Published in final edited form as:
Psychiatry Res. 2007 May 30; 151(1-2): 29–35. doi:10.1016/j.psychres.2006.10.012.

Social functioning in young people at risk for schizophrenia

Jacob S. Ballon[a,b], **Tejal Kaur**[a], **Iliana I. Marks**[a], and **Kristin S. Cadenhead**[a,*]

[a] University of California, San Diego, Department of Psychiatry, San Diego, CA, USA

[b] Stanford University, Department of Psychiatry and Behavioral Science, Stanford, CA, USA

Abstract

Deficits in social functioning are potential risk factors for schizophrenia. Social functioning was assessed in 55 individuals "at risk" for schizophrenia, 16 first episode patients with schizophrenia and 45 normal comparison subjects. The Social Adjustment Inventory for Children and Adolescents (SAICA) was administered to adolescents <18 and the Social Adjustment Scale (SAS-SR) to young adults >17. The at risk and first episode groups significantly differed from the normal subjects on measures of social functioning in the domains of peer, family, work and school relationships. Individuals at risk for schizophrenia have significant functional deficits which may be potential indicators of increased vulnerability for psychosis.

Keywords

Prodromal; Prodrome; Vulnerability markers; SAS-SR; SAICA; Social function

1. Introduction

To better define the prodrome of schizophrenia, it is necessary to identify illness-specific subsyndromal markers which help to accurately differentiate those individuals who will develop schizophrenia from others who present with similar warning signs but do not develop the illness. As current "at risk" criteria can only predict development of a psychotic illness with a sensitivity of up to 40% (Yung et al., 2004), we continue to struggle with the fact that many individuals who meet the operationally defined criteria for an "at risk" state (Miller et al., 2003) will ultimately either fail to convert to an Axis I disorder, or will be diagnosed with an Axis I disorder other than schizophrenia (Haroun et al., 2006). Combining illness-specific risk markers with current clinical "at risk criteria" is of critical importance in not only increasing the sensitivity of current criteria (Mason et al., 2004; Simon et al., 2006), but in identifying those individuals most at risk for schizophrenia (Seeber and Cadenhead, 2005).

Schizophrenia is an illness that presents itself in late adolescence or early adulthood and is often characterized by both a premorbid and a prodromal phase. The premorbid phase is characterized by a period of stable social and cognitive deficits which long precede the first episode of psychosis (Davidson et al., 1999). In contrast, the "prodromal" period is defined by its lack of stability, and a worsening course of psychosocial impairment culminating in the onset of frank psychosis (Keith and Matthews, 1991; Yung et al., 1996). A decline in quality of life and social functioning often precedes psychosis (Melle et al., 2005) and the

*Corresponding author. Department of Psychiatry, 0810, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0810, USA. Tel.: +1 619 725 3537; fax: +1 619 260 8437. kcadenhead@ucsd.edu (K.S. Cadenhead)..

duration of untreated psychosis corresponds to further decline in terms of total symptoms, depression/anxiety, negative symptoms, overall functioning, positive symptoms, and social functioning (Marshall et al., 2005). As attempts to define a predictive profile for schizophrenia develop, it is becoming clear that early identification of at risk individuals and early intervention prior to onset of psychosis can potentially diminish the toxic effects of untreated psychosis (Marshall et al., 2005).

Many prospective, premorbid high-risk studies have been conducted with children whose parents have schizophrenia or another mental disorder. These studies generally show a pattern of social dysfunction with general social withdrawal, hostility and aggression common in many children with a psychotic parent (Hans et al., 1992). Hans et al. (2000) also found that high-risk adolescents showed poor engagement with peers, immaturity, and social adjustment deficits on the Social Adjustment Inventory for Children and Adolescents (SAICA) and the Youth Self Report (YSR). These high-risk studies propose that adolescents genetically at risk for schizophrenia have social deficits that may predict vulnerability to the disease. Davidson et al.'s (1999) prospective study of Israeli draftees who later developed psychosis found that measures of intellectual ability, organization and social functioning assessed premorbidly were most predictive of future illness.

Recent studies further corroborate the role of social dysfunction as a predictive marker of future psychosis. Lencz et al.'s (2004) prospective study of 82 patients at high-risk for schizophrenia reported that social isolation and/or withdrawal were the most common presenting symptoms at initial evaluation. Yung et al. (2004) also showed that poor functioning, long duration of symptoms, high levels of depression and reduced attention were all predictive of psychosis within a group of 104 “ultra high-risk” subjects, and that combining these highly predictive variables could further increase the positive predictive value of identifying those individuals who will convert to psychosis. Other studies have suggested that the presence of academic decline with comorbid social deficits may further serve as a unique prodromal marker that may differentiate predictive risk for schizophrenia from other affective psychoses (Cannon et al., 1997; Reichenberg et al., 2002; Allen et al., 2005).

Most high-risk studies have examined social premorbid functioning either retrospectively or historically prospectively. Our study prospectively examines social functioning in a group of adolescents putatively prodromal for schizophrenia. Although we now present baseline cross-sectional data, future studies will expand on these findings to include prospective longitudinal data.

We hypothesized that individuals identified as at risk for the development of schizophrenia, or in their first episode of the illness, would exhibit deficits in social functioning compared to age-matched normal subjects at entry into the study. Additionally, we wanted to determine which specific domains of functioning are impaired.

2. Methods

A full description of the CARE program is detailed in a recent review (Seeber and Cadenhead, 2005). The Cognitive Assessment and Risk Evaluation (CARE) Program at the University of California, San Diego, is a clinic that provides longitudinal assessment of individuals ages 12 to 30 years who are considered to be at risk for developing schizophrenia, or have experienced their first episode of schizophrenia within the last year. At risk subjects are not told that they are specifically at risk for schizophrenia, but are presented with a broad differential which focuses on presenting symptoms. They are told that they have been selected to participate in the study because of changes in their thoughts,

behavior, or emotions, and that the study is designed to assess these changes while providing education and support for them and their families. Study participants also include normal comparison subjects from the community.

All participants received a comprehensive clinical, neurocognitive and psychophysiologic battery (Seeber and Cadenhead, 2005). The clinical assessment included the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (First et al., 1995) in young adults (>17 years) or the Schedule for Affective Disorders and Schizophrenia for School-Aged Children: Present and Lifetime Version (K-SADS-PL) (Kaufman et al., 1996) in adolescents (<18 years). In order to identify at risk individuals who met criteria for a “prodromal” state (as we can only truly diagnose the prodrome retrospectively), participants were assessed using the Structured Interview for Prodromal Syndromes (SIPS) (Miller et al., 2002). The at risk subjects are identified according to established CARE prodromal criteria (Table 1) that assess subsyndromal psychotic symptoms, family history of psychosis and global functioning (Seeber and Cadenhead, 2005). The CARE prodromal criteria follow the categories and symptom severity of the Criteria of Prodromal Syndromes (COPS) from the SIPS but differ slightly in the required frequency and duration of symptoms, and, for the Genetic Risk and Deterioration Syndrome, require any decline in functioning (and/or new onset of mood, anxiety or deficit symptoms) in the last twelve months in contrast to the 30% decline in GAF required by the COPS. Additionally, the Brief Intermittent Psychosis and Subsyndromal groups differ from the COPS criteria in that they also include a threshold for disorganized symptoms (behavior, thought, attention, personal hygiene and social attentiveness).

The Social Adjustment Inventory for Children and Adolescents (SAICA) (John et al., 1987) and the Social Adjustment Scale-Self Rated (SAS-SR) (Weissman and Bothwell, 1976) were used to evaluate social functioning in adolescents and young adults respectively in all at risk (AR), first episode (FE), and normal comparison (NC) subjects at baseline assessment. The SAICA is an interviewer-rated assessment for adolescents <18 years of age and evaluates functioning in school (subjective assessment of academic functioning; attitude toward and relationships within school environment; and behavior problems in school which include subjective attention deficits, fights, destruction of property, disruptive behavior, social isolation, and emotional conflicts with peer groups), spare-time activities (extent of involvement in common hobby; time spent watching TV; time spent with peers; and spare time problems such as lack of interest, excessive daydreaming, and getting into mischief/ destroying property), interactions with peers (interest in forming age-appropriate relationships; problems with being bullied or bullying others; age-appropriate interaction with opposite sex/forging romantic relationships) and family (ability to interact affectionately with parents and siblings; and ability to follow rules/chores at home). The SAICA has been previously used to assess patients with a variety of psychiatric disorders (Biederman et al., 1993; Hans et al., 2000).

The SAS-SR, which is self-rated, was used for young adults >17 years of age and assesses performance in six major areas of functioning including work/school role, social/leisure time, family outside of the home, primary relationship, parental role and family unit. This self-rated instrument has been used internationally (Achard et al., 1995; Gorenstein et al., 2002; Suzuki et al., 2003) in patients with a variety of psychiatric disorders (Fallon et al., 1991; Furukawa et al., 2001; Calabrese et al., 2004) and has shown to significantly correlate and be comparable to interviewer-rated assessments (Weissman and Bothwell, 1976). The areas assessed in the SAS-SR include work/school role (days missed; subjective description of quality of work; feelings of shame; arguments with others; emotional upset; and level of interest), social/leisure (number of social contacts; ability to discuss emotions with friends; number of recreational activities; emotional upset with friends; frequency of loneliness; and

frequency of romantic interactions), family outside of the home (level of contact; dependence on relatives for emotional or financial needs; emotional conflict; and frequency of unrequited expectations), and family unit (addressed relationship with intimate partner or children in areas of anxiety regarding welfare of partner/children, frequency of unrequited expectations, and ability to fulfill financial needs). We have excluded two categories (primary relationship and parental role) from our analyses, which could not be assessed individually because these roles did not apply to the majority of our sample.

We chose to use the SAICA and the SAS-SR because our study, being prospective, examines social functioning in at risk and first episode populations in a long-itudinal design. Both the SAICA and the SAS-SR scales provide a detailed assessment of an individual's specific deficits in the domains of work/academic and social functioning which may serve as a guide for targeting treatment options for these populations. Questions on each area of the SAICA score between 1 and 4, while SAS-SR areas are scored between 1 and 5. On both the SAICA and the SAS-SR, a higher score represents greater impairment in functioning.

In the adolescent group (age <18), 22 AR and 11 NC subjects completed the SAICA at intake into the study. First episode patients ($N = 5$) were not included in the younger adolescent group because of the small size of the sample. In the young adult group (age >17), 33 AR, 16 FE and 34 NC subjects completed the SAS-SR at intake (one AR subject was 17 at the time he received the SAS-SR). There were no statistical differences between the respective AR, FE, and NC groups on the basis of age, sex, and parental education in both adolescent and young adult groups. Among young adults, the NC group displayed significantly higher personal educational attainment ($F[2,82] = 9.82$, $P < 0.001$) than the AR and FE groups (see Table 2).

Statistics were computed using the SPSS 10.0 statistical software. The 15 items from the SAICA were collapsed into four primary domains: school functioning, spare time activities, peer relationships, and family relationships by averaging all items in each domain. An overall SAICA score was then derived by averaging all domains. The SAS-SR also included 4 domains as well as an overall composite score. To correct for multiple comparisons, the univariate tests were considered statistically significant when the corresponding P-value was 0.01 or less by two-tailed analysis. Significant results were followed up with analyses of individual items comprising the domain. Post-hoc Bonferroni comparisons were performed to determine whether the AR group differed from the FE or NC group in the SAS analysis.

3. Results

This article reports the results of a sample of 33 adolescents (AR=22, NC=11) assessed on the SAICA and a sample of 83 young adults (AR=33, FE=16, NC=34) assessed on the SAS-SR. As a group, adolescent AR individuals demonstrated significant social deficits as assessed by the overall SAICA score when compared to NC subjects (see Table 3). Deficits in the domain of school functioning accounted for this difference between groups. Analysis of individual items in the school functioning domain demonstrated that the student's subjective assessment of academic performance ($t[31] = 2.23$, $P < 0.05$), teachers' attitude towards the child ($t[31]=2.9$, $P < 0.01$) and behavior problems at school ($t[31]=3.3$, $P < 0.002$) all contributed to this finding.

Significant differences between the patient groups and the NC subjects were also present in the young adult group on the overall SAS-SR (see Table 4). Post-hoc analyses showed that AR subjects significantly differed from NC subjects but did not differ from the FE sample. Deficits in the AR and FE young adults were present in all domains (work/school, social/ leisure time, family outside of home and family unit).

4. Discussion

Individuals presumed to be at risk for schizophrenia and patients in their first episode of the illness demonstrated significant impairments in social functioning across multiple domains. Beyond global deficits in social functioning, the adolescent sample primarily had difficulties in the school setting while the young adults also reported difficulties in multiple aspects of their life.

Although the social functioning scales do not objectively assess occupational or academic performance, they do assess subjective experience of functioning in these settings, including feelings of shame, personal evaluation of performance and relationship with others within a work/school environment. The adolescent group reported problems in their attitude towards school work, their teachers' attitude towards them, and more difficulty at school in general. The young adult group endorsed problems in work/school success such as poor performance evaluations or grades, missing days at work/school, being fired or failing classes. Although these elements of academic dysfunction may be attributable to difficulty in social interaction, these responses could also be indicative of an occupational or cognitive deficit. Future studies utilizing objective assessment of both social and non-social cognitive functioning are required in order to ascertain which domain is an earlier and more sensitive indicator of a prodromal state (Addington et al., 2006).

Since up to 40% of identified at risk subjects go on to develop a psychotic illness (Yung et al., 2004) and many of those continue to have negative symptoms (i.e. decline in social functioning) even after successful treatment of positive symptoms (Cornblatt et al., 2003; Lencz et al., 2004; Haroun et al., 2006), it is imperative to provide therapeutic intervention that addresses social functioning in this vulnerable group. Social skills training, individualized educational programs, family psychoeducation and/or psychotherapy could all help to reduce stress and improve functional outcome (Addington et al., 2005, 2006; Haroun et al., 2006).

We have recently reported (Seeber and Cadenhead, 2005; Haroun et al., 2006) that the at risk sample in the CARE Program is heterogeneous with a high incidence of mood and anxiety disorders. Recent studies (Cannon et al., 1997; Allen et al., 2005) have shown premorbid social deficits in individuals who convert to both affective and non-affective psychosis, so it is likely that social deficits alone will not differentiate between Axis I disorders. As the current report is from baseline cross-sectional data, it is not possible to identify prodromal individuals who will go on to develop psychosis without longitudinal assessment. Although we currently apply CARE prodromal criteria in order to select for patients that are most at risk for developing schizophrenia, current demographic and clinical criteria lack sensitivity to accurately predict future development of schizophrenia versus other Axis I disorders (Haroun et al., 2006). Longitudinal data collected in future studies will address whether subsyndromal markers, including social, cognitive and academic deficits, will serve in increasing the sensitivity and specificity of current at risk criteria and ultimately help predict likelihood of conversion to schizophrenia or to another Axis I disorder. Additionally, longitudinal research will reveal whether specific areas of social deficits such as social cognition will aid in contributing to the specificity of these markers with respect to predicting psychotic diagnoses.

Since our intake criteria include a category for "genetic risk and deterioration" (see Table 1), our study is somewhat limited by the possibility of preselecting for individuals with social dysfunction. However, of the 16 subjects who qualified under this category, 14 subjects simultaneously qualified for other at risk criteria and would have been selected into our study regardless of genetic risk and deterioration criteria. Furthermore, we have defined

"deterioration" as any form of functional decline, which may or may not include social dysfunction. Unlike COPS at risk criteria, we accept any decline in functioning and therefore, this study has, to the best of our abilities, attempted to avoid preselecting for social dysfunction.

Another study limitation is the relatively small sample size of the adolescent group in comparison to the young adult group. Even with a small sample size (AR = 22, NC = 11), we still found significant deficits in social functioning. As the adolescent and young adult samples were assessed on different measures of social functioning, it is impossible to directly compare data. Regardless, we are observing relatively large group differences in social functioning using either a self report (SAS-SR) or interviewer-rated instrument (SAICA) that was based on subjective responses to questions. One of the challenges of working with the age range at highest risk for the onset of psychosis is that many of the assessment tools are designed for adults or children and not for the full age range. Future studies with larger sample sizes are necessary to more rigorously demonstrate these differences. It is also essential to validate an existing instrument such as the PAS or SAS-SR for the full age range included in many prodromal research clinics.

Given the potential benefit of early aggressive treatment of schizophrenia, as well as the risks associated with antipsychotic treatment, it is critical that we improve our ability to identify individuals early in the prodromal phase of schizophrenia (Melle et al., 2005). Since it has been shown that early detection prevents some of the most severe and devastating symptoms of untreated psychosis (Melle et al., 2005), strengthening current prodromal criteria will likely play a pivotal role in preserving quality of life.

Acknowledgments

The authors thank Nasra Haroun, MD, Karin Kristensen, PsyD, Kathy Shafer, BS, and Katherine Seeber, BA, for their assistance with preparing this manuscript. This work was previously presented at the 2005 Annual Meeting of the Society for Biological Psychiatry.

This work was supported by the National Institute of Mental Health Cognitive Assessment and Risk Evaluation (CARE, MH60720).

References

Achard S, Chignon JM, Poirier-Littre MF, Galinowski A, Pringuey D, Van Os J, Lemonnier F. Social adjustment and depression: value of the SAS-SR (Social Adjustment Scale Self-Report). Encephale. 1995; 21:107–116. [PubMed: 7781581]

Addington J, Collins A, McCleery A, Addington D. The role of family work in early psychosis. Schizophrenia Research. 2005; 79:77–83. [PubMed: 16198240]

Addington J, Saeedi H, Addington D. Facial affect recognition: a mediator between cognitive and social functioning in psychosis? Schizophrenia Research. 2006; 85:142–150. [PubMed: 16678388]

Allen DN, Frantom LV, Strauss GP, van Kammen DP. Differential patterns of premorbid academic and social deterioration in patients with schizophrenia. Schizophrenia Research. 2005; 75:389–397. [PubMed: 15885529]

Biederman J, Faraone SV, Chen WJ. Social Adjustment Inventory for Children and Adolescents: concurrent validity in ADHD children. Journal of the American Academy of Child and Adolescent Psychiatry. 1993; 32:1059–1064. [PubMed: 8407752]

Calabrese JR, Hirschfeld RM, Frye MA, Reed ML. Impact of depressive symptoms compared with manic symptoms in bipolar disorder: results of a U.S. community-based sample. Journal of Clinical Psychiatry. 2004; 65:1499–1504. [PubMed: 15554762]

Cannon M, Jones P, Gilvarry C, Rifkin L, McKenzie K, Foerster A, Murray RM. Premorbid social functioning in schizophrenia and bipolar disorder: similarities and differences. American Journal of Psychiatry. 1997; 154:1544–1550. [PubMed: 9356562]

Cornblatt BA, Lencz T, Smith CW, Correll CU, Auther AM, Nakayama E. The schizophrenia prodrome revisited: a neuro-developmental perspective. Schizophrenia Bulletin. 2003; 29:633–651. [PubMed: 14989404]

Davidson M, Reichenberg A, Rabinowitz J, Weiser M, Kaplan Z, Mordehai M. Behavioral and intellectual markers for schizophrenia in apparently healthy male adolescents. American Journal of Psychiatry. 1999; 156:1328–1335. [PubMed: 10484941]

Fallon BA, Walsh BT, Sadik C, Saoud JB, Lukasik V. Outcome and clinical course in inpatient bulimic women: a 2- to 9-year follow-up study. Journal of Clinical Psychiatry. 1991; 52:272–278. [PubMed: 2055901]

First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JB. Structured Clinical Interview for DSM-IV Axis I Disorders - Patient Edition (SCID-I/P, Version 2.0). Biometrics Research Department, New York State Psychiatric Institute; New York: 1995.

Furukawa TA, Takeuchi H, Hiroe T, Mashiko H, Kamei K, Kitamura T, Takahashi K. Symptomatic recovery and social functioning in major depression. Acta Psychiatrica Scandinavica. 2001; 103:257–261. [PubMed: 11328238]

Gorenstein C, Moreno RA, Bernik MA, Carvalho SC, Nicastri S, Cordas T, Camargo AP, Artes R, Andrade L. Validation of the Portuguese version of the Social Adjustment Scale on Brazilian samples. Journal of Affective Disorders. 2002; 69:167–175. [PubMed: 12103463]

Hans SL, Marcus J, Henson L, Auerbach JG, Mirsky AF. Interpersonal behavior of children at risk for schizophrenia. Psychiatry. 1992; 55:314–335. [PubMed: 1470672]

Hans SL, Auerbach JG, Asarnow JR, Styr B, Marcus J. Social adjustment of adolescents at risk for schizophrenia: the Jerusalem Infant Development Study. Journal of the American Academy of Child and Adolescent Psychiatry. 2000; 39:1406–1414. [PubMed: 11068896]

Haroun N, Dunn L, Haroun A, Cadenhead KS. Risk and protection in prodromal schizophrenia: ethical implications for clinical practice and future research. Schizophrenia Bulletin. 2006; 32:166–178. [PubMed: 16207892]

John K, Gammon GD, Prusoff BA, Warner V. The Social Adjustment Inventory for Children and Adolescents (SAICA): testing of a new semistructured interview. Journal of the American Academy of Child and Adolescent Psychiatry. 1987; 26:898–911. [PubMed: 3429410]

Kaufman, J.; Birmaher, B.; Brent, D.; Rao, U.; Ryan, N. Kiddie-SADS-Present and Lifetime Version (K-SADS-PL, Version 1.0). University of Pittsburgh, School of Medicine; Pittsburgh: 1996.

Keith SJ, Matthews SM. The diagnosis of schizophrenia: a review of onset and duration issues. Schizophrenia Bulletin. 1991; 17:51–67. [PubMed: 2047789]

Lencz T, Smith CW, Auther A, Correll CU, Cornblatt B. Nonspecific and attenuated negative symptoms in patients at clinical high-risk for schizophrenia. Schizophrenia Research. 2004; 68:37–48. [PubMed: 15037338]

Marshall M, Lewis S, Lockwood A, Drake R, Jones P, Croudace T. Association between duration of untreated psychosis and outcome in cohorts of first-episode patients: a systematic review. Archives of General Psychiatry. 2005; 62:975–983. [PubMed: 16143729]

Mason O, Startup M, Halpin S, Schall U, Conrad A, Carr V. Risk factors for transition to first episode psychosis among individuals with ‘at-risk mental states’. Schizophrenia Research. 2004; 71:227–237. [PubMed: 15474894]

Melle I, Haahr U, Friis S, Hustoft K, Johannessen JO, Larsen TK, Opjordsmoen S, Rund BR, Simonsen E, Vaglum P, McGlashan T. Reducing the duration of untreated first-episode psychosis-effects on baseline social functioning and quality of life. Acta Psychiatrica Scandinavica. 2005; 112:469–473. [PubMed: 16279877]

Miller TJ, McGlashan TH, Rosen JL, Somjee L, Markovich PJ, Stein K, Woods SW. Prospective diagnosis of the initial prodrome for schizophrenia based on the Structured Interview for Prodromal Syndromes: preliminary evidence of interrater reliability and predictive validity. American Journal of Psychiatry. 2002; 159:863–865. [PubMed: 11986145]

Miller TJ, McGlashan TH, Rosen JL, Cadenhead K, Cannon T, Ventura J, McFarlane W, Perkins DO, Pearlson GD, Woods SW. Prodromal assessment with the structured interview for prodromal syndromes and the scale of prodromal symptoms: predictive validity, interrater reliability, and training to reliability. Schizophrenia Bulletin. 2003; 29:703–715. [PubMed: 14989408]

Reichenberg A, Weiser M, Rabinowitz J, Caspi A, Schmeidler J, Mark M, Kaplan Z, Davidson M. A population-based cohort study of premorbid intellectual, language, and behavioral functioning in patients with schizophrenia, schizoaffective disorder, and nonpsychotic bipolar disorder. American Journal of Psychiatry. 2002; 159:2027–2035. [PubMed: 12450952]

Seeber K, Cadenhead KS. How does studying schizotypal personality disorder inform us about the prodrome of schizophrenia? Current Psychiatry Reports. 2005; 7:41–50. [PubMed: 15717986]

Simon AE, Dvorsky DN, Boesch J, Roth B, Isler E, Schueler P, Petralli C, Umbricht D. Defining subjects at risk for psychosis: a comparison of two approaches. Schizophrenia Research. 2006; 81:83–90. [PubMed: 16297599]

Suzuki Y, Sakurai A, Yasuda T, Harai H, Kitamura T, Takahashi K, Furukawa TA. Reliability, validity and standardization of the Japanese version of the Social Adjustment Scale-Self Report. Psychiatry and Clinical Neurosciences. 2003; 57:441–446. [PubMed: 12839527]

Weissman MM, Bothwell S. Assessment of social adjustment by patient self-report. Archives of General Psychiatry. 1976; 33:1111–1115. [PubMed: 962494]

Yung AR, McGorry PD, McFarlane CA, Jackson HJ, Patton GC, Rakkar A. Monitoring and care of young people at incipient risk of psychosis. Schizophrenia Bulletin. 1996; 22:283–303. [PubMed: 8782287]

Yung AR, Phillips LJ, Yuen HP, McGorry PD. Risk factors for psychosis in an ultra high-risk group: psychopathology and clinical features. Schizophrenia Research. 2004; 67:131–142. [PubMed: 14984872]

Table 1

CARE criteria for at risk groups

Brief intermittent psychosis group
Severity scale score of 6 on at least one item from P1 through P5 or D1 through D4 from SIPS;
Frequency of <3 to 6 times per week and <1 h or ≤2 times per week and >1 h;
Each episode of symptoms is present for <1 week and symptoms spontaneously remit on every occasion;
Symptoms began or worsened in the past year.
Subsyndromal group
Severity scale score of 3 to 5 on at least one item from P1 through P5 or from D1 through D4 from SIPS;
Frequency of at least one time in past month;
Symptoms began or worsened in the past year.
Genetic risk and deterioration group
Family history of psychosis in first degree relative or schizotypal personality disorder in identified patient;
Deterioration in functioning and/or mood, anxiety, or deficit symptoms;
Symptoms began or worsened in the past year.
Psychotic syndrome/first episode group
Severity scale score of 6 on at least one item from P1 through P5 or D1 through D4 from SIPS;
Frequency is daily or >1 h 3 to 6 times per week;
Symptoms present for >1 week;
Severity and frequency met within the past 12 months

(Adapted from Structured Interview for Prodromal Syndromes (SIPS) and the Comprehensive Assessment of At-Risk Mental States (CAARMS)).

Table 2

Demographics

SAICA	**At risk**	**First episode**	**Normal**
	***N*=22**		***N*=11**
M:F	11:11		7:4
Age (range)	14.6 (12–18)		13.7 (12–16)
Education (range)	8.4 (6–11)		7.6 (5–10)
Parental education (range)	14.8 (12–20)		15.2 (12–18)
SAS-SR	***N*=33**	***N*=16**	***N*=34**
M:F	20:13	13:3	17:17
Age (range)	21.9 (17–30)	21.1 (18–33)	22.2 (18–29)
Education (range)	13.1 (10–19)	12.0 (9–16)	14.4 (12–19)
Parental education (range)	15.5 (10–20)	14.9 (9–19)	15.1 (6–20)

Table 3

Mean SAICA scores by group

SAICA	At risk	Normal	*t*[31]	Cohen *d*	*P*
	N=22	*N*=11			
School functioning (S.D.)	1.98 (0.36)	1.44 (0.44)	3.74	1.17	0.001
Spare time activities (S.D.)	2.18 (0.41)	1.82 (0.67)	1.94	0.68	NS
Peer relationships (S.D.)	1.92 (0.62)	1.61 (0.57)	1.37	0.49	NS
Family relationships (S.D.)	1.80 (0.54)	1.70 (0.53)	0.53	0.39	NS
Overall (S.D.)	1.97 (0.30)	1.64 (0.40)	2.62	0.92	0.01

Table 4

Mean SAS-SR scores by group analyzed by ANOVA

SAS-SR	At risk *N* = 33	First episode *N* = 16	Normal *N* = 34	*d.f.*	F	Eta squared	*P*
Work role (S.D.)	2.06 (0.79)*	2.00 (0.59)	1.44 (0.34)	[2,62]	8.71	0.225	0.000
Social/leisure (S.D.)	2.56 (0.55)*	2.78 (0.67)*	1.74 (0.42)	[2,82]	29.41	0.424	0.000
Family outside of home (S.D.)	2.20 (0.73)*	2.19 (0.72)*	1.46 (0.32)	[2,82]	15.90	0.284	0.000
Family unit (S.D.)	2.50 (1.50)*	2.74 (1.61)*	1.62 (0.87)	[2,77]	5.19	0.121	0.008
Overall (S.D.)	2.37 (0.45)*	2.46 (0.56)*	1.58 (0.28)	[2,82]	39.52	0.497	0.000

*$P < 0.05$ post-hoc Bonferroni analysis versus normal comparison subjects.