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Sexual Trauma in Childhood and Adulthood as Predictors of Psychotic-like Experiences: The Mediating Role of Dissociation

Research has highlighted the role of dissociation in understanding the trauma–psychosis relationship. Moreover, it has been proposed that the association between trauma and psychotic symptoms may be both directly and indirectly explained by dissociative processes. The current study sought to investigate the relationship between age at first sexual trauma, dissociative experiences and psychotic-like experiences (PLEs) in 269 female trauma survivors (overall mean age = 32.11, SD = 10.55). Mediation analyses were employed to estimate the direct effects of childhood sexual abuse (CSA; mean age at abuse onset = 6.53, SD = 3.98) and adult sexual assault (ASA; mean age at abuse onset = 18.72, SD = 2.59) on PLEs, and the indirect effects via the three subscales of absorption, depersonalisation and amnesia. The findings showed that the CSA group was significantly associated with each of the three dissociation variables ($p < 0.01$ for each variable), while the ASA group was significantly associated with absorption and depersonalisation ($p < 0.01$ for each variable). Depersonalisation partially mediated the effect between CSA and PLEs, whereas the relationship between ASA and PLEs was fully mediated via depersonalisation. The findings are consistent with, and complement, models implicating depersonalisation as a unique mechanism in the pathways between sexually based victimisation and PLEs. © 2021 The Authors. Child Abuse Review published by Association of Child Protection Professionals and John Wiley & Sons Ltd.

KEY PRACTITIONER MESSAGES:

- CSA and ASA have both direct and indirect impacts on later psychological symptoms. Elucidating mechanisms by which sexual trauma leads to the transition to PLEs should be instrumental in treatment formulation.
- Depersonalisation is a complementary mechanism in the link between sexually based trauma and PLEs. Evaluating dysfunctional metacognitive beliefs is crucial for therapeutic intervention as these may contribute to the development and maintenance of symptoms.

KEY WORDS: sexual trauma; psychosis; psychotic-like experiences; dissociation

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'Investigate[s] the relationship between age at first sexual trauma, dissociative experiences and psychotic-like experiences... in 269 female trauma survivors'

'Exposure to traumatic experiences in early life plays a significant aetiological role in a host of mental health disorders across the life course'

'The association between trauma and psychotic symptoms may be both directly and indirectly explained by dissociative processes'

Introduction

A wealth of empirical evidence now exists highlighting the detrimental impact of trauma and adverse life events on individual wellbeing (Morgan and Gayer-Anderson, 2016). In particular, it is well documented that exposure to traumatic experiences in early life plays a significant aetiological role in a host of mental health disorders across the life course, including psychosis (Varese *et al.*, 2012). Numerous methodologically rigorous population, clinical, meta-analytic and trauma-exposed studies (Seidenfaden *et al.*, 2017) have quantified childhood abuse, particularly of a sexual nature, as a major risk factor for the development of psychosis.

The contribution of the timing of sexual trauma and vulnerability to psychosis has been less well studied. Recent research has highlighted how the type and timing of exposure confers a specific risk in the development of psychotic-like experiences (PLEs) (Schalinski *et al.*, 2018). This is further exaggerated by the level of intrusiveness and distress of the experiences including severity, frequency, comorbidity and impairment (Linscott and van Os, 2013). This is further complicated when observing the heterogeneous outcomes and overlap in mental health disorders, and that PLEs are relatively common in other diagnoses, including depression, post-traumatic stress disorder, bipolar affective disorder and personality disorder (Palmier-Claus *et al.*, 2016). These diverse outcomes and differential pathways from adversity to mental health difficulties, however, suggest that potential underlying psychological mechanisms may be in operation, contributing to the myriad outcomes that are observed.

Although the evidence base for the relationship between early trauma and psychosis has expanded exponentially, the mechanisms by which this occurs remain a contentious area of debate (Newman-Taylor and Sambrook, 2013). Examining potential mediators in the relationship has the potential to help illuminate the key processes which help both drive and maintain psychotic symptomology. One mechanism that has been widely recognised is that of dissociation, with many researchers suggesting that the association between trauma and psychotic symptoms may be both directly and indirectly explained by dissociative processes (Anglin *et al.*, 2015). Dissociation has been conceptualised as the result of the interplay between integrative failures and defence mechanisms, which serve to protect an individual after traumatic events (Farina *et al.*, 2019). The Diagnostic and Statistical Manual-5 (DSM-5®) (American Psychiatric Association, 2013) further defines dissociation as the 'disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behaviour' (p. 291), which is known to be a major feature of trauma responses. These then contribute to a range of subjective experiences such as depersonalisation (experiences of the self as unreal or unfamiliar), derealisation (experiences of the external environment as unreal or unfamiliar) and emotional numbing (experience of affect as dulled or absent) (Sar *et al.*, 2017).

Examining the psychological mechanisms mediating the effects between sexual trauma and psychotic symptomology provides a promising pathway in disentangling specific aetiologies. In particular, researchers are increasingly focusing on how distinct psychotic experiences may be a product of specific

psychological foundations, which act as risk factors and carrier mechanisms for psychosis. In addition, there is growing evidence that differential dissociative experiences are related to the expression of differing psychotic symptomology. Perona-Garcelán *et al.* (2014) demonstrated that both depersonalisation and absorption were mediators in the relationship between trauma and hallucinatory experiences in both clinical and non-clinical populations. Furthermore, Holmes *et al.* (2005) proposed that depersonalisation and specifically peritraumatic detachment affect the encoding of traumatic memories, resulting in poorly integrated information that intrudes into conscious awareness as hallucinations. Furthermore, Varese *et al.* (2012) established that dissociation positively mediated the effect of childhood trauma and hallucination-proneness and that the mediational role was particularly strong for childhood sexual abuse (CSA) over other types of trauma. In contrast to the plethora of literature concerning CSA, PLEs and dissociation, adult sexual assault (ASA), psychotic-like symptomology and dissociation have been less examined. Some research has suggested, however, that a primacy/recency effect may occur, whereby recent sexual trauma may have a greater impact on psychological outcomes than distal childhood trauma (Krause *et al.*, 2020). In particular, individuals who have suffered recent trauma are thought to attempt to self-regulate through dissociation, and it has been suggested that such maladaptive coping mechanisms increase the risk of positive psychotic symptomology (Anglin *et al.*, 2015). Taken together, these studies established that the impact of both childhood and adulthood sexual trauma on PLEs may not be direct, but mediated by a number of dissociative processes, a proposition that is consistent with many dissociative accounts of the trauma–hallucination relationship (e.g. Moskowitz, 2011).

Investigations of the contribution of the timing of sexual trauma have been less well studied, with the available evidence remaining inconclusive regarding the specificity of timing that is thought to sensitise for psychotic symptom initiation and exacerbation (Longden *et al.*, 2015). The aim of the current study was to determine the differential impact of the timing of sexual trauma and transition to PLEs via dissociation. Specifically, the study sought to examine the role of age at first sexual trauma and the relationship to both dissociative experiences and PLEs. Firstly, it was hypothesised that both CSA and ASA would be positively associated with the frequency of dissociation and PLEs. Secondly, it was hypothesised that dissociative absorption, dissociative amnesia and dissociative depersonalisation would act as mediators in the relationship between CSA and PLEs and between ASA and PLEs.

Method

Participants and Procedure

A between-group female sample of 269 help-seeking sexual trauma survivors completed an online questionnaire. The between-group factor was the timing of sexual trauma with two levels (childhood, adulthood). In total, the sample comprised 237 CSA survivors and 32 ASA survivors. Ethics approval was granted from the university research ethics committee. Initially, websites and online discussion forums for sexual trauma survivors were identified from

‘The sample comprised 237 CSA survivors and 32 ASA survivors’

the UK, USA and Australia. With the support of the website administrators, a message was posted on the sites describing the research project and requesting participants. Potential participants were required to be active users and full members of the particular website/forums for more than one year for inclusion. Invitations to participate were on the home pages of each help-seeking website/forum involved. Participation in the study was on a self-selecting basis. The information, consent form and questionnaire were accessed by following the link. After providing informed consent, participants had access to the questionnaire. If potential participants did not want to take part after reading the participant information, a withdrawal link was provided alongside the consent form. Participants were advised of the sensitive nature and that they had the right to withdraw at any time. After completion, participants were presented with country-specific support and advice services. Participants were recruited from 11 internet forums, with the majority emerging from Pandys.org (36.5%), aftersilence.org (20.5%) and Psychforums.com (15%).

Statistical Methods

Mediation analyses were employed, and models were tested using the approach specified by Preacher and Hayes (2008) that allows multiple mediators to be included in an overall analysis. This approach was favoured over the Sobel test (MacKinnon *et al.*, 1995) owing to the likelihood of low power and the occurrence of type II errors. The overall model was specified and estimated using Mplus 7.0 (Muthén and Muthén, 2010) based on robust maximum likelihood estimation and 1000 bootstrap redraws. In addition, the statistical significance of the mediated effects was computed using bootstrapped, bias-corrected and accelerated percentile-based confidence intervals (Efron, 1987; Efron and Tibshirani, 1993). If the 95 per cent bias-corrected confidence interval for the parameter estimate did not include zero, then the indirect effect was statistically significant and mediation was established (Mallinckrodt *et al.*, 2006; Preacher and Hayes, 2008).

Measures

*The Sexual Abuse Questionnaire Part 2 (SAQ-Part II; Lock *et al.*, 2005)*

The SAQ is a 36-item self-report measure. It is used to assess history of CSA and comprises a number of sexual abuse questions alongside a number of filler items. For this study, only four items were retained: 'Someone removed my clothing when I did not want them to', 'Someone touched me sexually when I did not want them to', 'Someone forced me to engage in sexual behaviour, but not sexual intercourse' and 'Someone forced me to engage in sexual intercourse when I did not want to'. For each item, a follow-up question asked, 'What age were you when it first happened?' On the basis of the responses, two variables were computed that indicated whether the first occurrence of sexual trauma occurred before or after the age of 16 years, a cut-off used in many large-scale population-based studies (Bebbington *et al.*, 2011). In this sample, the SAQ-Part II's internal consistency was good, yielding a Cronbach's alpha of 0.78.

**'Mediation analyses
were employed'**

The Seven-Item Adolescent Psychotic-Like Symptom Screener (APSS; Kelleher et al., 2011)

This measure assessed PLEs using seven items and can be used with both adolescent and adult samples to assess hallucinatory ('Have you ever heard voices or sounds that no-one else can hear?') and delusional ('Have you ever felt you were under the control of some special power?') experiences. Each item had three possible responses: 'Yes, definitely', 'Maybe' and 'No, never'. For the purposes of this study, the response format was altered to assess symptom frequency using a four-point Likert scale: '0 = Never, 1 = Sometimes, 2 = Often, 3 = Nearly always' - with higher scores indicating a higher level of psychotic experiences. In this sample, the APSS's internal consistency was good, yielding a Cronbach's alpha of 0.81.

The Dissociative Experiences Scale (DES; Bernstein and Putnam, 1986)

The DES is a 28-item self-report measure designed to measure dissociative experiences and phenomena in daily life. Respondents rate the percentage of time that they experience each item on an analogue scale ranging from zero to 100 per cent in increments of ten. For each item, the possible range of scores is zero to 100. It produces an overall score and three subscale scores (absorption, depersonalisation and amnesia). Participants are instructed to report only experiences they had while not being under the influence of alcohol or drugs. The amnesia subscale measures memory loss (e.g. Some people have the experience of finding themselves dressed in clothes that they do not remember putting on), the depersonalisation subscale measures the experience of unreality of the self (e.g. Some people have the experience of looking in a mirror and not recognising themselves) and the absorption subscale measures levels of distraction that are said to be caused by preoccupation with past trauma (e.g. Some people find that sometimes they are listening to someone talk and they suddenly realise that they did not hear part or all of what was said). In this sample, the DES's internal consistency was excellent, yielding a Cronbach's alpha of 0.97.

Results

Sociodemographic Information

For the main study, participants were recruited from three different geographical locations. Participants were enlisted from online support forums, websites and organisations from the UK, USA and Australia. Data from the UK sample ($N = 137$) consisted of 120 females and 12 males, mean age was 32.89 (SD = 9.79). The USA sample ($N = 127$) comprised 120 females and seven males, mean age was 32.21 (SD = 11.42), while the sample obtained from Australia ($N = 35$) consisted of 29 females and six males with a mean age of 33.57 (SD = 11.86). Overall, the study consisted of 25 males, with a mean age of 39.36 (SD = 10.69) and 269 females with a mean age of 32.11 (SD = 10.55). Analyses were conducted on the female sample of 237 CSA survivors (mean age at abuse onset = 6.53, SD = 3.98) and 32 ASA survivors (mean age at abuse onset = 18.72, SD = 2.59). Around three-quarters of the sample identified as white (72.9%) and resided in an urban

'Participants were enlisted from online support forums, websites and organisations from the UK, USA and Australia'

area (73%). A further 82.6 per cent of the sample reported having educational qualifications, with more than half the sample working full/part-time (51%) and unemployment status accounting for around 30 per cent of the sample. Of these, around two-thirds (64.3%) identified as having a professional/managerial occupation, while more than a quarter identified as partly skilled and unskilled (26.7%).

Descriptive Analyses

Table 1 provides a between-group comparison of both the CSA under-16 (U16) and ASA over-16 (O16) age groups assessed using the DES and APSS. The U16 group scored higher than the O16 group on all three dissociation subscales and the DES total, with the greatest deficit emerging in the depersonalisation domain. Scores on the APSS evidenced a similar trend with the CSA group scoring higher in all domains than the ASA group, with auditory hallucinations evidencing the largest deficit between groups. A number of independent samples *t*-tests were carried out on the data to determine the effect of experiencing sexual trauma in childhood or adulthood on the variables. Results showed that participants who experienced sexual trauma in childhood had higher mean scores on each of the APSS domains than those who experienced sexual trauma in adulthood and these differences were found to be significant, $t(-2.51) = 2.57, p = < 0.05$. Further, results showed that participants who experienced sexual trauma in childhood had higher mean scores on each of the DES domains than those who experienced sexual trauma in adulthood and these differences were found to be significant $t(-2.75) = 3.98, p = < 0.05$.

Mediation Analysis

Mediation analysis was employed to estimate the direct effects of CSA and ASA on PLEs and the indirect (mediated) effects via the three subscales

Table 1. Comparison of under-16 sexual trauma and over-16 sexual trauma age groups assessed using the DES and the APSS

| | Sexual trauma under 16 years (<i>N</i> = 237) | Sexual trauma over 16 years (<i>N</i> = 32) | <i>t</i> (df) | <i>p</i> |
|---------------------------------------|---|---|---------------|----------|
| DES | | | | |
| Absorption/Imaginative Involvement | 40.17 (23.23) | 29.00 (22.40) | | |
| Depersonalisation | 33.21 (28.80) | 19.68 (23.11) | | |
| Amnesia | 20.80 (21.76) | 11.09 (15.88) | | |
| Total | 34.53 (22.92) | 23.17 (20.05) | -2.51 (267) | 0.01 |
| APSS | | | | |
| Thoughts read | 1.51 (0.73) | 1.47 (0.57) | | |
| Messages sent | 1.17 (0.45) | 1.06 (0.25) | | |
| Following/Spying | 1.81 (0.80) | 1.78 (0.75) | | |
| Heard voices | 1.94 (0.98) | 1.34 (0.55) | | |
| Under control | 1.28 (0.66) | 1.19 (0.47) | | |
| Seen things | 1.61 (0.75) | 1.38 (0.49) | | |
| Extra special powers | 1.31 (0.65) | 1.19 (0.40) | | |
| Total | 1.52 (0.49) | 1.34 (0.31) | -2.75 (267) | 0.008 |

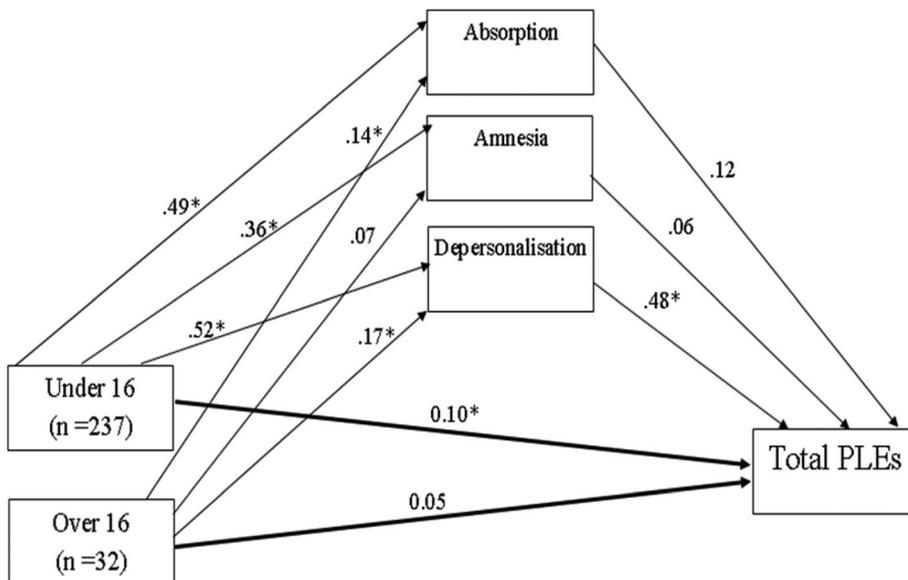
Values are means (SD).

APSS = Adolescent Psychotic-Like Symptom Screener; DES = Dissociative Experiences Scale.

of dissociative absorption, dissociative depersonalisation and dissociative amnesia. All models were conducted separately for CSA and ASA compared to controls. A range of demographic variables and potential risk factors for PLEs (age, educational qualifications, employment status) were controlled for by including them as covariates in the analysis. The multiple mediator model is presented in Figure 1.

Direct estimates showed that the regression coefficients of each of the mediation variables on CSA (U16) were statistically significant ($p < 0.01$ for each variable) (see Table 2). The model estimates further showed that the regression coefficients were significant between ASA (O16) and Absorption and Depersonalisation ($p < 0.01$ for each variable). The model also showed that, with the exception of the Depersonalisation variable ($p < 0.005$), the regression coefficients of the mediator variables direct to Total PLEs were non-significant.

The mediation analysis indicated that the path coefficient between CSA (U16) and Total PLEs was statistically significant (path c_1 ; $\beta = 0.100$, $SE = 0.212$, $p = 0.02$) (see Figure 1). The bootstrapping estimate of the indirect path between Depersonalisation and Total PLEs was also statistically reliable ($\beta = 0.249$, 95% confidence interval [0.16, 0.34]). Further, the path coefficient between ASA (O16) and Total PLEs was non-significant (path c_2 ; $\beta = 0.050$, $SE = 0.176$, $p = 0.15$). While the bootstrapping estimate of the indirect path between Depersonalisation and Total PLEs was significant ($\beta = 0.081$, 95% confidence interval [0.03, 0.13] $p < 0.05$). The data suggest therefore that Depersonalisation partially mediated the effect between CSA and PLEs, whereas the relationship between ASA and PLEs was fully mediated through depersonalisation. The total proportion of the variance accounted for by these models was encouraging, with R-squared values of 0.48 for Total PLEs, 0.18 for Absorption, 0.10 for Amnesia and 0.20 for Depersonalisation, indicating



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Figure 1. Path diagram indicating direct and mediated effects of dissociative experiences between under-16 childhood sexual abuse (Under 16) (paths a1 – a3) and over-16 adult sexual assault (Over 16) (paths a4 – a6) age groups and psychotic-like experiences (Total PLEs) (paths b1 – b3). * < 0.05 , < 0.01 , < 0.001 .

Table 2. Direct and indirect (mediated) effects of childhood sexual abuse (under-16 age group) and adult sexual assault (over-16 age group) on total PLEs with bootstrapped confidence intervals.

| | Absorption | | Amnesia | | Depersonalisation | |
|---|------------|---------------|----------|---------------|-------------------|--------------|
| | β | <i>p</i> | β | <i>p</i> | β | <i>p</i> |
| Direct effect from under-16 age group ($a_1 - a_3$) | 0.488*** | <0.001 | 0.357*** | <0.001 | 0.518*** | <0.01 |
| Direct effect from over 16 age group ($a_4 - a_6$) | 0.140* | 0.008 | 0.065 | 0.13 | 0.168*** | <0.01 |
| Direct effect to total PLEs ($b_1 - b_3$) From: | 0.117 | 0.22 | 0.061 | 0.46 | 0.481*** | <0.01 |
| | β | 95% BC CI | β | 95% BC CI | β | 95% BC CI |
| Mediated paths: under-16 age group | 0.057 | [-0.04, 0.15] | 0.022 | [-0.04, 0.08] | 0.249* | [0.16, 0.34] |
| Mediated paths: over-16 age group | 0.016 | [-0.01, 0.05] | 0.004 | [-0.01, 0.02] | 0.081* | [0.03, 0.13] |

Note:

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.005$ (under-16 age group compared to controls, over 16-age group compared to controls).

BC = Bias-corrected; CI = confidence interval; PLEs = psychotic-like experiences.

considerable variation explained by age at first sexual trauma and the background variables.

Discussion

The objectives of this study were twofold: (1) to assess whether CSA and ASA would influence the expression of both dissociation and PLEs; and (2) to ascertain if specific dissociative processes mediated the relationship between age at first sexual trauma and PLEs. Our figures on the links between sexual trauma and the development of PLEs complement the well-established evidence base, highlighting trauma, particularly sexual trauma, as an aetiological agent for the development of psychotic-like symptoms (Longden *et al.*, 2015).

A number of possible explanations could account for these relationships, which have been highlighted within the wider literature. These could include cognitive models whereby trauma enhances negative or maladaptive schemas, leading to cognitive disturbances and appraisal errors rendering individuals more susceptible (Copeland *et al.*, 2007). Other models such as the traumagenic neurodevelopmental model (Read *et al.*, 2001), combining social, psychological and biological factors, suggest that prolonged exposure to stressors causes permanent and irrevocable damage to the hypothalamic–pituitary–adrenal axis, resulting from trauma-induced neurological changes during key developmental periods. This biopsychosocial approach underscores how emotional reactivity to stressors may render individuals susceptible to the onset of psychotic symptoms and/or psychotic experiences. This developmental cascade perspective (Cicchetti and Banny, 2014) whereby a developmental sequence of risk is initiated when trauma is experienced in childhood has the potential to generate subsequent vulnerabilities in later life. Such cascade models are consistent with, and may compound, the understanding of how environmental adversities increase heterogeneity in symptom expression and coping mechanisms. However, these strategies can paradoxically increase an individual's sense of threat by impacting on intrusions and coping responses, thereby perpetuating psychotic symptomology.

Beyond the association connecting trauma to the development of PLEs, we were interested in the relationship between dissociative processes and age at first sexual trauma, and indeed if these processes mediated the relationship between trauma and psychotic symptoms. As predicted, individuals who had experienced sexual trauma (CSA or ASA) manifested significant dissociative symptoms and this finding is congruent with previous research examining these relationships (Scott *et al.*, 2019). Our findings also support previously reported studies suggesting that childhood abuse may generate behavioural patterns involving defensive dissociation that continues into adulthood (Briere *et al.*, 2017). However, traumatised individuals generally may be vulnerable to dissociation as a coping mechanism, which may be difficult without experiencing some degree of psychotic phenomena given the parallels in symptomology.

The main findings of the current study show that dissociative depersonalisation plays a significant mediating role in the reporting of psychotic symptomatology among survivors of sexual trauma. The effects of CSA on depersonalisation were partially responsible for the effects of CSA on PLEs, while the effects of ASA on depersonalisation were fully responsible for the effects of ASA on PLEs. This is consistent with previous literature which indicates that a history of sexual trauma could account for a significant amount of variance between dissociation and PLEs (Lahav *et al.*, 2020). Our findings highlight the meditational role of depersonalisation and transition to PLEs, which is consistent with, and supports, the vast majority of literature in the area (Perona-Garcelán *et al.*, 2014). However, we extend upon those of other researchers such as Varese *et al.* (2012) whereby depersonalisation was found to be a mediator for sexual trauma pre- and post-16 to different degrees. A number of plausible, not mutually exclusive, explanations may account for the effect that depersonalisation exerts in the development and facilitation of PLEs. In particular, it may be that non-pathological depersonalisation is as pronounced, and has similar detrimental effects on information processing for adverse events, in traumatised populations as it is in clinical populations (Seidenfaden *et al.*, 2017). These disruptions may then result in poorly encoded representations of the traumatic event, which may be experienced as PLEs. Others have supported these propositions by suggesting that exposure to sexual trauma may increase the risk of dysfunctional responses like depersonalisation to abnormal stimuli, resulting in psychosis proneness (Sheinbaum and Barrantes-Vidal, 2015). One explanation may be that traumatic experiences in childhood and adulthood lead to increased cognitive vulnerability. Indeed, research has suggested that dysfunctional and counterproductive efforts at cognitive control are instrumental in the creation and maintenance of psychotic symptoms such as hallucinations and delusions (Morrison, 2001). This may compound the proposition that dissociation acts as a ‘carrier mechanism’ in the multifarious relationship between trauma and psychotic experiences (Perona-Garcelán *et al.*, 2014). Nevertheless, whether the mechanistic pathways highlight biological and/or psychological conduits from sexual trauma to PLEs, they do appear to operate via dissociative disturbances. Indeed, depersonalisation appears to represent a plausible element in the link between sexually based trauma and psychotic symptomology irrespective of age at first abuse and may underscore the significance of this variable in explaining the total effect (Preacher and Kelley, 2011).

‘Individuals who had experienced sexual trauma... manifested significant dissociative symptoms’

‘Depersonalisation appears to represent a plausible element in the link between sexually based trauma and psychotic symptomology irrespective of age at first abuse’

The findings of the present study contribute to the existing literature base documenting the deleterious and pervasive effects of sexual trauma; however, they should be interpreted in light of potential methodological considerations and limitations. The current study extends upon the accumulating literature in the field by utilising a sexually traumatised population within an accessible and relevant online context. In particular, the high scores observed may in part be due to the anonymity afforded to online participants. The sample size for the current study could also be viewed as a strength in this hard-to-reach population. The inclusion of only females in this research may be considered a biased sample and therefore a weakness. However, focusing only on female survivors was deemed justifiable in an attempt to disentangle the mechanisms facilitating greater psychotic susceptibility in this population (Fisher *et al.*, 2012). Self-identification of sexual trauma was the singular source for inclusion in the trauma category, and so without objective verification, this recruitment strategy may be subject to memory bias and under/over-reporting. However, owing to the sensitive and anonymous nature, the current participants are more likely to reflect this target population as survivors and help-seekers. Indeed, these types of populations have been recognised as much more representative than solely clinical or non-clinical samples (Beavan *et al.*, 2011), leading to better explanatory power.

Sexual abuse was categorised dichotomously as under 16 and over 16, a requirement of the temporal ordering necessary for mediation (Kraemer *et al.*, 2008). However, this may have inadvertently clustered survivors into categories irrespective of the severity of abuse, which may have had an influence on the potential mediators. It may have been advantageous to examine age continuously to observe whether differing developmental stages or key ages predicted different mediated relationships. Further, research has suggested that high levels of subjective stress sensitivity (Rössler *et al.*, 2016), a lack of resilience to socio-environmental stress (Reininghaus *et al.*, 2016), negative schemas (Gibson *et al.*, 2019) and anxiety consequent to trauma mediate the link between traumatic experiences in childhood and PLEs (Metel *et al.*, 2020); however, these variables were beyond the scope of measurement in the current study. Finally, the clustering of all PLEs as the outcome variable may have led to symptom overlap in the domains of dissociation and PLEs. It may have been beneficial to observe individual PLEs and the influence of the mediators in the relationships.

Research such as this which elucidates mechanisms by which sexual trauma contributes to PLEs should be instrumental in treatment formulation. From a clinical perspective, it may be challenging given that a crucial element of dissociation is to ameliorate traumatic and distressing memories; treatment that helps survivors remember and integrate the trauma coherently would be the most effective but may prove difficult. Treatments designed to help clients accept and process sexually traumatic events, such as cognitive processing therapy, should be offered (Holliday *et al.*, 2018). In addition, therapists should focus on and evaluate dysfunctional positive metacognitive beliefs as these may contribute to the development of psychotic-like symptomology (Cotter *et al.*, 2017). Helping sexual trauma survivors to communicate current symptoms in terms of past and/or current triggers, and what may instigate the triggers, may be crucial in detaching intrusive experiences from a sense of current threat.

'Treatments designed to help clients accept and process sexually traumatic events... should be offered'

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