Sexual assault and psychosis in two large general population samples

Yates, Kathryn; Lång, Ulla; Peters, Evyn M.; Wigman, Johanna T.W.; McNicholas, Fiona; Cannon, Mary; DeVylder, Jordan; Oh, Hans; Kelleher, Ian

Published in:
Schizophrenia Research

DOI:
10.1016/j.schres.2022.01.033

Publication date:
2022

Schizophrenia Research 241 (2022) 78–82

Contents lists available at ScienceDirect

Schizophrenia Research

journal homepage: www.elsevier.com/locate/schres

Sexual assault and psychosis in two large general population samples: Is childhood and adolescence a developmental window of sensitivity?

Kathryn Yates [a,*], Ulla Lång [a], Evyn M. Peters [b], Johanna T.W. Wigman [c], Fiona McNicholas [d,e,f], Mary Cannon [a], Jordan DeVylder [g], Hans Oh [h], Ian Kelleher [a,d,e]

[a] Department of Psychiatry, Royal College of Surgeons in Ireland, Dublin 2, Ireland
[b] Department of Psychiatry, University of Saskatchewan, Saskatoon, SK, Canada
[c] Department of Psychiatry, Interdisciplinary Center Psychopathology and Emotion regulation (ICPE), University of Groningen, the Netherlands
[d] School of Medicine, University College Dublin, Belfield, Dublin, Ireland
[e] Lucena Clinic St. John of God Community Mental Health Services, Dublin, Ireland
[f] Department of Child Psychiatry, Our Lady's Hospital for Sick Children, Dublin, Ireland
[g] Graduate School of Social Service, Fordham University, NY, New York, United States
[h] University of Southern California, Suzanne Dworak Peck School of Social Work, California, United States

ARTICLE INFO

Keywords:
Sexual assault
Psychosis

ABSTRACT

Background: Research has shown a strong relationship between psychosis and sexual assault. Theories on developmental trauma as a causal factor for psychosis suggest that exposure to sexual trauma in childhood would have a stronger association with psychosis than sexual trauma in adulthood. We hypothesized that exposure to sexual trauma earlier in childhood and adolescence would be more strongly associated with hallucinations, delusional beliefs and psychotic disorder than sexual trauma that occurred later in life.

Methods: Using the 2007 and 2014 Adult Psychiatric Morbidity Surveys ($N = 14{,}949$) we calculated the prevalence of sexual assault, hallucinations, delusional beliefs, and psychotic disorder. We used logistic regression to examine the relationship between age of exposure to sexual assault (first exposure <16 vs first exposure ≥16) and odds of hallucinations, delusions, and psychotic disorder.

Results: Sexual assault at any age was associated with an increased odds of hallucinations (aOR = 2.00, 95%CI = 1.63–2.46), delusional beliefs (aOR = 2.55, 95%CI = 2.24–2.89) and psychotic disorder (aOR = 5.28, 95%CI = 3.59–7.76). There was no significant difference, however, in the prevalence of hallucinations, delusional beliefs or psychotic disorders in individuals first exposed to sexual assault <16 and individuals first exposed ≥16.

Conclusions: Contrary to our hypothesis, we did not find evidence that exposure to sexual assault in childhood and adolescence was more strongly associated with hallucinations, delusional beliefs or psychotic disorder than exposure to sexual assault age >16. Our findings do not support the idea that childhood and adolescence are uniquely sensitive periods for the emergence of psychotic experiences or psychotic disorder in relation to sexual trauma.

1. Introduction

Adverse experiences, such as physical (Shevlin et al., 2007), emotional (Bonoldi et al., 2013), or sexual abuse (Bebbington et al., 2011), neglect (Stickley et al., 2021), bullying (Trotta et al., 2013) and exposure to domestic violence (Shah et al., 2018), are more prevalent in individuals with psychosis compared to the general population. Some researchers have suggested that, of all adverse experiences, sexual assault may be particularly strongly associated with psychosis, especially hallucinations (Bentall et al., 2012; Read et al., 2003; Sitko et al., 2014). A possible causal role for sexual abuse in the development of psychosis has received much research attention (Bendall et al., 2008; Kelleher et al., 2013; Morgan and Fisher, 2007; Schäfer and Fisher, 2011), especially adverse experiences that occur in childhood and adolescence

* Corresponding author at: University College Dublin, School of Medicine, Dublin, Ireland.
E-mail addresses: kathrynyates@rcsi.ie (K. Yates), UllaPulkkinen@rcsi.ie (U. Lång), emp998@mail.usask.ca (E.M. Peters), j.t.w.wigman@umcg.nl (J.T.W. Wigman), fiona.mcnicholas@ucd.ie (F. McNicholas), marycannon@rcsi.ie (M. Cannon), jdevylder@fordham.edu (J. DeVylder), ian.kelleher@ucd.ie (I. Kelleher).

https://doi.org/10.1016/j.schres.2022.01.033
Received 17 August 2021; Received in revised form 10 January 2022; Accepted 16 January 2022
Available online 26 January 2022

(Baldwin et al., 2020; Croft et al., 2019; McGrath et al., 2017; Moore et al., 2017; Newbury et al., 2020; Varese et al., 2012) given that these are critical periods for brain development.

Using the Adult Psychiatric Morbidity Survey studies (2007, 2014), we wished to explore the association between age of exposure to sexual assault and prevalence of psychosis (both psychotic experiences – hallucinations and delusional beliefs – and psychotic disorders). Given that childhood and adolescence is considered a sensitive period for brain development in relation to trauma exposure and psychosis (Fuhrmann et al., 2015; Keshavan et al., 2014; Mackiewicz Seghete et al., 2018; Teicher et al., 2016), we hypothesized that exposure to sexual assault before age 16 years would be associated with greater odds of psychosis than exposure after age 16 years.

2. Methods

The Adult Psychiatric Morbidity Survey (APMS) studies are national household surveys that assess the prevalence of treated and untreated mental health disorders in a representative sample of the general population. The cross-sectional surveys have been conducted every seven years since 1993 (2000, 2007, 2014) using consistent methods. At each of the four APMS assessment time points, approximately 7500 people aged 16 years and over were interviewed after having been identified using household probability sampling. The first two surveys, conducted in 1993 and 2000, collected data on individuals aged 16–74 from England, Scotland and Wales and were conducted by the Office of National Statistics. The 2007 and 2014 surveys collected data from individuals aged 16 years onwards, with no upper age limit, in England only and were conducted by NatCen Social Research, in collaboration with the University of Leicester. For the purposes of this study, we combined data from the 2007 and 2014 studies. The 1993 and 2000 datasets were not included as they had limited data on sexual assault.

The APMS studies used a two-phase approach. During the first phase, trained interviewers collected data on demographic variables, service use and social variables as well as a number of physical and mental health conditions. In the second phase, conducted by clinically trained interviewers, Information was collected on traumatic experiences, suicidality and self-harm behaviours and psychosis.

In line with previous studies using the APMS datasets, all analyses were weighted to ensure the dataset was representative of the general population (Marwaha et al., 2014; McManus et al., 2009).

2.1. Creation of trauma variables

The 2007 and 2014 APMS surveys collected information non-consensual sexual touching and rape. They also collected information on whether these experiences occurred before or after age 16 years.

We created a 'sexual assault' variable in which individuals were said to have experienced sexual assault if they responded positively to either of the below questions:

'Before the age of 16/Since the age of 16….did anyone touch you, or get you to touch them, in sexual way without your consent?' or 'Before the age of 16/since the age of 16… has anyone had sexual intercourse with you without your consent?'

We also created a variable indicating age-point of first trauma exposure with categories: 'no sexual assault', 'First age of exposure under 16', 'First age of exposure over the age of 16'. For the 'First age of exposure over the age of 16' variable, we excluded individuals who reported sexual assault under the age of 16 so they were not included in the reference group. We included individuals who had experienced sexual assault both before and since the age of 16 in the 'first age of exposure under 16' group. This is because it is possible that individuals exposed to sexual assault only under the age of 16 could have some protective factors that reduce the negative impact of sexual assault on psychotic outcomes.

2.2. Outcome variables

2.2.1. Psychotic experiences

2.2.1.1. Past-year hallucinations. Hallucinations were assessed using the following question taken from the Psychosis Screening Questionnaire (PSQ; Bebbington and Nayani, 1995); '*Over the past year, have there been times when you heard or saw things that other people couldn't?*'.

2.2.1.2. Past-year delusional beliefs. A positive response to either of the two following items from the PSQ (Bebbington and Nayani, 1995) were used to identify past-year delusional beliefs; '*Over the past year, have you ever felt that your thoughts were directly interfered with or controlled by some outside force or person?*' and '*Have there been times when you felt that people were deliberately acting to harm you or your interests?*'.

2.2.1.3. Psychotic disorder. In addition to assessing psychotic experiences, the APMS studies also sought to identify individuals with a definite or probable psychotic disorder. Individuals who endorsed at least one of the below screening criteria in phase one, which suggested a possible psychotic disorder, were invited to a semi-structured interview using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) in phase two. The screening criteria were: current antipsychotic use, history of psychiatric hospital admission, self-reported diagnosis or symptoms suggesting a psychotic disorder, or a positive response to the follow-up question on hallucinations 'Did you at any time hear voices saying quite a few words or sentences when there was no one around that might account for it?' The phase two SCAN was used to identify individuals with psychotic disorder. Individuals whose answers to the phase one screening criteria suggested a possible psychotic disorder but were unable to be assessed were deemed to have 'probable psychosis' if they endorsed at least two of the above screening criteria.

2.3. Statistical analyses

All analyses were conducted using StataSE 14. First, we used logistic regression to assess the association between sexual assault (yes/no) and 1) psychotic experiences (hallucinations and delusional beliefs) and 2) psychotic disorder, regardless of age at first exposure, compared to individuals without a history of sexual trauma.

We used logistic regressions to test for a significant difference in the prevalence of psychotic experiences and psychotic disorders between individuals whose first exposure to sexual assault was before the age of 16 and individuals whose first exposure to sexual assault was since the age of 16. Individuals with no history of sexual assault were treated as a reference group.

Individuals with psychotic disorder were excluded from the analysis when looking at 1) hallucinations and 2) delusional beliefs. This was to ensure that individuals with psychotic disorder did not drive any significant findings for these two outcomes.

All analyses reported in text were adjusted for age and sex.

3. Results

3.1. General descriptive statistics

The 2007 ($N = 7403$) and 2014 ($N = 7546$) datasets were combined, with a total sample of $N = 14{,}949$. Age of the total sample ranged from 16 to 95 years with the mean age of the respondent being 51.7 (SD = 18.7), and 58% of the sample identified as female. Four percent (4.48%) reported past year hallucinations and 12.57% reported past year delusional beliefs. The prevalence of sexual assault in the whole sample was 13% ($N = 1851$). Approximately 9% of the whole sample reported first being exposed to sexual assault under the age of 16 and 4% reported first being exposed to sexual assault since the age of 16.

3.2. Prevalence of psychotic experiences and psychotic disorder by sexual assault

Compared to individuals with no history of sexual assault, individuals with a history of sexual assault had an increased odds of hallucinations, delusional beliefs and psychotic disorder. Whilst 3.7% of individuals with no sexual assault reported hallucinations, this compared to 7.2% of individuals exposed to sexual assault (aOR = 2.00, 95%CI = 1.63–2.46). Whilst 10.8% of individuals with no sexual assault reported delusional beliefs, this compared to 23.5% of individuals exposed to sexual assault (aOR = 2.55, 95%CI = 2.24–2.89). Whilst 0.5% of individuals with no sexual assault had a probable psychotic disorder, this compared to 2.6% of individuals exposed to sexual assault (aOR = 5.28, 95%CI = 3.59–7.76).

3.3. Age at first exposure to sexual assault

Looking at whether individuals were exposed to sexual assault before or after age 16, both groups had significantly increased odds of 1) hallucinations, 2) delusional beliefs and 3) psychotic disorder (see Table 1). Comparing across age groups, there was no significant difference in the prevalence of 1) hallucinations, 2) delusional beliefs or 3) psychotic disorders in individuals first exposed to sexual assault under age 16 years and individuals first exposed to sexual assault after age 16 years (see Table 1).

4. Discussion

This study aimed to explore the association between age of sexual assault and prevalence of 1) hallucinations 2) delusional beliefs and 3) psychotic disorder in the general population. Given that childhood and adolescence is a sensitive period in terms of dependency, safety and attachment, and that early adverse experiences may more negatively affect the developing brain (Fuhrmann et al., 2015; Keshavan et al., 2014; Mackiewicz Seghete et al., 2018; Teicher et al., 2016), we hypothesized that exposure to sexual trauma before the age of 16 would be more strongly associated with hallucinations, delusional beliefs and psychotic disorders than sexual trauma that occurred after age 16. Our hypothesis was not supported: although sexual assault was associated with increased odds of 1) hallucinations 2) delusional beliefs and 3) psychotic disorder, this association did not differ depending on age at exposure.

There are several possible explanations for the relationship between sexual assault and psychosis. Sexual assault may be directly or indirectly causally related to the emergence of PE and psychotic disorder via multiple pathways. For example, increased stress sensitivity (Grasso et al., 2013), substance use as a form of self-medication (Kendler et al., 2000), and deficits in cognitive and affective function (Pechtel and Pizzagalli, 2011) are common in victims of trauma (Cross et al., 2017) and may also increase risk for psychosis (Ruby et al., 2014). Alternatively, it may be the case that the relationship is non-causal and that individuals who are more vulnerable to psychosis are also more vulnerable to victimisation, including sexual victimisation.

4.1. Sexual assault and hallucinations

Some research suggests that sexual assault may be associated with hallucinations specifically, rather than other types of psychotic experience such as delusional beliefs (Bentall et al., 2014). Researchers have proposed this may partly be due to the mediating influence of dissociative experiences as a result of trauma and how these associate with hallucinations specifically (Pilton et al., 2015). For example, Allé et al. (2019) found that individuals who report hallucinations have more frequent involuntary autobiographical memories compared to healthy controls, which may refer to past traumatic experiences, and may be reported as intrusive and distressing. Our findings were not in keeping

Table 1
Odds of 1) hallucinations, 2) delusional beliefs and 3) psychotic disorder in individuals first exposed to sexual assault aged under 16 years compared to over 16 years.

	Hallucinations					Delusional beliefs					Psychotic disorder				
	Under 16 at time of first exposure		Over 16 at time of first exposure		Difference (OR)[b]	Under 16 at time of first exposure		Over 16 at time of first exposure		Difference (OR)[b]	Under 16 at time of first exposure		Over 16 at time of first exposure		Difference (OR)[b]
	n (%) with HA	OR[a] (CI95%)	n (%) with HA	OR[a] (CI95%)		n (%) with DB	OR[a] (CI95%)	n (%) with DB	OR[a] (CI95%)		n (%) with PD	OR[a] (CI95%)	n (%) with PD	OR[a] (CI95%)	
Sexual assault	96 (7.69)	**2.15 (1.70–2.71)**	34 (6.16)	**1.66 (1.15–2.39)**	0.77 (0.51–1.16)	296 (23.91)	**2.63 (2.27–3.04)**	124 (22.46)	**2.32 (1.87–2.86)**	0.88 (0.69–1.13)	37 (2.88)	**5.83 (3.86–8.79)**	11 (1.95)	**3.73 (1.93–7.19)**	0.61 (0.31–1.21)

HA, hallucinations; DB, delusional beliefs; PD, psychotic disorder.
Bold font indicates statistical significance.
[a] Adjusted for age and sex.
[b] Comparing the prevalence in O16 group to U16 group; adjusted for age and sex.

with the above. Rather, there was a similar order of magnitude in terms of the relationship between hallucinations and delusional beliefs with sexual assault, and this was consistent across both age of exposure groups.

4.2. Strengths and limitations

The APMS is a large, nationally representative general population survey that uses consistent measures. As such, we were able to combine the 2007 and 2014 datasets in order to examine the association between two phenomena with low prevalence in a large overall sample. Due to the cross-sectional nature of the APMS surveys, we cannot determine temporal association or determine causality. Retrospective reporting of sexual assault could have led to recall bias. However, studies on the retrospective reporting of childhood adversity show it to have good test-retest reliability (Pinto et al., 2014). Reasonable test-retest reliability (using the k statistic; Sim and Wright, 2005) of retrospective reporting of abuse has been shown in a psychosis population (Fisher et al., 2011). Similarly, sexual assault is more often underreported rather than over-reported (World Health Organization, 2003). It could be that individuals who have been repeatedly exposed to sexual assault are likely to show more severe sequelae than an individual exposed only once. Whilst individuals who had been exposed to the same type of assault at both time points had to have experienced assault at least twice, we did not have data on the frequency of assault for all individuals, which may increase the magnitude of the relationship further. Similarly, we did not have information on factors such as the relationship between the perpetrator and the victim, access to treatment post-trauma or subjective interpretation of distress, all of which may influence the association between trauma and hallucinations and delusional beliefs.

4.3. Conclusions

Using a large general population sample, we explored whether the timing of sexual assault during development was differentially associated with hallucinations, delusional beliefs and psychotic disorder. We found that sexual assault was associated with increased odds of experiencing hallucinations, delusional beliefs and psychotic disorder but, contrary to our hypothesis, did not find a difference in the strength of the association depending on whether this abuse occurs before or after age 16 years. Our findings do not support the idea of childhood and early adolescence as a developmental window of particular sensitivity to sexual trauma in terms of risk for psychotic disorder or psychotic experiences. Future research should explore the clinical significance of hallucinations and delusional beliefs in individuals who report sexual assault and whether the co-occurrence of different types of trauma influences the relationship.

Declaration of competing interest

None.

Acknowledgements

We would like to thank National Health Service (NHS) Digital for granting us permission to use the Adult Psychiatric Morbidity Survey (APMS) data.

Funding

This work was supported by a Strategic Academic Recruitment (StAR) award to I.K. from the Royal College of Surgeons in Ireland (KY, UL). M.C. was funded by European Research Council Consolidator Award (724809, iHEAR). I.K. was funded by the Irish Health Research Board (ECSA-2020-05), and St John of God Research Foundation clg (project grant 2021). JTWW was funded by a Netherlands Organisation for Scientific Research (NWO) Veni grant no. 016.156.019. Funding sources had no involvement in study design, in the collection, analysis or interpretation of the data, in writing of the manuscript, or in the decision to submit the manuscript for publication.

References

Allé, M.C., Berna, F., Berntsen, D., 2019. Individuals with psychotic-like experiences exhibit enhanced involuntary autobiographical memories. Psychiatry Res. 273, 281–287. https://doi.org/10.1016/j.psychres.2019.01.050.

Baldwin, J.R., Ayorech, Z., Rijsdijk, F.V., Schoeler, T., Pingault, J.-B., 2020. Cyber-victimisation and mental health in young people: a co-twin control study. Psychol. Med. 1–11 https://doi.org/10.1017/S0033291720001178.

Bebbington, P., Nayani, T., 1995. The psychosis screening questionnaire. Int. J. Methods Psychiatr. Res. 5, 11–19.

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. Br. J. Psychiatry 199, 29–37. https://doi.org/10.1192/bjp.bp.110.083642.

Bendall, S., Jackson, H.J., Hulbert, C.A., McGorry, P.D., 2008. Childhood trauma and psychotic disorders: a systematic, critical review of the evidence. Schizophr. Bull. 34, 568–579. https://doi.org/10.1093/schbul/sbm121.

Bentall, R.P., 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. Schizophr. Bull. 38, 734–740. https://doi.org/10.1093/schbul/sbs049.

Bentall, R.P., 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. Soc. Psychiatry Psychiatr. Epidemiol. 49, 1011–1022. https://doi.org/10.1007/s00127-014-0914-0.

Bonoldi, I., Simeone, E., Rocchetti, M., Codjoe, L., Rossi, G., Gambi, F., Balottin, U., Caverzasi, E., Politi, P., Fusar-Poli, P., 2013. Prevalence of self-reported childhood abuse in psychosis: a meta-analysis of retrospective studies. Psychiatry Res. 210, 8–15. https://doi.org/10.1016/j.psychres.2013.05.003.

Croft, J., Heron, J., Teufel, C., Cannon, M., Wolke, D., Thompson, A., Houtepen, L., Zammit, S., 2019. Association of trauma type, age of exposure, and frequency in childhood and adolescence with psychotic experiences in early adulthood. JAMA Psychiatry 76, 79–86.

Cross, D., Fani, N., Powers, A., Bradley, B., 2017. Neurobiological development in the context of childhood trauma. Clin. Psychol. Sci. Pract. 24, 111.

Fisher, H.L., Craig, T.K., Fearon, P., Morgan, K., Dazzan, P., Lappin, J., Hutchinson, G., Doody, G.A., Jones, P.B., McGuffin, P., Murray, R.M., Leff, J., Morgan, C., 2011. Reliability and comparability of psychosis patients' retrospective reports of childhood abuse. Schizophr. Bull. 37, 546–553. https://doi.org/10.1093/schbul/sbp103.

Fuhrmann, D., Knoll, L.J., Blakemore, S.-J., 2015. Adolescence as a sensitive period of brain development. Trends Cogn. Sci. 19, 558–566.

Grasso, D.J., Ford, J.D., Briggs-Gowan, M.J., 2013. Early life trauma exposure and stress sensitivity in young children. J. Pediatr. Psychol. 38, 94–103. https://doi.org/10.1093/jpepsy/jss101.

Kelleher, I., Keeley, H., Corcoran, P., Ramsay, H., Wasserman, C., Carli, V., Sarchiapone, M., Hoven, C., Wasserman, D., Cannon, M., 2013. Childhood trauma and psychosis in a prospective cohort study: cause, effect, and directionality. Am. J. Psychiatry 170, 734–741.

Kendler, K.S., Bulik, C.M., Silberg, J., Hettema, J.M., Myers, J., Prescott, C.A., 2000. Childhood sexual abuse and adult psychiatric and substance use disorders in women: an epidemiological and Cotwin control analysis. Arch. Gen. Psychiatry 57, 953–959. https://doi.org/10.1001/archpsyc.57.10.953.

Keshavan, M.S., Giedd, J., Lau, J.Y.F., Lewis, D.A., Paus, T., 2014. Changes in the adolescent brain and the pathophysiology of psychotic disorders. Lancet Psychiatry 1, 549–558. https://doi.org/10.1016/S2215-0366(14)00081-9.

Mackiewicz Seghete, K.L., DePrince, A.P., Banich, M.T., 2018. Association between initial age of exposure to childhood abuse and cognitive control: preliminary evidence. J. Trauma. Stress. 31, 437–447. https://doi.org/10.1002/jts.22290.

Marwaha, S., Broome, M.R., Bebbington, P.E., Kuipers, E., Freeman, D., 2014. Mood instability and psychosis: analyses of British national survey data. Schizophr. Bull. 40, 269–277. https://doi.org/10.1093/schbul/sbt149.

McGrath, J.J., McLaughlin, K.A., Saha, S., Aguilar-Gaxiola, S., Al-Hamzawi, A., Alonso, J., Bruffaerts, R., de Girolamo, G., de Jonge, P., Esan, O., Florescu, S., Gureje, O., Haro, J.M., Hu, C., Karam, E.G., Kovess-Masfety, V., Lee, S., Lepine, J.P., Lim, C.C.W., Medina-Mora, M.E., Mneimneh, Z., Pennell, B.E., Piazza, M., Posada-Villa, J., Sampson, N., Viana, M.C., Xavier, M., Bromet, E.J., Kendler, K.S., Kessler, R. C., 2017. The association between childhood adversities and subsequent first onset of psychotic experiences: a cross-national analysis of 23 998 respondents from 17 countries. Psychol. Med. 47, 1230–1245. https://doi.org/10.1017/S0033291716003263.

McManus, S., Meltzer, H., Brugha, T.S., Bebbington, P.E., Jenkins, R., 2009. Adult Psychiatric Morbidity in England, 2007: Results of a Household Survey. The NHS Information Centre for Health and Social Care.

Moore, S.E., Norman, R.E., Suetani, S., Thomas, H.J., Sly, P.D., Scott, J.G., 2017. Consequences of bullying victimization in childhood and adolescence: a systematic review and meta-analysis. World J. Psychiatry 7, 60–76. https://doi.org/10.5498/wjp.v7.i1.60.

Morgan, C., Fisher, H., 2007. Environment and schizophrenia: environmental factors in schizophrenia: childhood trauma–a critical review. Schizophr. Bull. 33, 3–10. https://doi.org/10.1093/schbul/sbl053.

Newbury, J.B., Arseneault, L., Caspi, A., Moffitt, T.E., Odgers, C.L., Belsky, D.W., Sugden, K., Williams, B., Ambler, A.P., Matthews, T., 2020. Association between genetic and socioenvironmental risk for schizophrenia during upbringing in a UK longitudinal cohort. Psychol. Med. 1–11.

Pechtel, P., Pizzagalli, D.A., 2011. Effects of early life stress on cognitive and affective function: an integrated review of human literature. Psychopharmacology 214, 55–70. https://doi.org/10.1007/s00213-010-2009-2.

Pilton, M., Varese, F., Berry, K., Bucci, S., 2015. The relationship between dissociation and voices: a systematic literature review and meta-analysis. Clin. Psychol. Rev. 40, 138–155. https://doi.org/10.1016/j.cpr.2015.06.004.

Pinto, R., Correia, L., Maia, A., 2014. Assessing the reliability of retrospective reports of adverse childhood experiences among adolescents with documented childhood maltreatment. J. Fam. Violence 29, 431–438.

Read, J., Agar, K., Argyle, N., Aderhold, V., 2003. Sexual and physical abuse during childhood and adulthood as predictors of hallucinations, delusions and thought disorder. Psychol. Psychother. TheoryRes. Pract. 76, 1–22.

Ruby, E., Polito, S., McMahon, K., Gorovitz, M., Corcoran, C., Malaspina, D., 2014. Pathways associating childhood trauma to the neurobiology of schizophrenia. Front. Psychol. Behav. Sci. 3, 1–17.

Schäfer, I., Fisher, H.L., 2011. Childhood trauma and psychosis - what is the evidence? Dialogues Clin.Neurosci. 13, 360–365. https://doi.org/10.31887/DCNS.2011.13.2/ischaefer.

Shah, R., Von Mach, T., Fedina, L., Link, B., DeVylder, J., 2018. Intimate partner violence and psychotic experiences in four U.S. cities. Schizophr. Res. 195, 506–512. https://doi.org/10.1016/j.schres.2017.09.017.

Shevlin, M., Dorahy, M.J., Adamson, G., 2007. Trauma and psychosis: an analysis of the National Comorbidity Survey. Am. J. Psychiatry 164, 166–169. https://doi.org/10.1176/ajp.2007.164.1.166.

Sim, J., Wright, C.C., 2005. The kappa statistic in reliability studies: use, interpretation, and sample size requirements. Phys. Ther. 85, 257–268. https://doi.org/10.1093/ptj/85.3.257.

Sitko, K., Bentall, R.P., Shevlin, M., O'Sullivan, N., 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 Res. 217, 202–209. https://doi.org/10.1016/j.psychres.2014.03.019.

Stickley, A., Waldman, K., Sumiyoshi, T., Narita, Z., Shirama, A., Shin, J.Il, Oh, H., 2021. Childhood physical neglect and psychotic experiences: findings from the National Comorbidity Survey Replication. Early Interv. Psychiatry 15, 256–262.

Teicher, M.H., Samson, J.A., Anderson, C.M., Ohashi, K., 2016. The effects of childhood maltreatment on brain structure, function and connectivity. Nat. Rev. Neurosci. 17, 652.

Trotta, A., Di Forti, M., Mondelli, V., Dazzan, P., Pariante, C., David, A., Mulè, A., Ferraro, L., Formica, I., Murray, R.M., Fisher, H.L., 2013. Prevalence of bullying victimisation amongst first-episode psychosis patients and unaffected controls. Schizophr. Res. 150, 169–175. https://doi.org/10.1016/j.schres.2013.07.001.

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., Read, J., van Os, J., Bentall, R.P., 2012. Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective- and cross-sectional cohort studies. Schizophr. Bull. 38, 661–671. https://doi.org/10.1093/schbul/sbs050.

World Health Organization, 2003. Guidelines for medico-legal care of victims of sexual violence [WWW Document]. https://apps.who.int/iris/bitstream/handle/10665/42788/924154628X.pdf.