Psychotic-like experiences and correlation with childhood trauma and other socio-demographic factors: A cross-sectional survey in adolescence and early adulthood in China

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ABSTRACT

Psychotic-like experiences (PLEs) in adolescence are found to be risk factors for later mental disorders. Previous research has also found that childhood trauma has a positive correlation with mental health problems. However, few studies have focused on the relationship between them, especially in adolescence and early adulthood. A total of 9122 students (age between 10 and 23.3) were surveyed and assessed with the positive and depressive subscales of the Community Assessment of Psychic Experiences and the Trauma History Questionnaire. A total of 20.7% students experienced frequent PLEs, 17.5% had frequent delusional experiences, and 7.6% had frequent hallucinatory experiences. Only a small portion of this sample experienced frequent PLEs, associated with more types of PLEs, more distress, and more depressive experiences. Several socio-demographic factors were associated with frequent PLEs in this sample, which could be further examined in future prevention studies. Students with frequent PLEs experienced significantly higher impact from trauma events, both at the time of the events and in the present, indicating a possible reciprocal effect between childhood trauma and PLEs. The impact of childhood trauma played an important role in the relationship between childhood trauma and PLEs.

1. Introduction

Bleuler put forward the important roles of biological and environmental factors in causing psychotic symptoms and schizophrenia more than 100 years ago (Peralta and Cuesta, 2011). A previous study demonstrated that although prevention is difficult for genetic risk factors, environmental risks might be modifiable and could have a significant effect (Stephan et al., 2016). Previous studies have found that psychotic-like experiences (PLEs) in early life are associated with an increased risk for later psychotic disorders (Welham et al., 2009; Mollon et al., 2016). Therefore, exploring psychosocial factors associated with PLEs in early life might be useful for the prevention of psychotic disorders.

According to previous research, the persistence of PLEs is influenced by several environmental factors such as childhood trauma (Arseneault et al., 2011), cannabis use (Hides et al., 2009), urban environment (Spauwen et al., 2006), and student status (McGrath et al., 2015), as well as personal factors, such as coping style (Bak et al., 2003), distress associated with PLEs (Hanssen et al., 2005), and the severity of PLEs (Welham et al., 2009). Among these factors, childhood trauma is likely an important one, as it is associated with the onset of several different types of psychopathology in adult life (Kitamura et al., 2000). Several studies have tried to explore the mechanism of how childhood trauma impacts PLEs (Fisher et al., 2013; Murphy et al., 2015; Choi et al., 2015). A series of intrinsic and extrinsic mediators such as depressive symptoms, elevated sensitivity, and peer victimization were found to be mediators. However, previous studies focused only on some respects of childhood trauma, such as harsh parenting and childhood abuse (Fisher et al., 2013; Cole et al., 2016), and the sample was very small in most studies (Choi et al., 2015; Cristobal-Narvaez et al., 2016; Reininghaus

et al., 2016). Therefore, further research on the relationship of childhood trauma and PLEs—examining a more comprehensive number of factors—is needed among a large sample.

Besides, PLEs are relatively common in adolescents (Kitamura et al., 2000). The period of adolescence is thought to be the crucial time for the development of later psychotic disorders (Poulton et al., 2000; Lataster et al., 2006; Nishida et al., 2008). Therefore, it will be helpful to explore the relationship and possible mediators between childhood trauma and PLEs in adolescence.

Our study of Chinese adolescents also provides a special opportunity to examine some factors that are more unique to China and occur on a massive scale, including the single-child phenomenon and the left-behind child status. As the result of the 1979 One-Child Policy, most families in China only have one child. Further, millions of parents migrated within China since the implementation of the reform and opening-up policy in 1978, causing over 61 million children to be "left behind" in their hometowns by one or both parents who migrated to work in other cities. However, no research has been conducted regarding this impact on PLEs.

As the baseline phase of a longitudinal study, we sampled first grade students from middle schools (usually aged 10–12 years in junior middle school, 14–16 years in senior middle school) and a college (usually aged 17–19 years) in Hunan Province and Jiangxi Province. Both provinces have enormous numbers of outgoing internal migrants.

There were three main aims in this cross-sectional study: First, we aimed to explore the prevalence of PLEs in Chinese adolescents, and the relationship between the frequency of PLEs, the number of types, the distress, and the depressive experiences. Second, the correlation of the frequency of PLEs with childhood trauma and other social-demographic factors was explored. Finally, the mediating effect of the impact from traumatic events was explored between childhood trauma and the frequency of PLEs. It was hypothesized that the frequency of PLEs was associated with the number of PLE types, the distress of them, and the depressive experiences. Considering findings from previous studies, it was expected that childhood trauma, younger age, minority status, urban household registration, unstable family income, "left-behind" child status, and a family history of psychiatric disorders were all associated with a higher frequency of PLEs. Additionally, impact from trauma was expected to have a mediating effect between childhood trauma and PLEs.

2. Method

2.1. Sample

First grade students from 13 middle schools (including 12 junior middle schools and 1 senior middle school) in the Xiangxi Region and Changsha City of Hunan Province, as well as 1 college in Jiangxi Province participated in the survey. All participants and their parent/guardian gave written informed consent for the study. On average, it took 45 min for the students to fill in the questionnaires. The study was approved by the Ethics Committees of the Second Xiangya Hospital of Central South University.

2.2. Instruments

The positive subscale of Community Assessment of Psychic Experiences (CAPE) was used to evaluate the lifetime PLEs (Konings et al., 2006). This self-report instrument measures PLEs on both a frequency scale (1 = never, 2 = sometimes, 3 = often, 4 = nearly always) and a distress scale (1 = not distressed, 2 = a bit distressed, 3 = quite distressed, 4 = very distressed). It includes 20 items derived from the Delusions Inventory by Peters et al. (1999) (PDI-21). As some items are quite common (such as "Have you ever felt as if some people are not what they seem to be?" and "Have you ever felt as if you are destined to be someone very important?"), especially for adolescents, or redundant,

representing similar symptoms (such as "Have you ever heard voices talking to each other when you were alone?" and "Have you ever heard voices when you were alone?"), we selected eight items reflecting true hallucinatory experiences (HEs) and delusional experiences (DEs) for further analyses. Among these items, six were related to DEs (including delusion of reference, delusion of persecution, thought withdrawal, thought insertion, thought broadcasting, and a feeling of being controlled), and two items were related to HEs (verbal auditory hallucinations and visual hallucinations). These eight items constitute eight types of PLEs in our study. Our item choice was guided by previous studies (Schreier et al., 2009; Arseneault et al., 2011; McGrath et al., 2015). Subjects were denoted as having frequent PLEs if they had a frequency of "often" or "nearly always" on one or more of the eight selected items.

As the level of PLEs' admixture with affective symptoms is also thought to be an important risk factor in the transition of PLEs to psychosis (van Rossum et al., 2011), depressive experiences were assessed through the depressive frequency subscale of CAPE (Kibel et al., 1993). The Trauma History Questionnaire (THQ), child version (Kibel et al., 1993), contains 15 items, derived from the Traumatic Events Screening Inventory Child and Parent Report (TESI) (Ghosh-Ippen et al., 2002). Each item was designed to assess the child's history of lifetime traumatic events as well as the level of emotional impact on the child, both at the time of the event and currently. Therefore, respondents were asked to choose whether they have experienced a specific traumatic event (0 = No, 1 = Yes) and to rate the strength of its impact using a number from "0 = not at all" to "4 = extremely," both at the time of the trauma and at the time of the current assessment.

Both the Chinese version of the CAPE and THQ child versions were translated into Chinese and validated specifically for this study by our research team. Both questionnaires showed good reliability and validity. A separate paper on the reliability and validity of the Chinese translations is now under preparation by the authors.

Socio-demographic information to be collected included gender, age, ethnicity, boarding options, residency status, sources of family income, "left-behind" child status, divorced family, parental death, single child status, family history of psychiatric disorders, and past history of any psychiatric conditions for participants. Exclusion criteria for the study included participants with a history of psychiatric conditions or who did not complete the specified items in the CAPE.

2.3. Analyses

First, the prevalence of PLEs, DEs, and HEs was calculated, as well as each item at different frequency levels. The prevalence of a different number of PLE types was also examined. Next, correlation analyses were conducted through Pearson's correlation coefficient between the frequency of PLEs and the PLE type metric; between the frequency of PLEs and the distress caused by PLEs; and between the frequency of PLEs and depressive experiences. Groups with PLEs of different frequency levels were also compared on the number of PLE types, the distress caused by PLEs, and the depressive experiences through a *t*-test.

Next, items on the THQ were summarized to represent three measures of trauma: (i) the number of past traumatic events; (ii) the severity of perceived emotional impact at the time of the traumatic event; and (iii) the severity of impact as experienced at present.

To investigate the predictors of frequent PLEs, DEs, and HEs, logistic regression analyses were conducted to calculate odds ratios (OR) and 95% confidence intervals (CI). The stepwise method was used with an entry criterion of 0.05 and removal criterion of 0.10. All dichotomous socio-demographic variables, age, and the number of past traumatic events were used as independent variables in a model of the frequency of PLEs. The variance inflation factor (VIF) was used for assessment of multicollinearity.

Groups with PLEs of different frequency levels were compared on average impact both at the time of the traumatic event and at present