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# Does childhood trauma play a role in the aetiology of psychosis? A review of recent evidence

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## Learning Objectives

- 1 To identify findings from recent meta-analyses on the association between childhood trauma and a range of psychotic outcomes, from non-clinical psychotic experiences to psychotic disorders
- 2 To consider which childhood traumas are the most potent in the context of psychotic outcomes
- 3 To recognise that the relationships between childhood trauma, psychotic symptoms and other psychopathology are complex, dynamic and multi-dimensional

*“Stress or trauma of some kind is, I believe...a factor in every case of psychosis, and every human being, has, I think, a threshold of vulnerability”*

Allan A. MacDougall, *The British Medical Journal*, December 16, 1939

## INTRODUCTION

A key imperative in current psychosis research is the development of an integrated and nuanced understanding of how and why psychotic symptoms emerge and, for a small minority, become entrenched and result in significant social and functional impairment (i.e. disorder). A dynamic range of interrelated factors have been implicated in the activation and perpetuation of psychosis, among which there is growing interest in the role of early childhood trauma. However, with low rates of conversion to psychotic disorder, even among at risk groups, questions still remain about the level of risk conferred by exposure to childhood trauma and the range of potential mechanisms through which such exposure is converted into psychotic symptoms or disorders.

This article is based on our review of reported findings on the relationship between childhood trauma and psychosis. For it, we reviewed papers from the time of publication of a large meta-analysis by Varese and colleagues in 2012 to the time our article was submitted in November 2016. We did not follow the process of a systematic review, so some relevant studies may not be included. Table 1 summarises the key studies that we identified.

## THE ASSOCIATION BETWEEN CHILDHOOD TRAUMA AND PSYCHOTIC OUTCOMES

The idea that trauma and stress are implicated in the emergence and persistence of psychotic symptoms and disorders is not new (e.g. Clark 1932, MacDougall 1939) and evidence from a number of recent studies has confirmed that childhood trauma and adversity are associated with a continuum of outcomes along the psychosis spectrum, from non-clinical psychotic experiences to diagnosable psychotic disorders (Arseneault et

al. 2011, Bentall et al. 2012, Varese et al. 2012, Dvir et al. 2013, Fisher et al. 2013, Kelleher et al. 2013a, Matheson et al. 2013, Sheffield et al. 2013, Bentall et al. 2014, Duhig et al. 2015, Kraan et al. 2015, Trotta et al. 2015, Ajnakina et al. 2016).

In a meta-analysis, Varese and colleagues (2012) examined data on childhood trauma and psychosis from 41 population-based, case-control and prospective studies. For the analysis, they defined childhood trauma as any history of sexual, physical or emotional abuse, neglect, parental death or bullying and outcomes included both diagnostic (i.e. any diagnosed psychotic disorder) and dimensional (i.e. non-clinical hallucinations and delusions) measures of psychosis. The authors found an almost 3-fold (OR 2.79 95% CI 2.34-3.31) increase in the odds of psychotic outcomes among people exposed to childhood trauma. This increased risk was evident across both population-based and clinical case control studies.

A subsequent meta-analysis by Matheson and colleagues (2013) focused specifically on patients with schizophrenia. Its authors found that schizophrenia patients were 3.6 times more likely to have experienced childhood trauma when compared with healthy controls (OR 3.60 95% CI 2.08-6.23). However, when they extended their analyses to include associations between childhood trauma and other psychopathological outcomes, the authors found that, while schizophrenia patients were more likely to have experienced childhood trauma than patients with anxiety, there were no significant differences in rates of childhood trauma between schizophrenia patients and patients with affective psychoses, depression or personality disorders. This finding reflects the real challenge in determining exact pathways that lead from certain childhood traumas to specific psychopathological outcomes, including psychosis.

Most recently, a meta-analysis by Trotta and colleagues (2015) found that exposure to childhood trauma conferred an almost 1.8-fold increase in the odds of hallucination and delusion persistence among general population samples (OR 1.76 95% CI 1.19-2.32) with an over 1.5-fold increase in the odds of psychotic symptom persistence among individuals already diagnosed with a psychotic disorder (OR 1.55 95% CI 0.32-2.77). Although these findings in the studies examined point to the potentially enduring impact that childhood trauma may have on both the emergence and the later evolution of psychotic symptoms, it is important to note that only nine papers met inclusion criteria for the meta-analysis, five of which were general population studies and four of which involved clinical samples. In addition, the authors urge that the findings be considered cautiously on account of a number of methodological issues that may have impacted on reliability of some of the findings of association across the studies examined.

In addition to the individual risk that accompanies the experience of a range of childhood traumas, evidence also supports the hypothesis that multiple or cumulative traumas provide an additive risk effect on psychotic outcomes in both population-based (Shevlin et al. 2011a, Bentall et al 2012, Kelleher et al. 2013a) and clinical samples (Longden et al. 2015, Muenzenmaier et al. 2015). This suggests that individuals who experience multiple traumas are at higher risk of both non-clinical and clinical psychotic outcomes. However, a notable limitation in findings that have addressed the impact of multiple traumas on psychotic outcomes is that most only involve a

crude count of trauma types and therefore fail to incorporate any consideration of subjective impact of these experiences.

**TABLE 1: Meta-analyses on childhood trauma/adversity and psychotic outcomes, 2012-2015**

Authors	Year published	Number of studies included	Sample size range	Age range (years)	Type/s of childhood trauma examined	Main findings
Varese <i>et al</i>	2012	41	35–17 337	12-78	Sexual abuse, physical abuse, emotional/psychological abuse, neglect, parental death, bullying	Childhood trauma was associated with psychotic outcomes in population-based, clinical and prospective study samples
van Dam <i>et al</i>	2012	14	64–8 580	12-74	Bullying	Bullying was associated with psychotic outcomes among population-based study samples  Findings were inconclusive for clinical/patient populations
Vassos	2012	4	26–17 389	18+	Urbanicity	Childhood urbanicity was associated with psychotic outcomes
Bonoldi <i>et al</i>	2013	23	18– 569	16-65	Sexual abuse, physical abuse, emotional abuse	Higher prevalence of childhood sexual, physical and emotional abuse among clinical populations compared to healthy controls
Trotta <i>et al</i>	2015	20 papers reviewed  9 papers included in meta-analysis	71–9 292	Not reported	Sexual abuse, physical abuse, emotional/psychological abuse, neglect, parental death, bullying, life threatening accident, natural disaster, victim of violence, parental conflict, paternal mental disorder, punitive parenting, direct combat experience in war <sup>a</sup>	Childhood trauma was associated with psychotic outcomes in both population-based and clinical samples

<sup>a</sup> Meta-analysis also included adult traumas

## PSYCHOTIC SYMPTOMS AND TRAUMA TYPES

### Childhood sexual abuse

Across all childhood traumas, childhood sexual abuse has emerged as one of the most potent in the context of psychotic outcomes. With some exceptions (e.g. Longden et al. 2015), a growing number of studies have

demonstrated that child sexual abuse is strongly associated with both non-clinical psychotic experiences and psychotic disorders (Bebbington et al. 2011, Bentall et al. 2012, Daalman et al. 2012, Sheffield et al. 2013, Thompson et al. 2013, Velthorst et al. 2013, Morgan et al. 2014, Ajnakina et al. 2016). Evidence that child sexual abuse confers specific risk for the experience of both auditory (Shevlin et al. 2011a, Bentall et al. 2012, Daalman et al. 2012, Sheffield et al. 2013) and visual hallucinations (Shevlin et al. 2011a) is most convincing. In one large population-based survey in the UK, people who experienced childhood rape were found to be almost 9 times more likely to experience hallucinations than those who did not (OR 8.9 95% CI 1.86-42.44) (Bentall et al. 2012). Conversely, evidence that childhood sexual abuse is a risk factor for paranoia and delusions is equivocal (Bentall et al. 2012, Sitko et al. 2014). However, fewer studies have reported on delusional or paranoid outcomes. In addition, among ultra-high risk samples, childhood sexual abuse is the only trauma that has been found to be associated with transition to psychotic disorder (Bechdolf et al. 2010, Thompson et al. 2013). This finding suggests that childhood sexual abuse may confer specific risk for psychotic symptom persistence and the development of a pathological psychotic disorder.

### **Childhood physical abuse**

Like sexual abuse, child physical abuse has been found to be associated with psychotic symptoms in both population-based (Shevlin et al. 2011a, Bentall et al. 2012, Fisher et al. 2012, Beards et al. 2013) and clinical studies (Daalman et al. 2012, Sheffield et al. 2013, Longden et al. 2015, Ajnakina et al. 2016). Among adult population-based samples, those with a history of childhood physical abuse have been found to be up to almost 9 times more likely to experience hallucinations when compared to healthy controls (OR 8.79 [95% CI not reported]) (Daalman et al. 2012). Using data from over 250 medical records in New Zealand, Longden and colleagues (2015) found that childhood physical abuse was associated with hallucinations (OR 2.11 95% CI 1.10-4.47), in particular command hallucinations (OR 3.35 95% CI 1.32-8.50), but not with delusions or paranoia. This is at variance from some previous studies where physical abuse was found to increase the likelihood of experiencing paranoia in both population based (OR 8.52 95% CI 3.55-20.43) (Bentall et al. 2012) and ultra-high risk (OR 3.03 95% CI 1.18-7.79) (Velthorst et al. 2013) samples.

In their study, comparing clinical psychosis patients with one sample that experienced non-clinical auditory verbal hallucinations and a sample of healthy controls, Daalman and colleagues (2012) found higher rates of physical abuse in the non-clinical auditory verbal hallucinations group than in the clinical group, with higher associated odds (8.79 versus 7.44) when compared to the healthy controls. These varied findings on childhood physical abuse raise some questions about the specificity of risk conferred by childhood physical abuse, both in terms of risk of a pathological outcome and the types of psychotic symptoms experienced.

Among those who have experienced childhood sexual and/or physical abuse, there is some qualitative evidence that the content of their hallucinations and delusions is directly related to their earlier lived experiences of these traumas (Reiff et al. 2012). These qualitative findings are supported by data from a study of individuals at ultra-high risk of psychosis, among whom sexual abuse was associated with more malevolent hallucinatory content. Those within the ultra-high risk sample who reported childhood sexual abuse were 4.5 times (OR 4.5 95% CI

1.30-15.88) more likely to experience perceptual distortions with abusive content among individuals than those with no history of sexual abuse, even after adjusting for other traumas (Velthorst et al. 2013).

### **Childhood emotional abuse**

Although childhood emotional abuse has been identified as a risk factor for psychotic outcomes, reported findings have been both limited and inconsistent. Some studies have found early emotional abuse to be associated with hallucinations (Daalman et al. 2012, Sheffield et al. 2013), with one study finding that emotional abuse in childhood conferred a 6.5-fold increase in the likelihood of experiencing non-clinical auditory verbal hallucinations specifically (OR 6.51 [95% CI not reported]) (Daalman et al. 2012). In both clinical and population-based samples, there is also evidence that there is between a 2- (OR 2.20 95% CI 1.13-4.26) (Longden et al. 2015) and 3-fold increase (OR 3.26 95% CI 1.56-6.81) (Fisher et al. 2012) in the likelihood of experiencing paranoia among people who experienced childhood emotional abuse. Importantly, in one study where childhood emotional abuse was found to be highly correlated with both sexual and physical abuse, it was the co-occurrence of sexual abuse with emotional abuse that drove the association with hallucinations, suggesting that emotional abuse on its own may be less potent in its effect on later hallucinations (Sheffield et al. 2013).

### **Childhood neglect**

As with emotional abuse, data on the impact of childhood neglect are limited. Among population-based studies, childhood neglect has been found to have an association with psychotic experiences generally (van Nierop et al. 2014) and with paranoia specifically (Sitko et al. 2014). Differing findings have emerged from clinical population studies. One Dutch study found that there was an association between childhood neglect and hallucinations among patients with a psychotic disorder (Daalman et al. 2012) while a more recent study from New Zealand found no such association with either hallucinations or any other psychotic symptom type (Longden et al. 2015).

One of the challenges in relation to emotional abuse and neglect is that the parameters of how such experiences are conceptualised and defined vary considerably. In addition, as with other forms of childhood trauma, studies using adolescent or adult samples may be impacted by retrospective recall bias among study participants. Notwithstanding these definitional and methodological issues, with such limited and variable evidence on the impact of childhood emotional abuse and neglect, additional prospective population-based research is needed to better understand on the range psychotic outcomes in both population and clinical samples.

### **Loss through death and the experience of institutional care in childhood**

Although childhood trauma that involves intent to harm (i.e. child abuse) appears to be particularly salient in the emergence and persistence of psychosis (van Nierop et al. 2014), childhood traumas without an explicit intent to harm have also emerged as risk factors for psychosis. There are a number of childhood traumas that involve some degree of loss and a resultant discontinuation in established family and other relationships and/or the home environment. These include parental death and institutional care. Although death of a parent, sibling or friend was not associated with non-clinical psychotic experiences in a large population-based Dutch study (van Nierop et al. 2014), an even larger study of over 900,000 people in Sweden, found that death of a close family member and, in particular death within the nuclear family was associated with psychotic disorders (OR

1.44 95% CI 1.27-1.63) (Abel et al. 2014). This was particularly the case for deaths that occurred during the first three years of life (OR 1.84 95% CI 1.41-2.41) and for deaths from suicide during that phase of the lifespan (OR 2.17 95% CI 1/52-3.08). These findings raise important questions about the mechanisms that are activated during this formative phase of development, a phase of the lifespan that predates verbal memory. It also suggests that early losses that are traumatic for other adult caregivers in an infant's life may be implicated in the associations found.

Along with loss through death, psychosis has also been found to be associated with the trauma of being separated from one's parent/s and removed into institutional or foster care. In one clinical study, the experience of living in foster care was associated with verbal hallucinations, paranoia and the negative symptoms of psychosis (Longden et al. 2015). However, in a large population-based study, institutional care was found only to be associated with paranoia with an 11-fold increase in the odds of experiencing paranoia among individuals who had spent time in care (OR 11.08 95% CI 3.26-37.62) (Bentall et al. 2012).

**BOX A: Summary of associations found between childhood trauma and psychotic outcomes\***

PSYCHOSIS OUTCOME	CHILDHOOD TRAUMA TYPE								
	Any	Cumulative	Sexual abuse	Physical abuse	Emotional abuse	Neglect	Parental death	Institutional care	Bullying
Any psychotic outcome	✓	✓	✓	✓	✓	✓	✓	✓	✓
Non-clinical psychotic experiences	✓	✓	✓	✓	✓	✓		✓	✓
Psychotic disorder	✓	✓	✓	✓	✓	✓	✓	✓	
Any hallucinations			✓	✓	✓	✓		✓	
Auditory hallucinations			✓	✓	✓			✓	
Paranoia				✓	✓	✓		✓	
Persistence	✓								✓
Transition to disorder			✓						

\* Summary only of those studies reviewed for the current paper

### Childhood bullying

The relationship between bullying and psychosis has been the focus of number of recent studies (Fisher et al. 2013, Kelleher et al. 2013a, Wolke et al. 2014, Catone et al. 2015, Valmaggia et al. 2015). In a recent meta-analysis bullying in childhood was found to confer a 2.3-fold increase (95% CI 1.5-3.4) in the odds of experiencing non-clinical psychotic experiences across population-based samples but evidence of any association among clinical samples was inconclusive (Van Dam et al. 2012). The association between bullying and psychotic symptoms has been most evident among non-clinical adolescent samples. Data from two studies in the UK and Ireland respectively found that adolescents with a history of bullying were between 1.5-times (Fisher et al. 2013)



and 3-times (Kelleher et al. 2013a) more likely to report non-clinical psychotic experiences than those who did not. In the latter study, a bi-directional association between bullying and psychotic experiences was found, highlighting a dynamic relationship between these experiences. However, by controlling for the presence of psychotic experiences that pre-dated any experiences of bullying, the study was able to confirm an association between bullying and new incident psychotic experiences with a dose-response effect. Findings from this study therefore point to the potential of a causal relationship between the experience of being bullied and the emergence of psychotic experiences in youth populations. Of particular clinical relevance was a finding by Kelleher and colleagues that the cessation of bullying was associated with a reduction in psychotic experiences at 12-month follow up. This important finding suggests that efforts to halt experiences of bullying could be protective against the persistence of psychotic experiences in young people.

### **CHILDHOOD TRAUMA AND PSYCHOSIS: SPECIFIC OR GENERAL EFFECTS?**

The weight of recent evidence clearly implicates early a range of childhood traumas in the genesis and evolution of both non-clinical and clinical psychosis trajectories. This association is evident across both hallucination and delusional phenomena in both population-based and clinical samples (see Box A). However, findings of association do not prove causation. In addition, childhood trauma has also been found to be associated with a range of other disorders, including depressive disorders (Heim et al. 2008, Kessler et al. 2010), anxiety disorders (Heim and Nemeroff 2001) and personality disorders (Afifi et al. 2011, Klein et al. 2015, Velikonja et al. 2015). Furthermore, psychotic experiences themselves are also associated with a range of other non-psychotic psychopathology (Kelleher et al. 2012, Schroeder et al. 2013, Fusar-Poli et al. 2014, Bortolon and Raffard 2015, McCarthy-Jones and Longden 2015, Upthegrove et al. 2015a). Of particular relevance to this review is the association between psychotic symptoms and post-traumatic stress disorder (PTSD) (e.g. Mueser et al 2002, Kilcommons and Morrison 2005, Read et al 2005, Shevlin et al 2011b). From a clinical perspective, the evidence seems to suggest that both early trauma and psychotic symptoms have transdiagnostic relevance rather than being predictive of any specific psychopathological outcome. This highlights the diagnostic and treatment challenges that accompany complex clinical presentations involving early trauma where such experiences are likely to be interacting synergistically with a myriad of other factors and disorders to result in psychotic outcomes.

### **The role of biological and cognitive mechanisms**

One of the dominant current perspectives on the aetiology of psychotic disorders is that of a complex gene-environment interaction that influences both the emergence and the persistence of psychotic symptoms over time (Van Os et al. 2008, Van Os et al. 2009, van Os et al. 2010). From this perspective, no single pathway is seen as responsible for the range of psychotic phenomena that individuals experience (Bentall et al. 2014). Rather, it is a dynamic interplay between genetics, epigenetics, exposure to childhood trauma, and the experience of sub-optimal environmental factors that cause the activation and later pathologization of psychosis (Millan et al. 2016). In relation to early trauma and adversity, existing evidence supports the view that exposure to stress, including childhood trauma, maltreatment and living in sub-optimal environmental conditions, can affect human brain (Seo et al. 2014), biological (McEwen 2000, Hayes et al. 2014), social (MacDonald et al. 2000), cognitive (Kelleher et al. 2013b, Aas et al. 2014) and emotional development. Certain permutations of these exposures

and their effects may sensitise certain individuals to become more vulnerable or prone to hallucinations, delusions and psychotic disorders (Van Os et al. 2009, van Os et al. 2010). Along with any pre-existing genetic loading (Van Os et al. 2008), it is the experience of repeated exposure to multiple risk factors from the pre-natal to the early adult years that may place individuals at highest risk for progression to pathological manifestations of psychosis (Millan et al. 2016). Among those with exposure to stress in childhood and/or the emergence of early non-clinical psychotic experiences, additional exposure to stress during the adolescent years and into young adulthood could play a key role in activating the transition to pathological psychotic outcomes, with the resultant social, emotional and functional consequences that generally accompany diagnosed psychotic disorders.

### **Psychodynamic perspectives**

From a psychodynamic perspective, the experience of psychosis has long been conceptualised as a defence against unbearable or unmanageable emotions (Martindale and Summers 2013) and psychotic symptoms are understood to have meaning in the context of people's lived experiences (Martindale 2007). In some recent studies, for example, the content of psychotic experiences has been found to reflect specific aspects of traumatic and adverse life experiences among both high-risk and clinical populations (Reiff et al. 2012, Velthorst et al. 2013). Recently, the growth of the hearing voices movement and the rejection by some of the assumption that psychotic experiences are inherently pathological, have also resulted in the development of new theories about the mechanisms and meaning of auditory verbal hallucinations (AVHs) in particular. For example, in their extensive review on AVHs, Longden and colleagues (2012) propose that AVHs may be understood, not necessarily as symptoms of a psychotic disorder, but as unconscious dissociative responses to the experience of trauma (Longden et al. 2012), a protective mechanism through which individuals cognitively and affectively disconnect from traumatic events that they are unable to process (Foa and Hearst-Ikeda 1996). Given that dissociation has been associated with both trauma and with AVHs in both clinical and non-clinical samples, Longden and colleagues argue that the conceptualisation of AVHs as a dissociative response to stress and trauma offers a superior explanation of these phenomena (Longden et al. 2012). To advance any psychodynamic and developmental understanding of these phenomena and their relationship with early experiences of adversity and trauma, a number of authors have recently called for the use of qualitative research designs to develop a more nuanced and refined understanding these complex human experiences (Longden et al. 2012, Corstens et al. 2014, Humpston 2014, McCarthy-Jones et al. 2014, Uptegrove et al. 2015b).

## **CLINICAL IMPLICATIONS (see Box B)**

### **Child and adolescent mental health settings**

In the child and adolescent mental health setting, determining whether or not a child or adolescent has history of trauma must remain as a central feature of assessment. As a matter of course, every child presenting with any such history should also be routinely screened for psychotic experiences. Importantly, it cannot be assumed that children and adolescents who are or who have experienced psychotic phenomena will volunteer that information during an assessment. Most children and adolescents often only disclose these experiences when specifically asked about them. In addition, while many of the hallucinatory and paranoid phenomena that children and adolescents report do not meet the threshold criteria for frank psychotic symptoms, their

experiences may still have clinical relevance on account of the association between such sub-clinical psychotic experiences and other forms of psychopathology in adolescents (Kelleher et al. 2012). It is also important not to assume that young people with a primary presentation of depression, anxiety or personality disorder are not also experiencing some form of hallucinations or delusions.

Although limited, with some evidence to suggest that the cessation of traumatic events in the adolescent years can result in a reduction of psychotic experiences (Kelleher et al. 2013a), it is important to consider the range of possible interventions that could impact on current traumas among those children and adolescents presenting with psychotic symptoms. These could include family-based intervention, school-based intervention or referral to external agencies if there is evidence of any form of abuse. Notwithstanding the concerning absence of trauma-focused therapy research for young people who report childhood trauma and psychotic experiences, therapies that address the emotional impact of any experiences of trauma, that promote self-esteem and that support the development of positive coping mechanisms also ought to be considered and offered.

#### BOX B: The Psychotic Symptoms Early Trauma Checklist (CAP) <sup>1</sup>

CAP Criteria	
<b>Consider</b>	<p>When assessing patients who present with psychotic symptoms, consider childhood trauma as a potentially significant factor in the onset and nature of their symptoms. Conversely, when assessing patients who report a history of childhood trauma, consider the possibility that they may be experiencing primary or secondary psychotic symptomatology.</p> <p>Along with any history of childhood trauma, admission to hospital (particularly an involuntary admission) can be experienced as traumatic for many people. For psychosis patients with a history of trauma this has the potential to contribute additively to the impact of their earlier traumatic experiences. It is therefore always important to attend, not only to the immediate presenting symptoms that resulted in the admission, but also to the potential impact of the admission process on the patient.</p>
<b>Ask and Act</b>	<p>Unless they are a part of a patient's primary presenting symptoms, people who experience psychotic symptoms often do not report them unless explicitly asked about them. For patients who report a history of childhood trauma, ask about any psychotic symptoms that they may have experienced or be currently experiencing. For patients who present with psychotic symptoms, ensure that you ask them about any history of childhood trauma.</p> <p>Take action to respond to reported experiences of childhood trauma. For patients who report a history of childhood trauma, allow space for them to talk about these experiences if they wish to do so. If they report any past experiences of childhood trauma, discuss the potential routes that can be pursued in relation to these experiences and ask them what they would like to do in relation to these experiences. Depending on the type of trauma reported, discuss options including reporting the abuse to relevant authorities and/or referral for therapeutic support.</p>
<b>Plan and Provide</b>	<p>While it is important to assess all patients for their suitability for therapeutic intervention, do not rule out the potential value of therapeutic interventions for patients presenting with psychotic symptoms. Depending on the resources available to you, plan how your service can develop the capacity to provide trauma-relevant therapeutic interventions for patients with psychosis. These may include mindfulness, cognitive therapy or specific trauma-focused therapies (e.g. EMDR).</p> <p>Offer suitable trauma-relevant therapeutic intervention to patients with a history of trauma as an adjunct to all other forms of intervention (psychotropic medication, occupational therapy, family intervention, etc.).</p>

<sup>1</sup> The CAP Psychotic Symptoms Early Trauma Checklist, Coughlan & Cannon 2016

## **Adult mental health settings**

It is important to routinely assess for both childhood trauma and psychotic symptoms among individuals who present to adult mental health services. In adult mental health services, the management of psychotic symptoms is often the dominant therapeutic goal, usually with a reliance on psychotropic medication for symptomatic control or recovery. Once symptoms have stabilised, efforts frequently then turn to occupational and functional recovery. In reality, for many adults with psychosis, little or no consideration is given to the potential origins of their psychotic symptoms, including their potential experiences of childhood trauma. Given the vulnerability of some patients, clinicians can be cautious about exploring past traumas with their patients, and patients with psychosis may be denied the opportunity to talk about or explore the impact of those experiences during their engagement with mental health services.

In recent years, there has been a call for clinicians to consider the potential benefit of psychologically-oriented trauma-based therapies (McCarthy-Jones and Longden 2015). These include Eye-Movement Desensitisation Reprocessing (EMDR) (van den Berg et al. 2015), cognitive-oriented trauma-focused therapies (McCarthy-Jones and Longden 2015) and therapies such as mindfulness (Peters et al. 2016), for which there is an emerging evidence base that these therapies can be well tolerated by patients with psychosis and have therapeutic benefit. In light of these findings, there is a case for the development of targeted, evidence-based trauma-focused therapies within adult mental services that are considered as a potential intervention for all psychosis patients. Expanding the suite of therapeutic interventions to patients with psychosis to include interventions that address a history or trauma may therefore be a key factor in enhancing the symptomatic, emotional, social and functional trajectories of those individuals for whom trauma has been a factor in the emergence of their symptoms. This would, of course, necessitate that mental health services be sufficiently resourced to recruit and/or train sufficient numbers of clinical staff to provide such interventions.

## **SUMMARY & CONCLUSION**

Emergent findings from this review suggest that a] there is a dynamic interplay between childhood trauma and other exposures and risk factors; b] the role of childhood trauma needs to be considered across the continuum of psychotic outcomes and in the context of a range of psychopathological trajectories and outcomes; and c] psychopathological outcomes associated with a history of childhood trauma are often multi-dimensional and do not fit within traditional diagnostic classifications. From a clinical perspective, the complexity of the relationship between childhood trauma, psychosis and other psychopathology means that precise aetiological models for the spectrum of psychotic symptoms and disorders remain elusive. The same is true for predictive models regarding the transition from early experiences of hallucinations and delusions to later psychotic disorders. Notwithstanding these issues, screening for childhood trauma and psychotic symptoms may help in the early detection of potentially high risk individuals. In addition, developing and offering targeted psychotherapeutic and other interventions to reduce the potential impact of early experiences of trauma must remain an important clinical goal in reducing the incidence and subsequent impact of psychotic disorders and other psychopathology.

## **DECLARATION OF INTERESTS:**

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## REFERENCES

- Aas, M, Dazzan P, Mondelli V, Melle I, Murray RM & Pariante CM (2014) A systematic review of cognitive function in first-episode psychosis, including a discussion on childhood trauma, stress and inflammation. *Frontiers in Psychiatry*, **4**: 182
- Abel, KM, Heuvelman HP, Jörgensen L, Magnusson C, Wicks S, Susser E, Hallkvist J & Dalman C (2014) Severe bereavement stress during the prenatal and childhood periods and risk of psychosis in later life: population based cohort study. *BMJ*, **348**: f7679
- Afifi, TO, Mather A, Boman J, Fleisher W, Enns MW, MacMillan H, & Sareen J. (2011). Childhood adversity and personality disorders: results from a nationally representative population-based study. *Journal of Psychiatric Research*, **45** (6): 814-822.
- Ajnakina O, Trotta A, Oakley-Hannibal E, Di Forti M, Stilo SA, Kolliakou A, Gardner-Sood P, Gaughran F, David AS, Dazzan P & Pariante, C (2016) Impact of childhood adversities on specific symptom dimensions in first-episode psychosis. *Psychological Medicine* **46** (02): 317-326.
- Arseneault, L., Cannon M, Fisher HL, Polanczyk G, Moffitt TE, & Caspi A (2011). Childhood trauma and children's emerging psychotic symptoms: A genetically sensitive longitudinal cohort study. *Am J Psychiatry* **168** (1): 65-72.
- Beards S, Gayer-Anderson C, Borges S, Dewey ME, Fisher HL & Morgan C (2013) Life events and psychosis: a review and meta-analysis. *Schizophrenia Bulletin*: sbt065.
- Bebbington, P, Jonas S, Kuipers E, King M, Cooper C, Brugha T, Meltzer H, McManus S & Jenkins R (2011) Childhood sexual abuse and psychosis: data from a cross-sectional national psychiatric survey in England. *The British Journal of Psychiatry* **199** (1): 29-37.
- Bechdolf, A, Thompson A, Nelson B, Cotton S, Simmons MB, Amminger GP, Leicester S, Francey SM, McNab, C & Krstev H (2010) Experience of trauma and conversion to psychosis in an ultra-high-risk (prodromal) group." *Acta Psychiatrica Scandinavica* **121** (5): 377-384.
- Bentall, RP, de Sousa P, Varese F, Wickham S, Sitko K, Haarmans M & Read J (2014). From adversity to psychosis: pathways and mechanisms from specific adversities to specific symptoms. *Social Psychiatry and Psychiatric Epidemiology* **49** (7): 1011-1022.
- Bentall, RP, Wickham S, Shevlin M & Varese F (2012) Do Specific Early-Life Adversities Lead to Specific Symptoms of Psychosis? A Study from the 2007 The Adult Psychiatric Morbidity Survey. *Schizophrenia Bulletin* **38** (4): 734-740.
- Bortolon C & Raffard S (2015) Self-reported psychotic-like experiences in individuals with obsessive-compulsive disorder versus schizophrenia patients: characteristics and moderation role of trait anxiety. *Compr Psychiatry* **57**: 97-105.
- Catone G, Marwaha S, Kuipers E, Lennox B, Freeman D, Bebbington P & Broome M (2015) Bullying victimisation and risk of psychotic phenomena: analyses of British national survey data. *The Lancet Psychiatry*, **2**(7): 618-624
- Clark LP (1932) Can Child Analysis Prevent Neuroses and Psychoses in Later Life? *The Psychoanalytic Review* (1913-1957) **19**: 46.
- Corstens D, Longden E, McCarthy-Jones S, Waddingham R & Thomas N (2014). Emerging perspectives from the Hearing Voices Movement: implications for research and practice. *Schizophrenia Bulletin* **40**(Suppl 4): S285-S294.
- Daalman K, Diederens KJM, Derks EM, van Lutterveld R, Kahn RS & Sommer IEC (2012) Childhood trauma and auditory verbal hallucinations. *Psychological Medicine* **42** (12): 2475-2484.
- Duhig M, Patterson S, Connell M, Foley S, Capra C, Dark F, Gordon A, Singh S, Hides L, McGrath JJ & Scott J (2015). The prevalence and correlates of childhood trauma in patients with early psychosis. *Australian and New Zealand Journal of Psychiatry* **49** (7): 651-659.
- Dvir Y, Denietolis B & Frazier JA (2013) Childhood trauma and psychosis. *Child Adolesc Psychiatr Clin N Am* **22** (4): 629-41.
- Fisher HL, Schreier A, Zammit S, Maughan B, Munafò MR, Lewis G & Wolke D (2013) Pathways between childhood victimization and psychosis-like symptoms in the ALSPAC birth cohort. *Schizophrenia Bulletin* **39** (5): 1045-1055.
- Fisher HL, Appiah-Kusi E & Grant C (2012) Anxiety and negative self-schemas mediate the association between childhood maltreatment and paranoia. *Psychiatry Research*, **196**(2): 323-324.

Foa EB & Hearst-Ikeda D (1996) Emotional Dissociation in Response to Trauma. In *Handbook of Dissociation: Theoretical, Empirical, and Clinical Perspectives*, edited by Larry K. Michelson and William J. Ray, 207-224. Boston, MA: Springer US.

Fusar-Poli P, Nelson B, Valmaggia L, Yung AR & McGuire PK (2014) Comorbid Depressive and Anxiety Disorders in 509 Individuals with an At-Risk Mental State: Impact on Psychopathology and Transition to Psychosis. *Schizophrenia Bulletin* **40** (1): 120-131.

Hayes LN, Severance EG, Leek JT, Gressitt KL, Rohleder C, Coughlin JM, Leweke FM, Yolken RH & Sawa A (2014) Inflammatory molecular signature associated with infectious agents in psychosis. *Schizophrenia Bulletin* **40** (5): 963-972.

Heim C & Nemeroff CB (2001) The role of childhood trauma in the neurobiology of mood and anxiety disorders: preclinical and clinical studies. *Biological Psychiatry* **49**(12): 1023-1039

Heim C, Newport DJ, Mletzko T, Miller AH & Nemeroff C B (2008) The link between childhood trauma and depression: insights from HPA axis studies in humans. *Psychoneuroendocrinology* **33**(6): 693-710.

Humpston CS (2014) Perplexity and Meaning: Toward a Phenomenological "Core" of Psychotic Experiences. *Schizophrenia Bulletin* **40**(2): 240-243.

Kelleher I, Keeley H, Corcoran P, Lynch F, Fitzpatrick C, Devlin N, Molloy C, Roddy S, Clarke MC, Harley M, Arseneault L, Wasserman C, Carli C, Sarchiapone M, Hoven C, Wasserman D & Cannon M (2012) Clinicopathological significance of psychotic experiences in non-psychotic young people: evidence from four population-based studies. *Br J Psychiatry* **201** (1): 26-32.

Kelleher I, Keeley H, Corcoran P, Ramsay H, Wasserman C, Carli V, Sarchiapone M, Hoven C, Wasserman D & Cannon M (2013a) Childhood trauma and psychosis in a prospective cohort study: cause, effect, and directionality. *Am J Psychiatry* **170** (7):734-41.

Kelleher I, Murtagh A, Clarke MC, Murphy J, Rawdon C & Cannon M (2013b) Neurocognitive performance of a community-based sample of young people at putative ultra high risk for psychosis: support for the processing speed hypothesis. *Cognitive Neuropsychiatry* **18** (1-2): 9-25.

Kessler RC, McLaughlin KA, Greif Green J, Gruber MJ, Sampson NA, Zaslavsky AM, Aguilar-Gaxiola S, Obaid Alhamzawi A, Alonso J & Angermeyer M (2010). Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *The British Journal of Psychiatry* **197** (5): 378-385.

Kilcommons A M & Morrison A P (2005). Relationships between trauma and psychosis: an exploration of cognitive and dissociative factors. *Acta Psychiatrica Scandinavica*, **112**(5): 351-359.

Klein, J. Roniger PA, Schweiger U, Späth C & Brodbeck J (2015) The association of childhood trauma and personality disorders with chronic depression: A cross-sectional study in depressed outpatients. *The Journal of Clinical Psychiatry* **76**(6): e794-801.

Kraan, T, Velthorst E, Smit F, de Haan L & van der Gaag M (2015) Trauma and recent life events in individuals at ultra high risk for psychosis: Review and meta-analysis. *Schizophrenia Research* **161** (2):143-149.

Longden E, Sampson M & Read J (2015) Childhood adversity and psychosis: generalised or specific effects? *Epidemiology and Psychiatric Sciences*: 1-11.

Longden E, Madill A & Waterman MG (2012) Dissociation, trauma, and the role of lived experience: toward a new conceptualization of voice hearing. *Psychological Bulletin* **138** (1):28.

MacDonald EM, Hayes RL & Baglioni Jr. AJ (2000) The quantity and quality of the social networks of young people with early psychosis compared with closely matched controls. *Schizophrenia Research* **46** (1):25-30.

MacDougall AA (1939) Psychological Casualties in War. *British Medical Journal* **2** (4119): 1203.

Martindale B & Summers A (2013) The psychodynamics of psychosis. *Advances in Psychiatric Treatment* **19** (2): 124-131.

Martindale BV (2007) Psychodynamic contributions to early intervention in psychosis. *Advances in Psychiatric Treatment* **13** (1): 34-42.

Matheson SL, Shepherd AM, Pinchbeck RM, Laurens KR & Carr VJ (2013) Childhood adversity in schizophrenia: a systematic meta-analysis. *Psychological Medicine* **43** (02): 225-238.

McCarthy-Jones S, Trauer T, Mackinnon A, Sims E, Thomas N & Copolov DL (2014) A new phenomenological survey of auditory hallucinations: evidence for subtypes and implications for theory and practice. *Schizophrenia Bulletin* **40**(1): 231-235.

McCarthy-Jones S & Longden E (2015). Auditory verbal hallucinations in schizophrenia and post-traumatic stress disorder: common phenomenology, common cause, common interventions? *Front Psychol* **6**: 1071.

McEwen BS (2000) Allostasis and allostatic load: implications for neuropsychopharmacology. *Neuropsychopharmacology* **22** (2): 108-124.

Millan MJ, Andrieux A, Bartzokis G, Cadenhead K, Dazzan P, Fusar-Poli P, Gallinat J, Giedd J, Grayson DR & Heinrichs M (2016) Altering the course of schizophrenia: progress and perspectives. *Nature Reviews Drug Discovery*. **15**: 485–515.

Morgan C, Reininghaus U, Reichenberg A, Frissa S, Hotopf M, Hatch SL & SELCoH study team (2014) Adversity, cannabis use and psychotic experiences: evidence of cumulative and synergistic effects. *The British Journal of Psychiatry*: bjp-bp

Muenzenmaier KH, Seixas AA, Schneeberger AR, Castille DM, Battaglia J & Link BG (2015) Cumulative effects of stressful childhood experiences on delusions and hallucinations. *Journal of Trauma & Dissociation* **16** (4): 442-462.

Mueser KT, Rosenberg SD, Goodman LA & Trumbetta SL (2002). Trauma, PTSD, and the course of severe mental illness: an interactive model. *Schizophrenia research*: **53**(1): 123-143.

Peters E, Ward T, Jackson M, Morgan C, Charalambides M, McGuire P, Woodruff P, Jacobsen P, Chadwick P & Garety PA (2016) Clinical, socio-demographic and psychological characteristics in individuals with persistent psychotic experiences with and without a “need for care”. *World Psychiatry* **15** (1): 41-52.

Read J, van Os J, Morrison AP, Ross CA. (2005) Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatr Scand*. **112**: 330–350

Reiff M, Castille DM, Muenzenmaier K & Link B (2012) Childhood abuse and the content of adult psychotic symptoms. *Psychological Trauma: Theory, Research, Practice, and Policy* **4** (4): 356.

Schroeder K, Fisher HL & Schäfer I (2013) Psychotic symptoms in patients with borderline personality disorder: prevalence and clinical management. *Current Opinion in Psychiatry* **26** (1): 113-119.

Seo D, Tsou KA, Ansell EB, Potenza MN & Sinha R (2014) Cumulative adversity sensitizes neural response to acute stress: association with health symptoms. *Neuropsychopharmacology* **39** (3): 670-680.

Sheffield JM, Williams LE, Blackford JU & Heckers H (2013) Childhood sexual abuse increases risk of auditory hallucinations in psychotic disorders. *Comprehensive Psychiatry* **54** (7): 1098-1104.

Shevlin M, Murphy J, Read J, Mallett J, Adamson G & Houston JE (2011a) Childhood adversity and hallucinations: a community-based study using the National Comorbidity Survey Replication. *Social Psychiatry and Psychiatric Epidemiology* **46** (12): 1203-1210.

Shevlin M, Armour C, Murphy J, Houston JE & Adamson G (2011b) Evidence for a psychotic posttraumatic stress disorder subtype based on the National Comorbidity Survey. *Soc Psychiatry Psychiatr Epidemiol*: **46**: 1069.

Sitko K, Bentall RP, Shevlin M & Sellwood W (2014) Associations between specific psychotic symptoms and specific childhood adversities are mediated by attachment styles: an analysis of the National Comorbidity Survey. *Psychiatry Research* **217** (3): 202-209.

Thompson AD, Nelson B, Pan Yuen H, Lin A, Amminger GP, McGorry PD, Wood SJ & Yung AR (2013) Sexual trauma increases the risk of developing psychosis in an ultra high-risk “prodromal” population. *Schizophrenia Bulletin*: sbt032.

Trotta A, Murray RM & Fisher HL (2015) The impact of childhood adversity on the persistence of psychotic symptoms: a systematic review and meta-analysis. *Psychological Medicine* **45** (12): 2481-2498.

Uptegrove R, Chard C, Jones L, Gordon-Smith K, Forty L, Jones I & Craddock N (2015a) Adverse childhood events and psychosis in bipolar affective disorder. *The British Journal of Psychiatry* **206** (3): 191-197.

Uptegrove R, Broome M, Caldwell K, Ives J, Oyebode F & Wood S (2015b). Understanding auditory verbal hallucinations: a systematic review of current evidence. *Acta Psychiatrica Scandinavica*.

Valmaggia LR, Day FL, Kroll J, Laing J, Byrne M, Fusar-Poli P & McGuire P (2015) Bullying victimisation and paranoid ideation in people at ultra high risk for psychosis. *Schizophrenia Research* **168** (1): 68-73.

Van Dam DS, Van Der Ven E, Velthorst E, Selten JP, Morgan C & de Haan L (2012) Childhood bullying and the association with psychosis in non-clinical and clinical samples: a review and meta-analysis. *Psychological Medicine* **42** (12): 2463-2474.

van den Berg, DP, de Bont PA, van der Vleugel BM, de Roos C, de Jongh A, van Minnen A & van der Gaag M (2015) Prolonged exposure vs eye movement desensitization and reprocessing vs waiting list for posttraumatic stress disorder in patients with a psychotic disorder: a randomized clinical trial. *JAMA Psychiatry*, **72**(3):259-267.

Van Nierop M, Lataster T, Smeets F, Gunther N, van Zelst C, de Graaf R, ten Have M, van Dorsselaer S, Bak M & Myin-Germeys I (2014) Psychopathological mechanisms linking childhood traumatic experiences to risk of psychotic symptoms: analysis of a large, representative population-based sample. *Schizophrenia Bulletin* **40** (Suppl 2): S123-S130.

Van Os J, Kenis G & Rutten BPF (2010) The environment and schizophrenia. *Nature* **468** (7321): 203-212.

Van Os J, Linscott RJ, Myin-Germeys I, Delespaul P & Krabbendam L (2009) A systematic review and meta-analysis of the psychosis continuum: evidence for a psychosis proneness–persistence–impairment model of psychotic disorder. *Psychological Medicine* **39** (02): 179-195.

Van Os J, Rutten BBF & Poulton R (2008) Gene-environment interactions in schizophrenia: review of epidemiological findings and future directions. *Schizophrenia Bulletin* **34** (6): 1066.

Varese F, Smeets F, Drukker M, Lieveise R, Lataster T, Viechtbauer W, Read J, van Os J & Bentall RP (2012) Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective-and cross-sectional cohort studies. *Schizophrenia Bulletin* **38** (4): 661-671.

Velikonja T, Fisher HL, Mason O & Johnson S (2015) Childhood trauma and schizotypy: a systematic literature review. *Psychol Med* **45** (5): 947-63.

Velthorst E, Nelson B, O'Connor K, Mossaheb N, de Haan L, Bruxner A, Simmons MB, Yung AR & Thompson A (2013) History of trauma and the association with baseline symptoms in an Ultra-High Risk for psychosis cohort. *Psychiatry Res* **210** (1):75-81.

Velthorst E, Nelson B, O'Connor K, Mossaheb N, de Haan L, Bruxner A, Simmons MB, Yung AR & Thompson A (2013) History of trauma and the association with baseline symptoms in an Ultra-High Risk for psychosis cohort. *Psychiatry Research* **210** (1): 75-81.

Wolke D, Lereya ST, Fisher HL, Lewis G, and Zammit S (2014) Bullying in elementary school and psychotic experiences at 18 years: a longitudinal, population-based cohort study. *Psychological Medicine* **44** (10): 2199-2211.