Identification and characterization of college students with Attenuated Psychosis Syndrome in China

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ABSTRACT

Most studies on psychotic-like experiences in the non-clinical population were based on self-reported surveys, without any attempt to validate the clinical interview. The present study aimed to test whether the Attenuated Psychosis Syndrome (APS) could be detected in a college population by checking self-report results against an additional interview. A two-stage screening process was used in a sample of 579 college students (16–22 years old): a 16-item Chinese version of the Prodromal Questionnaire (CPQ-16) followed by the Structured Interview for Psychosis-Risk Syndromes (SIPS). Psychopathology symptoms were assessed using the Symptom Checklist-90 (SCL-90). There were 20 (3.5%) students who met the criteria for the APS according to SIPS. Compared with control students, the students with APS were more likely to be from divorced families and had more psychopathology based on the SCL-90. Certain factors on the SCL-90, including Obsessive-Compulsive (OBS), Interpersonal Sensitivity (INT), and Depression (DEP) were significantly correlated with positive psychosis risk symptoms on the SIPS, but only DEP had a strong correlation with the total score on the SIPS. These results demonstrate that the APS can be detected in a college sample and that psychosis risk symptoms are associated with co-occurring psychopathology.

1. Introduction

The identification of individuals at ultra-high risk of psychosis and the interventions for these individuals have become increasingly popular in recent years. In the newly published Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), 'Attenuated Psychosis Syndrome (APS)' is a new category included in the appendix (Section 3) as a condition for further study (APA, 2013). APS is a clinical condition associated with a significantly increased risk of developing psychotic disorders. The DSM-5 criteria specifically required that attenuated positive symptoms be associated with distress, disability, and warrant clinical attention; these criteria were more restrictive than other current research criteria (Granö et al., 2011). Many studies have consistently demonstrated that a large proportion of the general population has reported a psychotic-like experience at some point in their lifetime without presenting a full-blown mental disorder (Hanssen et al., 2003; Konings et al., 2006; Yung et al., 2009; Werbeloff et al., 2012). Although these psychotic-like experiences do not inevitably lead to psychosis, they indicated a higher level of distress and a greater risk of psychotic disorder (Yung et al., 2006; Nelson et al., 2012; Werbeloff et al., 2012). In contrast to a single psychotic-like experience, APS indicates a potential risk for psychosis on a syndrome level. Unfortunately, most studies on psychotic-like experiences in the general population were based on self-reported surveys without any attempt to validate the clinical interview. Therefore, it is not clear whether the criteria for APS can be applied more widely in the general population (Carpenter and van Os, 2011).

One preliminary report addressing this issue used the telephone-based Structured Interview for Prodromal Syndromes with a small sample ($n = 58$) from the general population (Schimmelmann et al., 2011). The researchers reported that only one participant fulfilled the criteria for psychosis risk syndrome. However, this study was limited by the small sample size and the lack of information on the validity of a telephone assessment compared with face-to-face interviews. Although Kelleher et al. (2012c) reported that about 8.1% of their

community sample of adolescents aged 11–13 years met the criteria for a prodromal risk syndrome based on face-to-face assessments (Kelleher et al., 2012c), the results were limited by the non-random sampling strategy and the age range of the sample, which did not align with the commonly accepted age at the onset of psychosis. Furthermore, to date, no APS studies, particularly with a non-clinical population, have been conducted in China. In this study, a two-stage diagnostic process was adopted to test whether APS could be identified in a population of older adolescents and young adults from a Chinese university and to analyze their psychopathology symptoms based on the results of the Symptom Checklist-90 (SCL-90). The hypothesis is that the APS could be identified among a college population and that such a population has more psychopathology associated with the psychosis risk symptoms.

2. Method

2.1. Participants

The study protocol, including the informed consent forms, was approved by the East Hospital affiliated with Tongji University, Shanghai, China. The participants were recruited from a mental health education course at Tongji University from October to December 2012. A total of 2500 undergraduates were enrolled in the Situation, Policy & Task compulsory course of Tongji University during the Autumn semester of 2012. One of the classes in the course is Mental Health Education course and it does not comprise of any exams. The 2500 students were subdivided into 15 classes. Of these 15 classes, four were chosen by instructors from our team as they were in charge of teaching these four classes. Thus, a total of 589 college students were invited to participate in the study. Of the 589 students who enrolled in the study, 10 (1.7%) surveys were invalid and were not included in the analysis. The submitted scales with more than 10% missing items or all "Yes" entries (ceiling effect) were considered invalid. All of the participants ($n=579$) were under-graduate freshmen or sophomores and unmarried. The mean age of the entire sample was 18.6 years (S.D.=0.9 years, range from 16 to 22), and 248 (42.8%) students were female (one student's gender was missing).

2.2. Instruments

2.2.1. The 16-item Chinese version of the Prodromal Questionnaire (CPQ-16)

The Prodromal Questionnaire (PQ-16) is a self-report questionnaire used to screen individuals for the risk of psychosis. It consists of nine items on perceptual abnormalities/hallucinations, five items on unusual thought content/delusional ideas/paranoia, and two negative symptoms (Ising et al., 2012), and it only takes approximately 3 min to complete. The items were marked true or false according to the participant's subjective experiences in the last month. When an item was marked as false, the item was rated 0; if an item was marked as true, the answer was rated according to the severity of distress experienced from 0 (none) to 3 (severe). The total score was the sum of all the scores.

The English version of the PQ-16 was translated by the authors into Simplified Mandarin Chinese (CPQ-16). Both the translation and the original English version were reviewed by several bilingual psychiatric experts to rate the semantic and cultural equivalence of each item. Then, the first-draft translation was evaluated by tens of undergraduate students, resulting in a second-draft translation based on these evaluations. Thereafter, the second draft was back-translated into English by a native English speaker who is fluent in Chinese and holds a master's degree from a Chinese university. The back-translated version of the PQ-16 was sent to the original author (H.K. Ising) to assess whether the back-translation was equivalent in meaning to the original version.

In this study, the internal consistency reliability of the CPQ-16 was good (Cronbach's $\alpha=0.72$).

2.2.2. The Symptom Checklist-90 (SCL-90)

The SCL-90 (Derogatis, 1974) is a multidimensional self-report symptom inventory with 90 items originally designed to cover nine different dimensions of psychological distress: Somatization (SOM), Obsessive-Compulsive (OBS), Interpersonal Sensitivity (INT), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHO), Paranoid Ideation (PAR), and Psychoticism (PSY). Each distinct symptom of psychopathology is rated on a Likert scale from 0 (not at all) to 4 (severe) based on the amount of distress the symptom has caused the patient in the past 7 days. The Chinese version of the SCL-90 has been widely used in China since the 1980s, and many studies have demonstrated its high reliability and validity (Zhengyu, 1984; Shulin and Linjiang, 2003). In this sample, the Cronbach's α of the SCL-90 was 0.96.

2.2.3. The Structured Interview for Psychosis-Risk Syndromes (SIPS)

The SIPS (McGlashan et al., 2010) is a clinician-administered, semi-structured interview specifically designed to establish the risk of psychosis. There are four major symptom dimensions on the Scale of Psychosis-Risk Symptoms (SOPS): positive, negative, disorganized and general symptoms. The SIPS/SOPS diagnoses three types of Psychosis-Risk Syndromes: (1) Attenuated Positive Symptom Prodromal Syndrome (APSP); (2) Brief Intermittent Psychosis Prodromal Syndrome (BIPS); and (3) Genetic Risk and Deterioration Prodromal Syndrome (GRDS). The Chinese version of the SIPS showed good reliability and validity in the assessment of psychosis risk syndromes (Lina et al., 2012). In this interviewed sample, the internal consistency reliability of the SOPS was good (Cronbach's $\alpha=0.80$).

2.2.4. Social demographic characteristics

Social demographic characteristics were evaluated using a demographic questionnaire designed by the authors that included name, sex, age, grade, address, discipline, marriage, family status, family history, and help-seeking experience for mental health.

2.3. Procedure

All of the subjects volunteered to participate at the end of the mental health education course. They signed an informed consent form and completed the CPQ-16 and the SCL-90. In this study, the positive threshold for the CPQ-16 was set at 6, based on the study conducted by Ising et al. (2012). This cut-off score was reached by 54 participants (9.3%) in this study. Of the remaining participants ($n=525$), another 50 students with CPQ-16 scores lower than 6 were randomly selected. These 104 participants entered the second stage and were interviewed by trained psychiatrists. All interviewers received a professional training for SIPS prior to the study and assessed a standard patient with APS through a video system. Inter-rater reliability was excellent among the clinical interviewers ($n=10$), and the ICC was 0.97 for the SIPS diagnoses. All of the interviews were completed within 1 month of completing the screening process.

2.4. Statistical analysis

The sample characteristics were analyzed using descriptive statistics, including means and standard deviations (S.D.s), frequencies, and percentages. Chi-square (including Fisher's exact test) or one-way ANOVA statistics were used to investigate the group differences, as appropriate. If these tests were significant, post-hoc tests were carried out. Pearson correlation analyses were conducted to test the association between the SIPS and the SCL-90. An analysis of the receiver operating characteristics (ROC) was performed to examine the sensitivity, specificity, positive predictive values (PPV), negative predictive values (NPV) and positive likelihood ratio (LR+). The accuracy of the test can be described as the area under the ROC curve (AUC). The internal consistency reliability was assessed with Cronbach's alpha coefficient. A p-value < 0.05 was considered statistically significant, and all of the tests were two-tailed. All statistical calculations were performed with SPSS version 18.0.

3. Results

3.1. Detection rate and demographic characteristics of APS

Of the 54 students who had a CPQ-16 ≥ 6, four refused to be interviewed without giving a reason and one could not be contacted because we had the wrong address. Of the remaining 49 students, 20 met the criteria for a prodromal risk syndrome as per the SIPS diagnostic criteria. In the low-scoring group (CPQ-16 < 6), all of the subjects selected to be interviewed completed the SIPS, and no one was diagnosed. All the detected APS patients were classified as APSP according to the subtypes on the SIPS. The sensitivity and specificity of the CPQ-16, using a cut-off score of 6, for APS screening in the 99 students were 100% and 63%. A total score of 9 or more balanced the greatest sensitivity and the greatest specificity, and the AUC was 0.93 ($p < 0.001$) (Table 2). Therefore, the prevalence of APS in this sample was estimated at approximately 3.5% (20/579).

The social demographic characteristics of APS are shown in Table 1. Compared with the Non-APS participants, the individuals with APS were more likely to come from a divorced family ($p < 0.001$). There were no significant differences in the family history of psychosis or the history of help-seeking for mental health problems.