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**Article:**
Dudley, Robert orcid.org/0000-0002-3765-9998, Turkington, Douglas, Coulthard, Naomi et al. (5 more authors) (2023) Childhood Trauma in Clozapine-Resistant Schizophrenia:Prevalence, and Relationship With Symptoms. Schizophrenia Bulletin Open. sgad030. ISSN 2632-7899

https://doi.org/10.1093/schizbullopen/sgad030

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**Schizophrenia Bulletin Open**
https://doi.org/10.1093/schizbullopen/sgad030

# Childhood Trauma in Clozapine-Resistant Schizophrenia: Prevalence, and Relationship With Symptoms

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***Background and Hypothesis*: The role of early adversity and trauma is increasingly recognized in psychosis but treatments for trauma and its consequences are lacking. Psychological treatments need to understand the prevalence of these experiences, the relationship with specific symptoms and identify potentially tractable processes that may be targeted in therapy. It was hypothesized that greater adversity, and specifically abuse rather than neglect, would be associated with positive symptoms and specifically hallucinations. In addition, negative beliefs would mediate the relationship with positive symptoms.*Study Design*: 292 Patients with treatment resistant psychosis completed measures of early adversity as well as current symptoms of psychosis.*Study Results*: Early adversity in the form of abuse and neglect were common in one-third of the sample. Adversity was associated with higher levels of psychotic symptoms generally, and more so with positive rather than negative symptoms. Abuse rather than neglect was associated with positive but not with negative symptoms. Abuse rather than neglect was associated with hallucinations but not delusions. Abuse and neglect were related to negative beliefs about the self and negative beliefs about others. Mediation demonstrated a general relationship with adversity, negative-self, and other views and overall psychotic symptoms but not in relation to the specific experience of abuse and hallucinations. Females were more likely to be abused, but not neglected, than males.*Conclusions*: Whilst most relationships were modest, they supported previous work indicating that adversity contributes to people with psychosis experiencing distressing symptoms especially hallucinations. Treatments need to address and target adversity.**

*Key words:* trauma/childhood abuse/childhood neglect/psychosis

## Introduction

Early adversity such as childhood neglect (CN) or abuse is associated with an increased risk of a range of mental health issues[1] including psychosis.[2] Varese and colleagues[3] in their meta-analysis found that early adversity was strongly associated with increased risk for psychosis and that people with schizophrenia are 2.72 times more likely to have experienced adverse childhood events than healthy individuals. Evidence supports a causal role as longitudinal studies indicate early adversity precedes the onset of psychosis.[4,5]

Importantly, the nature of the adversity affects the chance of developing psychotic symptoms, as there is a stronger link between childhood abuse (CA) and later psychosis than CN.[6] Specifically, greater endorsement of CA experiences has been linked to higher positive symptom ratings but not with negative symptoms.[7] It is probable that early CA and neglect contribute differently to the risk of and expression of psychosis. Neglect may increase the risk of atypical neurodevelopment[8] and childhood physical neglect (CPN) is positively correlated with negative symptoms scores.[9] Conversely, childhood sexual abuse (CSA) is associated with greater positive symptom reporting,[10] particularly with auditory hallucinations,[3] especially in conjunction with dissociation[11] and paranoia.[12] However, the relationship may be modest or small. For example, Wang and colleagues[13] reported correlations of $r$ = .17 between childhood trauma (CT)

and hallucinations in people in first episode psychosis services. Seemingly then, trauma/adversity is an important factor for some, but it is not likely to be necessary or sufficient to explain the experience of psychosis.[14] Current estimates suggest CT plays a role for one-third of cases.[3,15,16]

Given the role for trauma and adversity it has been proposed that there is a traumatic psychosis group, characterized by positive symptoms and high levels of anxiety who are regarded as a group resistant to or non-responsive to medications[17,18] and existing psychological therapies.[19] Patients with severe mental illness and a higher number of stressful childhood experiences receive higher doses of antipsychotic medication and mood stabilizers.[20] A meta-analytic review by Thomas and colleagues[21,22] found patients with histories of childhood maltreatment were more likely than those without such experiences to have a less favorable treatment outcome.

Severe symptoms unresponsive to treatments are core features of what is termed Treatment Resistant Schizophrenia (TRS) or Treatment Resistant Psychosis (TRP). TRS is defined as schizophrenia treated over two periods with different antipsychotics at an adequate dose for at least 4 weeks, and symptoms are not reduced by at least 20%. Clozapine treatment is a more widely applied criterion that could be used as a proxy for TRS/TRP, as typically patients offered a trial of clozapine have not responded to at least two other antipsychotics.[23] People with TRP have more severe symptoms and lower quality of life than non-treatment resistant patients. A meta-analysis by Vargas and colleagues[24] found a significant negative relationship between CT and both overall cognition and working memory in individuals with psychotic disorders. Wells and colleagues examined eight hundred thirty-six people with schizophrenia and healthy controls from the Australian Schizophrenia Research Bank who were assessed with the Childhood Adversity Questionnaire.[25] Higher reported levels of childhood adversity were associated with an earlier onset and persistence of impaired cognitive functioning, which are also characteristics of TRP. Some studies suggest that TRP may be more influenced by genetic vulnerabilities[26] but it is important to establish if rates of trauma and adversity are as common as in other groups of people with psychosis to help prevent the premature closure of exploring the contribution of these experiences to TRP.[15]

There is a higher prevalence of abuse and adversity in women with psychosis.[27] Women with psychosis reported more sexual or physical abuse than women control participants, which was not the case for men.[28] Obviously, the presence of these experiences can have a pronounced impact on the longer-term outcome of both women and men. However, studies considering the impact of traumatic life events on psychosis symptoms have yielded inconsistent findings.[29] Gender has been shown to moderate the relationship between early adversity and established psychosis and subclinical psychotic experiences,[30] whereas others reveal no impact of sex/gender.[16]

Where early adversity is part of a person's route to psychosis it is vital to study candidate mechanisms or mediators that help explain how these adverse events led to an increased chance of reporting psychotic symptoms as these may be mechanisms that can also be targeted in therapy.[6] Potential factors that have been considered include the impact of childhood adversity/trauma on attachment relationships,[31] affective dysregulation,[32] and how the person coped with the trauma (eg, dissociation[11]) at the time, and subsequently. However, a commonly studied area is to do with the schemas or beliefs the person holds of the self and others.[33,34]

Cognitive models of psychosis have long proposed that negative views of self and others are important in understanding psychotic symptoms. For instance, beliefs that others are powerful and the person is weak help explain the impact of command hallucinations.[35] Similarly, negative beliefs that others are untrustworthy, cruel, and unkind are seen as the lens from which people with paranoia view current events and helps explain the high levels of suspiciousness and mistrust.[36] Hardy and colleagues[37] found that negative-other beliefs (but not negative-self beliefs) mediated the relationship between childhood emotional abuse and delusions. A systematic review and meta-analysis of this topic indicates that negative-self and other beliefs mediate the relationship between developmental trauma, especially emotional abuse and neglect, and paranoia in adulthood.[38,39]

Another review of this field argued that there was strong evidence for the contribution of trauma and beliefs about self and others to psychosis symptoms. However, this was more evident in the general population than in clinical groups.[40] In the clinical studies, six reported evidence for a mediating role of negative-self and others beliefs but five did not indicating the need for additional consideration of this issue.

In this context, the present study aims to address the prevalence of adverse experiences in a large sample of people with TRP, and consider the nature of these experiences by examining the rates of reported childhood sexual, physical, and emotional abuse (CSA, CPA, CEA) and childhood physical and emotional neglect (CPN, CEN). Also, it examines the relationship between childhood adversity and symptoms of psychosis (positive and negative symptoms, hallucinations, and delusions) and psychological variables that may be potential mediators/targets for therapy.

Given the existing literature it is possible to specify a number of hypotheses that are replications of previous work but extended to this distinct sample of people with TRP. Hence, it was predicted that:

1 Exposure to early abuse and neglect will be associated with increased psychotic symptomatology.
2 Exposure to abuse and neglect will have a greater association with positive than negative symptoms.

3 Exposure to abuse will have a greater association with psychotic symptoms than neglect.
4 Exposure to abuse will have a greater association with positive symptoms than negative symptoms.
5 Exposure to neglect will have a greater association with negative symptoms than positive symptoms.
6 Exposure to abuse will be associated with hallucinations, and delusional ideation.
7 Exposure to abuse and neglect will be associated with greater negative beliefs about self and others.

Given past research,[32,40] it was predicted that negative beliefs about self and others would mediate the relationship between adversity and psychotic symptoms. In light of the findings in relation to the above predictions, the nature of specific relationships between adversity and symptoms can be explored using mediation. Given the uncertainty about the impact of sex this is also examined.

## Methods

### *Participants*

292 (210 males, and 82 females) participants were drawn from the 487 patients recruited for the FOCUS trial[41] which aimed to determine whether cognitive behavioral therapy (CBT) is an effective treatment for Clozapine-Resistant Schizophrenia (CRS). Participants in the present study were aged between 16 and 64 years of age (*M* 42.31 SD =10.30) and either had an ICD-10 confirmed diagnosis of schizophrenia, schizoaffective disorder, or delusional disorder (schizophrenia-spectrum disorders), or met criteria for an early intervention for psychosis service (operationally defined using the PANSS[42]). Participants needed to report persistent symptoms despite an adequate trial of clozapine in terms of dose, duration, and adherence, defined as treatment with clozapine at a stable dose of 400 mg or more (unless limited by tolerability) for at least 12 weeks, or if currently augmented with a second antipsychotic that had been given for at least 12 weeks, without remission of psychotic symptoms, or discontinuation of clozapine because of adverse reactions or inefficacy in the past 24 months. The participants were predominantly white (92%), unemployed (83%), diagnosed with Schizophrenia (87%) with 90% being prescribed Clozapine.

### *Design*

For these analyses single group correlational design was utilized.

## Measures

### *The Childhood Trauma Questionnaire*

The short-form Childhood Trauma Questionnaire (CTQ)[43] was used to assess CT exposure. This is a retrospective self-report questionnaire containing 28 items taken from the original 70-item version[44,45] containing 5 items to assess each of the 5 main types of childhood adversities: CEN, CPN, CEA, CPA, CSA. Three additional "minimisation and deception" items were used to detect over-idealization of childhood experiences as a potential indicator of defence/minimization (eg, "I had the perfect childhood"). Each item is rated on a 5-point Likert scale scored from 0 to 4 (never true, rarely true, sometimes true, often true) where a score of 4 would represent the highest frequency for a given item. Most items are phrased in an objective way (eg, "when I was growing up someone touched me in a sexual way or made me touch them"), but others involve more subjective evaluation (eg, "when I was growing up I believe I was sexually abused"). Studies have shown adequate reliability and validity of the CTQ in measuring and differentiating the 5 types of CT[43–45] generally and in people with emotional disorders.[46]

### *The Positive and Negative Syndrome Scale*

The Positive and Negative Syndrome Scale (PANSS),[42] was used to measure symptoms of psychosis. This is a clinician-rated 30-item semi-structured interview consisting of 7 items assessing positive symptoms (hallucinations, delusions, conceptual disorganization), 7 items assessing negative symptoms (blunted affect, passive/apathetic social avoidance), and 16 items assessing general psychopathology (anxiety, depression, lack of insight, guilt). Items are scored on a 7-point Likert scale (absent, minimal, mild, moderate, moderate-severe, severe, extreme) where a score of 7 on a given item would represent highest severity. There is good evidence for the reliability and validity of the PANSS.[42]

### *Psychotic Symptom Rating Scales*

The Psychotic Symptom Rating Scales (PSYRATS)[47] was used to assess dimensions of auditory hallucinations and delusional beliefs. These are semi-structured interviews with 11 items assessing the characteristics of auditory hallucinations (frequency, duration, controllability, loudness, location, severity and intensity of distress, amount and degree of negative content, beliefs about origin of voices, and disruption) and 6 items assess the characteristics of delusions (duration and frequency of preoccupation, intensity of distress, amount of distressing content, conviction, and disruption). Previous research has supported the reliability and validity of this measure amongst individuals with chronic schizophrenia.[47]

### *Brief Core Scheme Scale*

The Brief Core Scheme Scale (BCSS)[48] was used to measure beliefs about self and others. This is a self-report questionnaire, where 24 items are used to assess 4 subscales: negative-self-belief (eg, "I am unloved"),

negative-other belief (eg, "other people are hostile"), positive self-belief (eg, "I am valuable"), and positive other belief (eg, "others are good"). Corresponding statements are scored on a 4-point Likert scale from 0 to 4 (do not believe it, believe it slightly, believe it moderately, believe it very much, believe it totally). Previous research has demonstrated good reliability of the BCSS.[48]

### *Procedure*

Written informed consent was obtained and all the measures were completed with a research assistant trained in their administration. The PANSS and other outcome measures were undertaken at baseline and at the end of 9 months (end of the intervention) which is when the CTQ was undertaken. To avoid any impact of treatment, the baseline variables were utilized in the analysis. Additional information gathered included age, sex (as reported by the person), ethnicity, and diagnosis.

### *Ethics*

The original study was approved by NHS ethics National Research Ethics Committee (NRES Committee Northwest-Lancaster) (12/NW/0520) and relevant NHS Trust Research and Development Departments (Greater Manchester West Mental Health NHS Foundation Trust) and the trial (ISRCTN99672552) and the protocol[49] were registered and published in advance of completion of data collection.

### *Data Preparation*

Missing data was not replaced and was excluded on an analysis by analysis (pairwise basis). Outliers were retained. The skewness, kurtosis, and the Kolomogorove–Smirnov values indicated a violation of the assumption of normality for the CTQ, and efforts to transform this were not successful, but the impact of this reduces in larger samples.[50]

### *Statistical Analysis*

Given the aims of the research the analysis consisted of 4 main steps. First, the characteristics of the included sample are considered in comparison to those FOCUS participants who did not complete the CTQ. Then the prevalence and nature of adversity is considered in this sample with consideration of similarities to past research with other groups of people with Psychosis. With regards the relationship between adversity and psychosis (hypotheses 1–7) the data was analysed using SPSS (Version 24, IBM Corp, Armonk, New York, United States). Spearman's correlations explored the relationships between the variables (as the distributions of the CTQ did not meet assumptions for parametric analyses). Whilst the hypotheses are pre-specified there are multiple comparisons and to avoid type II error confidence intervals (CIs) and uncorrected probabilities are reported but for hypotheses 1–6 we have also indicated where these survive a strict Bonferroni correction on the basis that we have performed 12 main tests (0.05/12= 0.004). To avoid repetition where analyses remain significant with this correction it is indicated with an asterisk. The impact of sex on these relationships was also explored.

Finally, mediation analysis explored CT, negative beliefs about self and others and Psychosis symptoms using PROCESS software (mediation model 4, version 3.5.3[51]). Also, in light of the examination of the hypotheses (1–7) the most pertinent relationships between adversity and psychosis symptoms were explored in a mediation. Given the issue with the non-normal distribution of the CTQ, bootstrapping was used and the limitations of this approach are acknowledged.[52]

## Results

As can be seen in table 1 there were no differences between those FOCUS participants who did ($n$ = 292) or did not complete ($n$ = 195) the CTQ in terms of age, sex, or symptoms of psychosis.

The rates of childhood adversity in people with TRP are reported in table 2. These are higher than those reported in non-clinical participants[46] and comparable to those reported by other groups of people with psychiatric diagnoses[1] and groups of people with psychosis.[53] There is a higher reporting of abuse and overall adversity in females.

Whilst reporting high total scores within the sample there was variation in the rates reported of adverse experiences. As is evident in table 3, when considered by extent of adversity it is apparent that between 40% and 70% reported none to minimal experiences of neglect and abuse. These findings are broadly in line with a meta-analysis of 23 studies demonstrating that in people with psychosis the prevalence of self-reported CSA was 26%, physical abuse 39%, and emotional abuse 36%.[54] When adversity is reported, there are often quite noticeable levels of severe to extreme levels that are generally more frequent in females than males, and noticeably so in relation to abuse.

With regards the hypotheses these are examined in turn and the data is reported in table 4. Hypothesis 1 predicted that exposure to early adversity (abuse and neglect) would be associated with increased psychotic symptomatology. This was supported (CTQ total, and PANSS total $r(292) = .21$, $P < .001$* (CIs .10 .32)). Consistent with hypothesis two, the relationship was with positive symptoms rather than negative symptoms (CTQ total, and PANSS Positive $r(292) = .17$, $P = .004$*, (CIs. 05. 28), PANSS Negative $r(292) = .046$, $P = .435$ (CIs −.07 .16)).

Hypothesis 3 examined how exposure to abuse and neglect would relate to psychotic symptoms. Abuse has

**Table 1.** Descriptive Statistics (Mean and Standard Deviation) Comparing Characteristics of Those Who Completed the CTQ or Not

| Measures | Completed *M* (SD) *N* = 292 | Not completed *M* (SD) *N* = 195 | Test | *P* |
|---|---|---|---|---|
| Age | 42.31 (10.30) | 42.72 (10.94) | $t$ (485) = 0.42 | .68 |
| Sex | Males 210 (72%) Females 82 (28%) | Males 136 (71%) Females 56 (29%) | $\chi^2$ (1, 487) = 0.2 | .88 |
| PANSS Total | 82.50 (14.22) | 83.87 (13.18) | $t$ (485) = 1.07 | .28 |
| PANSS Positive | 24.91 (5.89) | 24.97 (5.74) | $t$ (485) = 1.02 | .92 |
| PANSS Negative | 19.12 (5.89) | 19.76 (6.68) | $t$ (485) = 1.11 | .28 |
| PSYRATS Hallucinations | 22.54 (13.78) | 23.55 (13.15) | $t$ (412) = 0.73 | .47 |
| PSYRATS Delusions | 14.48 (5.44) | 14.74 (5.58) | $t$ (452) = 0.49 | .62 |

*Note*: CTQ, Childhood Trauma Questionnaire; CPA, childhood physical abuse; CSA, childhood sexual abuse; CEA, childhood emotional abuse; CPN, childhood physical neglect; CEN, childhood emotional neglect.

**Table 2.** Descriptive Statistics (Mean and Standard Deviation) and Mann–Whitney *U* Tests, Comparing Childhood Trauma Questionnaire Scores Between Males and Females

| CTQ Measures | Males *M* (SD) | Females *M* (SD) | *U* | *P* |
|---|---|---|---|---|
| CTQ Total | *N* = 210 | *N* = 82 | | |
| | 43.86 (17.83) | 52.72 (24.24) | 7076.00 | .018 |
| CTQ Abuse | *N* = 215 | *N* = 86 | | |
| | 23.83 (11.09) | 31.29 (16.47) | 7099.50 | .002 |
| CTQ Neglect | *N* = 228 | *N* = 86 | | |
| | 19.99 (8.51) | 21.53 (9.10) | 8821.50 | .170 |
| CPA | *N* = 229 | *N* = 90 | | |
| | 7.47 (4.04) | 8.96 (5.23) | 9156.50 | .099 |
| CSA | *N* = 227 | *N* = 89 | | |
| | 7.18 (4.79) | 10.44 (7.83) | 8505.50 | .007 |
| CEA | *N* = 229 | *N* = 90 | | |
| | 9.32 (4.85) | 11.99 (5.71) | 7460.00 | .000 |
| CPN | *N* = 231 | *N* = 90 | | |
| | 8.64 (3.98) | 8.87 (4.07) | 10033.50 | .622 |
| CEN | *N* = 230 | *N* = 88 | | |
| | 11.33 (5.30) | 12.56 (5.80) | 8875.50 | .089 |

*Note*: CTQ, Childhood Trauma Questionnaire; CPA, childhood physical abuse; CSA, childhood sexual abuse; CEA, childhood emotional abuse; CPN, childhood physical neglect; CEN, childhood emotional neglect.

a greater relationship with psychotic symptoms (CTQ Abuse and PANSS total $r(301) = .24$, $P < .001$*, (CIs .13. 35)) than neglect (CTQ Neglect and PANSS total $r(314) = .15$, $P = .009$, (CIs .03 .26)).

Hypothesis 4, as predicted, demonstrated that abuse (CTQ Abuse and PANSS Positive $r(301) = .22$, $P = .001$*, (CIs .11 .33)), rather than neglect (CTQ Neglect and PANSS Positive $r(314) = .09$, $P = .13$, (CIs −.03 .20)) was associated with positive symptoms.

Hypothesis 5 was not supported as negative symptoms were not associated with neglect (CTQ Neglect and PANSS Negative $r(314) = .06$, $P = .31$ (CIs −.06 .17)), or abuse (CTQ Abuse and PANSS Negative $r(292) = .04$, $P = .52$ (CIs −.08 .15)).

Hypothesis 6 predicted that abuse would be associated with hallucinations and with delusional beliefs, which was partially supported (CTQ Abuse and PSYRATS Hallucinations $r(270) = .16$, $P = .008$ (CIs .04 .28)); (CTQ Abuse and PSYRATS Delusions $r(284) = .10$, $P = .085$ (CIs −.02 .22)). The type of abuse (CPA, CEA, CSA) did not matter and all were associated with Hallucinations (CPA and PSYRATS Hallucinations $r(286) = .15$, $P = .009$ (CIs .04 .27), CEA and PSYRATS Hallucinations $r(284) = .16$, $P = .008$ (CIs .04 .27), CSA and PSYRATS Hallucinations $r(282) = .16$, $P = .007$ (CIs .04 .28)). Given the differences in reported rates of adversity between males and females the analyses were run again by sex and are reported in Supplementary file 1. These were not subject to formal analysis given the risk of type II error owing to the increased number of comparisons, and smaller sample sizes, however, it is evident that the relationship between CTQ total and PANSS total was greater

**Table 3.** Descriptive Statistics (Number and Percentage) of Types and Levels of Abuse Reported by Males and Females Within the Childhood Trauma Questionnaire

| CTQ Subscales | Males *N* (%) | Females *N* (%) | Total *N* (%) |
|---|---|---|---|
| Physical abuse | *N* = 229 | *N* = 90 | *N* = 319 |
| None to minimal | 158 (69%) | 50 (55.6%) | 208 (65.2%) |
| Minimal to moderate | 28 (12.2%) | 10 (11.1%) | 38 (11.9%) |
| Moderate to severe | 20 (8.7%) | 8 (8.9%) | 28 (8.8%) |
| Severe to extreme | 23 (10%) | 22 (24.4%) | 45 (14.1%) |
| Sexual abuse | *N* = 227 | *N* = 89 | *N* = 316 |
| None to minimal | 166 (73.1%) | 56 (62.9%) | 222 (70.3%) |
| Minimal to moderate | 12 (5.3%) | 0 (0%) | 12 (3.8%) |
| Moderate to severe | 21 (9.3%) | 5 (5.6%) | 26 (8.2%) |
| Severe to extreme | 28 (12.3%) | 28 (31.5%) | 56 (17.7%) |
| Emotional abuse | *N* = 229 | *N* = 90 | *N* = 319 |
| None to minimal | 124 (54.1%) | 28 (31.1%) | 152 (47.6%) |
| Minimal to moderate | 55 (24%) | 25 (27.8%) | 80 (25.1%) |
| Moderate to severe | 22 (9.6%) | 11 (12.2%) | 33 (10.3%) |
| Severe to extreme | 28 (12.2%) | 26 (28.9%) | 54 (16.9%) |
| Physical neglect | *N* = 231 | *N* = 90 | *N* = 321 |
| None to minimal | 116 (50.2%) | 40 (44.4%) | 156 (48.6%) |
| Minimal to moderate | 39 (16.9%) | 23 (25.6%) | 62 (19.3%) |
| Moderate to severe | 36 (15.6%) | 11 (12.2%) | 47 (14.6%) |
| Severe to extreme | 40 (17.3%) | 16 (17.8%) | 56 (17.4%) |
| Emotional neglect | *N* = 230 | *N* = 88 | *N* = 318 |
| None to minimal | 99 (43%) | 28 (31.8%) | 127 (39.9%) |
| Minimal to moderate | 73 (31.7%) | 32 (36.4%) | 105 (33%) |
| Moderate to severe | 23 (10%) | 11 (12.5%) | 34 (10.7%) |
| Severe to extreme | 35 (15.2%) | 17 (19.3%) | 52 (16.4%) |

**Table 4.** Descriptive Statistics (Means, Standard Deviations) and Correlations Between Childhood Trauma Questionnaire and PANSS/PSYRATS Symptoms of Psychosis

| Measures | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| | *M* (SD) | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* |
| 1. Total CTQ | 46.34 (20.19) | 1 | | | | | | | |
| | | 292 | | | | | | | |
| 2. CTQ Abuse | 25.96 (13.26) | .91** | 1 | | | | | | |
| | | .000 | | | | | | | |
| | | 292 | 301 | | | | | | |
| 3. CTQ Neglect | 20.41 (8.69) | .89** | .64** | 1 | | | | | |
| | | | .000 | .000 | | | | | |
| | | 292 | 292 | 314 | | | | | |
| 4. PANSS Total | 83.05 (13.82) | .21** | .24** | .15* | 1 | | | | |
| | | | .000 | .000 | .009 | | | | |
| | | 292 | 301 | 314 | 487 | | | | |
| 5. PANSS Positive | 24.94 (5.83) | .17* | .22** | .09 | .61** | 1 | | | |
| | | | .004 | .000 | .125 | .000 | | | |
| | | 292 | 301 | 314 | 487 | 487 | | | |
| 6. PANSS Negative | 19.38 (6.22) | .05 | .04 | .06 | .57** | .14* | 1 | | |
| | | | .435 | .521 | .313 | .000 | .002 | | |
| | | 292 | 301 | 314 | 487 | 487 | 487 | | |
| 7. PSYRATS Hallucinations | 22.91 (13.54) | .12* | .16* | .04 | .21** | .21** | .07 | 1 | |
| | | | .048 | .008 | .56 | .000 | .000 | .184 | |
| | | 261 | 270 | 280 | 414 | 414 | 414 | 414 | |
| 8. PSYRATS Delusions | 14.59 (5.49) | .07 | .10 | .02 | .39** | .43** | .11* | .31** | 1 |
| | | | .271 | .085 | .794 | .000 | .000 | .019 | .000 |
| | | 275 | 284 | 295 | 454 | 454 | 454 | 392 | 454 |

Note: **Indicates $P < .001$.
*Indicates $P < .05$.

**Table 5.** Descriptive Statistics (Mean and Standard Deviation) and Correlations Between Brief Core Schema Scale (BCSS; Negative-Self and Negative-Other Indices) and Childhood Trauma Questionnaire (CTQ)

| Measures | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| | *M* (SD) | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* | *r*, *P*, *N* |
| 1. BCSS Negative-Self | 7.03 (6.00) | 1 | | | | |
| | | 439 | | | | |
| 2. BCSS Negative-Other | 8.84 (6.38) | .47** | 1 | | | |
| | | | .000 | | | |
| | | 424 | 433 | | | |
| 3. CTQ Abuse | 25.96 (13.26) | .30** | .27** | 1 | | |
| | | | .000 | .000 | | |
| | | 285 | 282 | 301 | | |
| 4. CTQ Neglect | 20.41 (8.69) | .18** | .19** | .64** | 1 | |
| | | | .002 | .001 | .000 | |
| | | 294 | 290 | 292 | 314 | |
| 5. CTQ Total | 46.34 (20.19) | .27** | .26** | .91** | .89** | 1 |
| | | | .000 | .000 | .000 | .000 |
| | | 277 | 273 | 292 | 292 | 292 |

Note: **Indicates $P < .001$.
*Indicates $P < .01$.

in females ($r = .4$) than males ($r = .14$) and for females there was a greater association between CTQ with negative symptoms ($r = .25$ vs $r = -.0.4$), indicating that sex does affect the pattern of relationships between trauma and psychosis, to a degree.

As shown in table 5 for hypothesis seven, exposure to adversity was associated with negative views of self (Negative-Self and CTQ Total: $r(277) = .27$, $P < .001$ (CIs .16 .38)) and to a greater degree with abuse (Abuse Total: $r(285) = .30$, $P < .001$ (CIs .18 .40)) than neglect (Neglect Total: $r(294) = .177$, $P = .002$ (CIs .06 .29)). This was also the case with negative views of others (Negative-Other and CTQ Total: $r(273) = .26$, $P < .001$ (CIs .14 .37)) and with abuse (Negative-Other and Abuse Total: $r(282) = .27$, $P < .001$ (CIs .15 .37)) to a greater extent than with neglect (Negative-Other and Neglect Total: $r(290) = .19$, $P = .001$ (CIs .07 .30)).

### *Mediation Analysis*

Mediation analysis investigated the indirect impact of negative beliefs about self and others on the relationship between Childhood Trauma (CT, abuse, and neglect) and psychosis symptoms. Mediation analysis was conducted based on 5000 bootstrapped samples using bias corrected and accelerated 95% CIs. Also, given the specific association between abuse and auditory hallucinations a second mediation analysis was undertaken to examine if the direct relationship was mediated by negative beliefs about self or others.

CT had a significant, direct path to psychotic symptomatology ($b = .12$, SE = .04, $P = .005$) and negative beliefs about self ($b = .10$, SE = .02, $P < .000$) and others ($b = .09$, SE = .02, $P < .000$). Negative beliefs about self, and others had a significant direct path to psychotic symptoms ($b = .33$, SE = .17, $P = .049$; $b = .31$, SE = .15, $P = .041$, respectively). The total model was significant ($R^2 = .07$, $F(1,268) = 19.65$, $P < .000$). The total effect of CT on psychotic symptoms was significant ($b = .18$, SE = .04, $P = .000$) as was the direct effect ($b = .12$, SE = .04, $P = .005$). The indirect effect was significant ($b = .06$ Boot LLCI .02 Boot ULCI .10). Thus, negative-self and other beliefs mediated the relationship between CT and psychosis symptoms.

In a second analysis, abuse also had a significant direct path to negative-self-beliefs ($b = .15$, SE = .03, $P < .000$) and negative-other beliefs ($b = .14$, SE = .03, $P < .000$). The direct path from abuse to hallucinations was not significant ($b = .13$, SE = .07, $P = .06$), nor were the paths from negative-self ($b = .22$, SE = .17, $P = .21$) or negative-other beliefs to hallucinations ($b = -.07$, SE =.16, $P = .67$). The total model was significant ($R^2 = .02$, $F(1,247) = 6.2$, $P = .01$). The total effect of abuse on hallucinations symptoms was significant ($b = .16$, SE = .06, $P = .013$) but not the direct effect ($b = .13$, SE = .07, $P = .056$). The indirect effect was not significant ($b = .03$ Boot LLCI −.036 Boot ULCI .08). Thus, negative-self and other beliefs did not mediate the relationship between abuse and hallucinations, which itself was not a significant relationship. Whilst abuse led to more negative views of self or others these beliefs did not contribute to the experience of hallucinations.

## Discussion

The relationship between adversity and symptoms of psychosis was examined in a large sample of people with TRP. Levels of abuse and neglect were comparable to those reported by other groups of people with psychosis indicating the contribution such experiences may play in people with

TRP. There were high levels of reported neglect and abuse especially for females who were more likely to be abused but not neglected than males. Females reported especially high levels of severe sexual and emotional abuse.

Our results showed adversity was associated with higher levels of psychotic symptoms generally and more so with positive than negative symptoms. Moreover, abuse rather than neglect was associated with positive but not with negative symptoms. Abuse rather than neglect was associated with hallucinations but not delusions. Abuse and neglect were related to negative beliefs about the self and negative beliefs about others.

Most of the relationships were modest but the findings largely support previous work indicating that adversity contributes to people with psychosis experiencing distressing symptoms, especially, hallucinations. The mediation demonstrated a general relationship with CA and neglect, negative-self, and other views and overall psychotic symptoms[40] but not in relation to the specific experience of abuse and hallucinations.

A number of limitations are evident. There is a lack of detail of the nature, duration, frequency, and perceived impact of the trauma events. The ages at which people experienced trauma which may have been important as the timing of stress has different effects on neurodevelopment, with early stress having a more severe and specific effect, creating a sensitization to later stressors in adolescence and adulthood. In addition, there is no account of later adult trauma and no assessment of the presence of current Post-Traumatic Stress Disorder, which is associated with lower quality of life, poorer functioning, higher levels of positive symptoms, general psychopathology, and poorer neurocognitive functioning.[55]

Whilst CBT for psychosis may address negative beliefs about self and others, the lack of mediation via negative belief about self and others indicates that these are not the key variables helping to contribute to hallucinations. It may be that other factors such as dissociation[11,56–59] or impact on attachment relationships may be better candidates.

Despite these and other limitations, our work further demonstrates the important role of adversity in childhood to the later emergence of distressing and impacting symptoms of psychosis. This reminds us of the need to purposefully but sensitively ask about these issues. Trauma-informed care involves taking a good trauma history and appreciating the impact of trauma on a person's presentation, including on psychotic symptoms. Given the high rate of reported abuse and neglect it would seem important that the consequences of trauma should be screened for, including post-traumatic stress disorder, complex PTSD, dissociative disorders, as well as the impact of depression and anxiety. This then provides a stronger rationale to provide treatment that reduces the impact of trauma with the plausible rationale that this can also reduce the frequency and distress of symptoms of psychosis. This has led to the suggestion that such individuals may be better suited to treatment with trauma focused therapies, like Eye Movement Desensitization and Reprocessing (EMDR)[60] and trauma focused cognitive behavioral therapy (CBTtr).[19,61] The use of trauma focused therapies[56,59,62] has previously not been available to people with psychosis often for fear of worsening their psychotic symptoms.[63]

## Supplementary Material

Supplementary data are available at *Schizophrenia Bulletin Open* online.

## Acknowledgments

We thank all the participants who agreed to take part in the trial. This study was supported by NHS Research Scotland, through the Chief Scientist Office and the Scottish Mental Health Research Network, and the Mental Health Research Network. We are grateful to the Psychosis Research Unit Service User Reference Group and the many researchers, network staff, and trial therapists who supported the study.

## Funding

This study/project was funded by the National Institute for Health and Care Research (NIHR) Health Technology Assessment programme (10/101/02). The funder had no role in data collection, data analysis, data interpretation or writing of the report. The corresponding author had full access to all the data and had final responsibility to submit for publication.

## Conflict of interests

RD reports payment for providing workshops on the topic of CBT and receives royalties for books and book chapters on the topic of CBT and delivers CBT in the National Health Service (NHS). DT reports personal fees and non-financial support from Insight-CBT partnership, Institutt Aktiv Psycoterapi (Norway), non-financial support from Anding Hospital, Beijing, China, outside the submitted work. AG and MS provide training to NHS Scotland staff in CBT for psychosis, outside the submitted work. APM reports delivering training workshops and has written textbooks about CBT for psychosis, for which he has received fees, and reports delivering CBT in the NHS. All other authors declare no competing interests.

## References

1. Wota AP, Byrne C, Murray I, *et al.* An examination of childhood trauma in individuals attending an adult mental health service. *Ir J Psychol Med.* 2014;31(4):259–270.

2. Morrison AP, Frame L, Larkin W. Relationships between trauma and psychosis: a review and integration. *Br J Clin Psychol.* 2003;42(4):331–353.
3. Varese F, Smeets F, Drukker M, *et al.* Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective- and cross-sectional cohort studies. *Schizophr Bull.* 2012;38(4):661–671.
4. Arseneault L, Cannon M, Fisher HL, Polanczyk G, Moffitt TE, Caspi A. Childhood trauma and children's emerging psychotic symptoms: a genetically sensitive longitudinal cohort study. *Am J Psychiatry.* 2011;168(1):65–72.
5. Fisher HL, Jones PB, Fearon P, *et al.* The varying impact of type, timing and frequency of exposure to childhood adversity on its association with adult psychotic disorder. *Psychol Med.* 2010;40(12):1967–1978.
6. Bentall RP, De Sousa P, Varese F, *et al.* From adversity to psychosis: Pathways and mechanisms from specific adversities to specific symptoms. *Soc Psychiatry Psychiatr Epidemiol.* 2014;49(7):1011–1022.
7. Ellason JW, Ross CA. Childhood trauma and psychiatric symptoms. *Psychol Rep.* 1997;80(2):447–450.
8. Glaser D. The effects of child maltreatment on the developing brain. *Med Leg J.* 2014;82(3):97–111.
9. van Dam DS, van der Ven E, Velthorst E, Selten JP, Morgan C, de Haan L. Childhood bullying and the association with psychosis in non-clinical and clinical samples: a review and meta-analysis. *Psychol Med.* 2012;422(12):2463–2474.
10. Schalinski I, Breinlinger S, Hirt V, Teicher MH, Odenwald M, Rockstroh B. Environmental adversities and psychotic symptoms: the impact of timing of trauma, abuse, and neglect. *Schizophr Res.* 2019;205:4–9.
11. Pilton M, Varese F, Berry K, Bucci S. The relationship between dissociation and voices: a systematic literature review and meta-analysis. *Clin Psychol Rev.* 2015;40:138–155.
12. Bendall S, Alvarez-Jimenez M, Nelson B, McGorry P. Childhood trauma and psychosis: new perspectives on aetiology and treatment. *Early Interv Psychiatry.* 2013;7(1):1–4.
13. Wang Z, Xue Z, Pu W, *et al.* Comparison of first-episode and chronic patients diagnosed with schizophrenia: symptoms and childhood trauma. *Early Interv Psychiatry.* 2013;7(1):23–30.
14. Luhrmann TM, Alderson-Day B, Bell V, *et al.* Beyond trauma: a multiple pathways approach to auditory hallucinations in clinical and nonclinical populations. *Schizophr Bull.* 2019;45:S24–S31.
15. Rosenfield PJ, Jiang D, Pauselli L. Childhood adversity and psychotic disorders: epidemiological evidence, theoretical models and clinical considerations. *Schizophr Res.* 2022;247:55–66.
16. Sideli L, Murray RM, Schimmenti A, *et al.* Childhood adversity and psychosis: a systematic review of bio-psycho-social mediators and moderators. *Psychol Med.* 2020;50(11):1761–1782.
17. Campodonico C, Varese F, Berry K. Trauma and psychosis: a qualitative study exploring the perspectives of people with psychosis on the influence of traumatic experiences on psychotic symptoms and quality of life. *BMC Psychiatry.* 2022;22(1):213.
18. Kamitsis I, Harms L, Bendall S. The subjective effect of antipsychotic medication on trauma-related thoughts, emotions, and physical symptoms: a qualitative study with people who have experienced childhood trauma and psychosis. *Psychol Psychother.* 2022;95(1):256–276.
19. Hassan AN, De Luca V. The effect of lifetime adversities on resistance to antipsychotic treatment in schizophrenia patients. *Schizophr Res.* 2015;161(2–3):496–500.
20. Schneeberger AR, Muenzenmaier K, Castille D, Battaglia J, Link B. Use of psychotropic medication groups in people with severe mental illness and stressful childhood experiences. *J Trauma Dissociation.* 2014;15(4):494–511.
21. Kim JS, Lee SH. Influence of interactions between genes and childhood trauma on refractoriness in psychiatric disorders. *Prog Neuropsychopharmacol Biol Psychiatry.* 2016;70:162–169.
22. Thomas S, Höfler M, Schäfer I, Trautmann S. Childhood maltreatment and treatment outcome in psychotic disorders: a systematic review and meta-analysis. *Acta Psychiatr Scand.* 2019;140(4):295–312.
23. Legge SE, Dennison CA, Pardiñas AF, *et al.* Clinical indicators of treatment-resistant psychosis. *Br J Psychiatry.* 2020;6(5):259–266. doi:10.1192/bjp.2019.120
24. Vargas T, Lam PH, Azis M, Osborne KJ, Lieberman A, Mittal VA. Childhood trauma and neurocognition in adults with psychotic disorders: a systematic review and meta-analysis. *Schizophr Bull.* 2019;45(6):1195–1208.
25. Wells R, Jacomb I, Swaminathan V, *et al.* The impact of childhood adversity on cognitive development in schizophrenia. *Schizophr Bull.* 2020;46(1):140–153.
26. Nucifora Jr FC, Woznica E, Lee BJ, Cascella N, Sawa A. Treatment resistant schizophrenia: clinical, biological, and therapeutic perspectives. *Neurobiol Dis.* 2019;131:104257. doi:10.1016/j.nbd.2018.08.016
27. Comacchio C, Howard LM, Bonetto C, *et al.* The impact of gender and childhood abuse on age of psychosis onset, psychopathology and needs for care in psychosis patients. *Schizophr Res.* 2019;210:164–171. doi:10.1016/j.schres.2018.12.046
28. Pruessner M, King S, Vracotas N, *et al.* Gender differences in childhood trauma in first episode psychosis: association with symptom severity over two years. *Schizophr Res.* 2019;205:30–37. doi:10.1016/j.schres.2018.06.043
29. Bendall S, Alvarez-Jimenez M, Hulbert CA, McGorry PD, Jackson HJ. Childhood trauma increases the risk of post-traumatic stress disorder in response to first-episode psychosis. *Aust N Z J Psychiatry.* 2012;46(1):35–39.
30. Gibson LE, Anglin DM, Klugman JT, *et al.* Stress sensitivity mediates the relationship between traumatic life events and attenuated positive psychotic symptoms differentially by gender in a college population sample. *J Psychiatr Res.* 2014;53(1):111–118.
31. Bucci S, Emsley R, Berry K. Attachment in psychosis: a latent profile analysis of attachment styles and association with symptoms in a large psychosis cohort. *Psychiatry Res.* 2017;247:243–249. doi:10.1016/j.psychres.2016.11.036
32. Williams J, Bucci S, Berry K, Varese F. Psychological mediators of the association between childhood adversities and psychosis: a systematic review. *Clin Psychol Rev.* 2018;65:175–196. doi:10.1016/j.cpr.2018.05.009
33. Gibson LE, Reeves LE, Cooper S, Olino TM, Ellman LM. Traumatic life event exposure and psychotic-like experiences: a multiple mediation model of cognitive-based mechanisms. *Schizophr Res.* 2019a;205:15–22. doi:10.1016/j.schres.2018.02.005
34. Thomas N, Farhall J, Shawyer F. Beliefs about voices and schemas about self and others in psychosis. *Behav Cogn Psychother.* 2015;43(2). doi:10.1017/S1352465813000817 209 223
35. Birchwood M, Mohan L, Meaden A, *et al.* The COMMAND trial of cognitive therapy for harmful compliance with command hallucinations (CTCH): a qualitative study of acceptability and tolerability in the UK. *BMJ Open.* 2018;8(6):e021657.

36. Smith B, Fowler DG, Freeman D, *et al.* Emotion and psychosis: links between depression, self-esteem, negative schematic beliefs and delusions and hallucinations. *Schizophr Res.* 2006;86(1–3):181–188.
37. Hardy A, Emsley R, Freeman D, *et al.* Psychological mechanisms mediating effects between trauma and psychotic symptoms: the role of affect regulation, intrusive trauma memory, beliefs, and depression. *Schizophr Bull.* 2016;42:S34–S43. doi:10.1093/schbul/sbv175
38. Bloomfield MAP, Chang T, Woodl MJ, *et al.* Psychological processes mediating the association between developmental trauma and specific psychotic symptoms in adults: a systematic review and meta-analysis. *World Psychiatry.* 2021;20(1):107–123.
39. Gibson LE, Reeves LE, Cooper S, Olino TM, Ellman LM. Traumatic life event exposure and psychotic-like experiences: a multiple mediation model of cognitive-based mechanisms. *Schizophr Res.* 2019b;205:15–22. doi:10.1016/j.schres.2018.02.005
40. Alameda L, Rodriguez V, Carr E, *et al.* A systematic review on mediators between adversity and psychosis: potential targets for treatment. *Psychol Med.* 2020;50(12):1966–1976.
41. Morrison AP, Pyle M, Gumley A, *et al.*; FOCUS trial group. Cognitive behavioural therapy in clozapine-resistant schizophrenia (FOCUS): an assessor-blinded, randomised controlled trial. *Lancet Psychiatry.* 2018;5(8):633–643.
42. Kay SR, Fiszbein A, Opler LA. The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. *Schizophr Bull.* 1987;13(2):261–276.
43. Bernstein DP, Stein JA, Newcomb MD, *et al.* Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse Negl.* 2003;227(2):169–190.
44. Bernstein DP, Fink L, Handelsman L, *et al.* Initial reliability and validity of a new retrospective measure of child abuse and neglect. *Am J Psychiatry.* 1994;151(8):1132–1136.
45. Bernstein DP, Ahluvalia T, Pogge D, Handelsman L. Validity of the Childhood Trauma Questionnaire in an adolescent psychiatric population. *J Am Acad Child Adolesc Psychiatry.* 1997;36(3):340–348.
46. Spinhoven P, Penninx BW, Hickendorff M, van Hemert AM, Bernstein DP, Elzinga BM. Childhood trauma questionnaire: factor structure, measurement invariance, and validity across emotional disorders. *Psychol Assess.* 2014;26(3):717–729.
47. Haddock G, McCarron J, Tarrier N, Faragher EB. Scales to measure dimensions of hallucinations and delusions: the psychotic symptom rating scales (PSYRATS). *Psychol Med.* 1999;29(4):879–889.
48. Fowler D, Freeman D, Smith B, *et al.* The Brief Core Schema Scales (BCSS): psychometric properties and associations with paranoia and grandiosity in non-clinical and psychosis samples. *Psychol Med.* 2006;36(6):749–759. doi:10.1017/S0033291706007355
49. Pyle M, Norrie J, Schwannauer M, *et al.* Design and protocol for the Focusing on Clozapine Unresponsive Symptoms (FOCUS) trial: a randomised controlled trial. *BMC Psychiatry.* 2016;16(1). doi:10.1186/s12888-016-0983-6
50. Lumley T, Diehr P, Emerson S, Chen L. The importance of the normality assumption in large public health data sets. *Annu Rev Public Health.* 2002;23(1):151–169.
51. Hayes A. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression Based Approach*. 2nd ed. New York: Guilford Press; 2018.
52. Bishara AJ, Hittner JB. Confidence intervals for correlations when data are not normal. *Behav Res Methods.* 2017;49(1):294–309.
53. Stevens LH, Turkington D, Drage L, *et al.* Investigation of a traumatic psychosis subgroup: a cluster analysis of an antipsychotic free cohort. *Psychosis.* 2019;11(4):298–307.
54. Bonoldi I, Simeone E, Rocchetti M, *et al.* Prevalence of self-reported childhood abuse in psychosis: a meta-analysis of retrospective studies. *Psychiatry Res.* 2013;210(1):8–15.
55. Seow LSE, Ong C, Mahesh MV, *et al.* A systematic review on comorbid post-traumatic stress disorder in schizophrenia. *Schizophr Res.* 2016;176(2–3):441–451.
56. McCartney L, Douglas M, Varese F, Turkington D, Morrison AP, Dudley R. Cognitive behavioural therapy for psychosis targeting trauma, voices and dissociation: a case report. *Cogn Behav Ther.* 2019;12:E18. doi:10.1017/S1754470X19000035
57. Varese F, Barkus E, Bentall RP. Dissociation mediates the relationship between childhood trauma and hallucination-proneness. *Psychol Med.* 2012;422(5):10252–11036.
58. Varese F, Udachina A, Myin-Germeys I, Oorschot M, Bentall RP. The relationship between dissociation and auditory verbal hallucinations in the flow of daily life of patients with psychosis. *Psychosis*, 2011;3(1), 14–228.
59. Varese F, Douglas M, Dudley R, *et al.* Targeting dissociation using cognitive behavioural therapy in voice hearers with psychosis and a history of interpersonal trauma: a case series. *Psychol Psychother.* 2021;94(2):247–265.
60. van den Berg DPG, de Bont PAJM, van der Vleugel BM, *et al.* Prolonged exposure vs eyemovement desensitization and reprocessing vs waiting list for posttraumatic stress disorder in patients with a psychotic disorder: a randomized clinical trial. *JAMA Psychiatry.* 2015;722(3):2259–2267.
61. Peters E, Hardy A, Dudley R, *et al.* Multisite randomised controlled trial of trauma-focused cognitive behaviour therapy for psychosis to reduce post-traumatic stress symptoms in people with co-morbid post-traumatic stress disorder and psychosis, compared to treatment as usual: study protocol for the STAR (Study of Trauma And Recovery) trial. *Trials.* 2022;23(1):429.
62. van den Berg DPG, de Bont PAJM, van der Vleugel BM, *et al.* Trauma-focused treatment in PTSD patients with psychosis: symptom exacerbation, adverse events, and revictimization. *Schizophr Bull.* 2016;422(3):693–7022.
63. van Minnen A, van der Vleugel BM, van den Berg DPG, *et al*. Effectiveness of trauma-focused treatment for patients with psychosis with and without the dissociative subtype of post-traumatic stress disorder. *Br J Psychiatry*. 2016;2209(4):347–348.