retrospective self-report of abuse. Spataro and colleagues compared hospital admission rates in those with a history of sexual abuse with admission rates in a general population control sample and found no association between child sexual abuse and later hospital admission with a diagnosis of schizophrenia. However, a major limitation of this approach is that the majority of cases of abuse are never registered, and cases of abuse will therefore

have been present in the control sample. In addition, the cases of abuse included in the study received some form of intervention, possibly mitigating the risk for later psychopathology.

Four population-based studies used a cross-sectional design to study the association between trauma and psychosis. These studies found significant associations between different types of self-reported trauma in childhood and psychotic disorder (Bebbington *et al.* 2004; Shevlin *et al.* 2007b), hallucinations (Whitfield *et al.* 2005; Shevlin *et al.* 2007a) and delusions (Scott *et al.* 2007). Prospective associations between self-reported trauma and incident psychotic symptoms (both hallucinations and delusions) were reported by Janssen *et al.* (2004) and Spauwen *et al.* (2006). In both studies, baseline retrospective assessment of trauma was associated with the new development of psychotic symptoms over mean follow-up periods of 36 and 42 months respectively.

The risk-increasing effect of trauma appears to be related to interpersonal events in particular, but is not confined to sexual abuse. One study investigating multiple types of trauma reported the highest effect size for sexual abuse (Bebbington *et al.* 2004), but this was not the case in the Spauwen *et al.* (2006) study.

Five studies reported dose–response relationships between number of traumatic events and risk for psychotic symptoms, in line with the hypothesized causal role for developmental trauma (Janssen *et al.* 2004; Whitfield *et al.* 2005; Spauwen *et al.* 2006; Scott *et al.* 2007; Shevlin *et al.* 2007a). Similarly, stronger effects were found for more severe trauma, as indicated by a diagnosis of post-traumatic stress disorder (PTSD; Scott *et al.* 2007); or trauma meeting the DSM-IV A2 criterion of presence of intense fear, helplessness or horror (Spauwen *et al.* 2006).

The consistency of the findings across these studies, all based on large samples and controlling for relevant demographic and mental health variables, has raised the possibility that developmental trauma may be

* Address for correspondence: Dr L. Krabbendam, Department of Psychiatry and Neuropsychology, South Limburg Mental Health Research and Teaching Network, EURON, Maastricht University, PO BOX 616, 6200 MD Maastricht, The Netherlands.
(Email: l.krabbendam@sp.unimaas.nl)

an important environmental risk factor contributing interactively with genetic factors to the development of psychosis (van Os *et al.* 2005). However, all studies in this area inevitably rely on observational data and a retrospective and relatively crude assessment of developmental trauma, making it difficult to prove causality. A strong argument in favour of causality is the fact that plausible psychological as well as biological mechanisms have been proposed that explain the relationship (discussed below).

Diagnostic issues

An often heard criticism of the population-based trauma studies is the focus on the outcome of individual psychotic symptoms in the general population rather than a diagnosis of clinical psychotic disorder (Morgan & Fisher, 2007). The first issue here is whether the relationship between trauma and psychotic symptoms in the community can be extrapolated to the categorical diagnosis of clinical psychotic disorders, such as schizophrenia. Converging evidence that the psychotic experiences in the general population are not qualitatively distinct from the clinical disorder comes from studies showing psychopathological resemblance (Vollema & van den Bosch, 1995; Gruzelier, 1996), shared demographic and clinical correlates (Van Os *et al.* 2001; Johns *et al.* 2004), familial clustering (Krabbendam *et al.* 2005; Hanssen *et al.* 2006) and the presence of transitions over time between the subclinical and clinical expressions of psychosis (Chapman *et al.* 1994; Poulton *et al.* 2000). This may indicate that the link with developmental trauma also pertains to clinical psychotic disorders. In fact, two of the seven population-based studies reported associations between trauma and psychotic disorder (Bebbington *et al.* 2004, Shevlin *et al.* 2007b).

Second, the relationship between trauma and psychosis refers almost exclusively to the positive symptoms of psychosis, i.e. hallucinations and delusions (Read *et al.* 2005). This observation is in agreement with the idea that there are at least two different dimensions in schizophrenia, each associated with their own pattern of risk factors, demographic associations and symptoms (Myin-Germeys & van Os, 2007). According to this view, developmental trauma is on the 'affective pathway' associated with positive symptoms, less cognitive impairment, and female sex. However, rates of positive psychotic symptoms are also elevated in individuals with PTSD (Butler *et al.* 1996; Hamner *et al.* 2000) and there is considerable diagnostic overlap between this disorder and schizophrenia (Seedat *et al.* 2003; Mueser *et al.* 2004). This raises the question whether developmental trauma truly increases the risk for (positive psychotic

symptoms in) schizophrenia. The focus on single symptoms is motivated by the heterogeneity of psychotic disorders such as schizophrenia, and by the lack of valid distinctions between diagnostic categories (Allardyce *et al.* 2007). The single-symptom approach has highlighted the common processes involved in development and persistence of symptoms across diagnostic boundaries, for example, in psychosis and anxiety disorders (Garety *et al.* 2001, 2007; Freeman *et al.* 2002). Along the same lines, a recent account of the relationship between trauma and psychosis argued that both PTSD and psychosis are characterized by intrusions and the subsequent interpretation of these intrusions, and suggested that it is the cultural acceptability of the intrusions and the subsequent interpretation that determines whether the experiences are labelled PTSD or psychosis (Morrison *et al.* 2003). According to Read *et al.* (2005), we may 'not need to separate abuse sequelae into seemingly discrete categories such as PTSD, dissociative disorder, schizophrenia, borderline personality disorder' (p. 340), but rather see all abuse-related symptoms as part of a spectrum of reactions to aversive events. Development and persistence of these symptoms may be mediated by shared biological and psychological mechanisms.

Mechanism of risk

At the biological level, trauma may contribute to the risk of psychosis by impacting on the developing brain, leading to neurodevelopmental abnormalities (Read *et al.* 2001; Nemeroff, 2004). Specifically, persistent exposure to stressors may lead to chronically heightened stress-induced glucocorticoid release, which may lead to permanent changes in the HPA axis and to structural abnormalities in the hippocampus (Bremner, 1999; Heim *et al.* 2000; Teicher *et al.* 2003). Dysregulation of the HPA axis may contribute to the dopaminergic abnormalities that are generally thought to be involved in psychosis (Walker & Diforio, 1997). This means that trauma may contribute to the oversensitivity to later stress, compatible with the view that vulnerability to psychosis is not determined exclusively by genetic factors, but may be moulded in an interaction with a variety of environmental exposures.

At the psychological level, exposure to early adverse life-events may create a cognitive vulnerability, characterized by a tendency to perceive the self as powerless and others as malevolent, which in combination with an externalizing attribution style may lead to paranoid interpretation of anomalous experiences (Bentall *et al.* 2001; Garety *et al.* 2001, 2007; Birchwood, 2003). The common assertion in these

models is that it is the interpretation of anomalous experiences which determines whether an individual will develop psychosis, and that exposure to trauma influences such interpretations. Empirical support for this claim comes from the study by Bak *et al.* (2005) who showed that in individuals with anomalous psychotic-like experiences, prior exposure to trauma in childhood and adolescence was associated with less subjective control over these experiences and greater level of psychological distress. The recent study by Gracie *et al.* (2007) in a student sample also pointed to the key mediating role of negative beliefs in the relationship between developmental trauma and predisposition to psychosis, particularly paranoid ideation, and to a lesser extent hallucinatory experiences. Predisposition to hallucinations was also weakly but significantly associated with PTSD re-experiencing symptoms, suggesting that there may also be a direct link between trauma and hallucinations.

The study by Andrew and colleagues in this issue (Andrew *et al.* 2008) explored the link between developmental trauma on the one hand and beliefs about psychotic experiences and associated distress on the other in greater detail, further corroborating the predictions of the cognitive models of psychosis. A particularly interesting feature of this study was the inclusion of a group of non-psychiatric voice-hearers (i.e. mediums or psychics), who have predominantly positive beliefs about voices, as well as a group of psychiatric voice-hearers, who have predominantly negative beliefs about voices. The study not only assessed the prevalence of developmental trauma but also the extent to which the trauma continued to affect the individuals in terms of current symptoms of intrusions, avoidance and hyperarousal. Current trauma symptoms were found to be a significant predictor of beliefs about malevolence, benevolence and omnipotence of the voices, suggesting that the extent to which the psychological effects of the trauma persist is a particularly important factor in determining beliefs about voices.

Conclusion

There is now substantial evidence for a role of developmental trauma in the development and persistence of the positive symptoms of psychosis, even though the studies published so far have all had methodological limitations. Future studies may benefit from using a more refined assessment of the developmental trauma, although the research in this area will almost inevitably rely on retrospective assessments, while truly prospective studies are limited by other severe biases. It seems timely to now move beyond the

assessment of the mere association between trauma and psychosis, to study the psychological and biological mechanisms of the relationship, as was done, for example, in the study by Andrew and colleagues in this issue. For clinical practice, the findings emphasize how important it may be to explore any history of trauma in patients with psychosis. For those individuals who have been exposed to trauma, it may be helpful to focus psychological treatment on possible links between the traumatic event and the psychotic experiences, including the role of negative beliefs and associated distress.

Declaration of Interest

None.

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