Diagnostic specificity of poor premorbid adjustment: Comparison of schizophrenia, schizoaffective disorder, and mood disorder with psychotic features

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ARTICLE INFO

ABSTRACT

Individuals with schizophrenia have significant deficits in premorbid social and academic adjustment compared to individuals with non-psychotic diagnoses. However, it is unclear how severity and developmental trajectory of premorbid maladjustment compare across psychotic disorders. This study examined the association between premorbid functioning (in childhood, early adolescence, and late adolescence) and psychotic disorder diagnosis in a first-episode sample of 105 individuals: schizophrenia (n = 68), schizoaffective disorder (n = 22), and mood disorder with psychotic features (n = 15). Social and academic maladjustment was assessed using the Cannon-Spoor Premorbid Adjustment Scale. Worse social functioning in late adolescence was associated with higher odds of schizophrenia compared to odds of either schizoaffective disorder or mood disorder with psychotic features, independently of child and early adolescent maladjustment. Greater social dysfunction in childhood was associated with higher odds of schizoaffective disorder compared to odds of schizophrenia. Premorbid decline in academic adjustment was observed for all groups, but did not predict diagnosis at any stage of development. Results suggest that social functioning is disrupted in the premorbid phase of both schizophrenia and schizoaffective disorder, but remains fairly stable in mood disorders with psychotic features. Disparities in the onset and time course of social dysfunction suggest important developmental differences between schizophrenia and schizoaffective disorder.

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1. Introduction

Premorbid adjustment (e.g., developing and maintaining friendships, participation in activities) is an important correlate of individual differences in course and outcome of schizophrenia, including age of psychosis onset (Haas and Sweeney, 1992) and severity of negative symptoms, cognitive deficits, and treatment refraction (e.g., Addington et al., 2003; Silverstein et al., 2003; Haim et al., 2006). Historically, poor premorbid functioning has not been considered central to the developmental pathology or diagnosis of schizoaffective disorder, bipolar I disorder with psychotic features, or major depressive disorder with psychotic features (American Psychiatric Association, 2000), implying specificity to schizophrenia. However, only a few studies have directly compared premorbid functioning in schizophrenia with schizoaffective disorder or mood disorders with psychotic features, and we are not aware of any published comparisons between schizoaffective disorder and psychotic mood disorders. Therefore, specificity of premorbid

maladjustment to schizophrenia has not been confirmed. The current study examined specificity of poor premorbid adjustment by evaluating the predictive association between premorbid social and academic maladjustment and odds of schizophrenia versus schizoaffective disorder versus mood disorder with psychosis.

2. Method

2.1. Participants

Participants were originally recruited for the longitudinal Pittsburgh First-Episode Study (see Keshavan and Schooler, 1992 for description). Participants were consecutively recruited patients who were experiencing a first episode of psychosis and were evaluated at the Western Psychiatric Institute and Clinic, Pittsburgh, Pennsylvania. Inclusion criteria for potential participants were: ages between 12 and 50, symptoms of a psychotic condition reported at intake evaluation, IQ ≥ 75, English as the primary language, no medical condition that could produce psychiatric symptoms or neurocognitive deficits (e.g., neuroendocrine disorder), no current diagnosis of substance dependence, if recent history of substance abuse, remission of symptoms for a minimum of 6 months, and no more than a 2-week (lifetime) history of antipsychotic treatment to avoid the confounding effects of medication. Participants provided

written informed consent in accordance with the University of Pittsburgh Institutional Review Board guidelines.

In addition to the above criteria, selection for the current study required a Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994) diagnosis of schizophrenia, schizoaffective disorder (bipolar or depressed type), bipolar I disorder with psychotic features, or major depressive disorder with psychotic features. Selection also required availability of Premorbid Adjustment Scale data (PAS; Cannon-Spoor et al., 1982), which were missing for a subset of participants as funding did not allow for consistent collection of PAS data (July 1998 through June 2003).

2.2. Assessment

2.2.1. Diagnostic assessment

All participants were administered the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I; First et al., 1995) at baseline and at subsequent study visits to assess current and lifetime Axis I psychiatric diagnoses. All baseline assessments were conducted within one week of initial diagnostic evaluation. Follow-up assessments were conducted at four, eight, and 26 weeks, and at one, two, and four years post-baseline. Interviews were administered by trained interviewers under the supervision of the investigators. Lifetime, multi-axial DSM-IV diagnoses were established at diagnostic consensus meetings by senior clinicians and interviewers using the LEAD (Longitudinal evaluation by Experts using All Data) approach (Spitzer et al., 1983).

2.2.2. Premorbid functioning assessment

Premorbid functioning was assessed at baseline using the Premorbid Adjustment Scale (PAS; Cannon-Spoor et al., 1982). The PAS is a semi-structured rating schedule designed to retrospectively assess developmental stage appropriate functioning prior to psychosis onset, particularly social and academic adjustment.[2] The PAS has established predictive and concurrent validity (Brill et al., 2008). Items are interviewer-rated on a 0–6 scale with '0' representing freedom from maladjustment and higher ratings reflecting evidence of maladjustment. Scoring was based on patient report and all available medical and social history data.

To enhance reliability of PAS scoring, patient information was collected using a semi-structured interview developed by Haas and colleagues (available on request). Interviewers were trained via didactic presentation by the senior investigator (Haas) and by observing and independently scoring 5 interviews by a trained rater. Practice interviews were audio-recorded and scored by an expert interviewer; divergent scoring was reviewed with the trainee. Inter-rater reliabilities for scoring of the PAS using the interview format are good, with intra-class correlation coefficients (ICCs) of 0.86 (childhood), 0.78 (early adolescence), and 0.88 (late adolescence) based on 6 interviewers who independently coded 20 interviews.

The PAS assesses up to four periods of development: childhood (age 5–11), early adolescence (age 12–15), late adolescence (age 16–18), and adulthood (age 19 and above). Indicators of social maladjustment (e.g., withdrawal from peers, unstable peer relationships) can be rated for all developmental periods (excluding social–sexual maladjustment in childhood). Ratings of academic maladjustment (e.g., poor scholastic performance, difficulty adapting to school regimen) are recorded for childhood through late adolescence, as applicable. Total (social and academic combined) maladjustment scores are derived for each developmental period.

To minimize the influence of prodromal symptoms and active illness, PAS ratings are generated for periods up to and excluding six

months prior to the estimated onset of first psychotic symptoms. In the current study, duration of psychosis prodrome was defined as the difference between the estimated age of onset of first attenuated psychotic symptom, as defined in the SCID, and age of onset of first psychotic episode. Onset date of first attenuated psychotic symptom and onset date of first psychotic episode were determined by consensus conference using a best estimate approach based on all available information, including patient report on the SCID-Patient Interview, outpatient therapist report, family report, and medical records.

The current study utilized mean social, academic, and total maladjustment ratings for childhood, early adolescence, and late adolescence. Adult social maladjustment ratings were not included in analyses because ratings for that period were not generated for the substantial minority of participants (25.7%) for whom psychosis onset occurred prior to adulthood and because the validity of these items as measures of social function is in question (Van Mastrigt and Addington, 2002).

2.3. Analyses

To identify demographic characteristics that could potentially confound the association between functioning and first-episode diagnosis, pairwise diagnostic group comparisons were conducted using either t-test or chi-square analyses. Demographic characteristics that differed among diagnostic groups were then tested for correlation with PAS ratings in the total sample.

Associations between social, academic, and total premorbid maladjustment and first-episode psychotic disorder diagnosis were examined using logistic regression analysis. For all regression analyses, covariates were entered into the model first (when applicable), followed by premorbid maladjustment ratings. For each domain (social, academic, and total), binary logistic regression was performed first to examine the individual contribution of maladjustment at each developmental period to first-episode diagnosis (pairwise contrasts), without controlling for maladjustment at other ages. To evaluate change in functioning over time within diagnostic groups, paired t-tests were used to perform within-group comparisons of functioning between childhood and early adolescence, and between early adolescence and late adolescence. Unadjusted mean PAS ratings were used in these analyses to aid comparison with prior studies.

Second, the three diagnostic outcomes of schizophrenia, schizoaffective disorder, and psychotic mood disorder were modeled together utilizing multinomial logistic regression analyses. For each domain, standardized maladjustment ratings for childhood, early adolescence, and late adolescence were entered sequentially into a multinomial logistic regression model, following entry of any covariates, to examine developmental effects at each age while controlling for maladjustment at prior developmental periods. Multinomial logistic regression is an extension of logistic regression that allows simultaneous comparison of categorical outcomes with greater than two values, resulting in odds ratios for each of two diagnostic groups compared to a third "baseline" diagnosis. The baseline group can be changed to identify significant odds ratios in comparison to a new baseline, but the overall significance of the model is independent of the baseline chosen. To insure that all models utilized the same individuals, only participants with PAS data for all three developmental periods were included in multinomial analyses.

3. Results

3.1. Sample characteristics

3.1.1. Psychotic disorder diagnosis

Of the 142 first-episode patients recruited between 1990 and 2009 that met the inclusion and diagnostic criteria described above, 105 individuals had PAS ratings available for childhood, early adolescence,

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[2] Academic maladjustment as assessed on the PAS is not a measure of cognitive ability per se, but rather a gauge of adaptation to the school environment and scholastic performance.