



## Schedule for affective disorders and schizophrenia for school-age children (K-SADS-PL) for the assessment of preschool children – A preliminary psychometric study

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### ABSTRACT

**Objective:** To assess the psychometrics of the schedule for affective disorders and schizophrenia for school-age children present and lifetime version (K-SADS-PL) in diagnosing DSM-IV psychiatric disorders and subsyndromal symptomatology in preschool children.

**Method:** Parents were interviewed about their children using the K-SADS-PL, and they completed the early childhood inventory-4 (ECI-4) and child behavior checklist for ages 1½–5 years (CBCL). Discriminant, divergent, and convergent validity of the K-SADS-PL were evaluated in 204 offspring ages 2–5 years old of parents from an ongoing study. Inter-rater reliability as well as predictive validity of intake diagnoses at second assessment approximately two years after intake were evaluated. Fourteen children were also assessed by the preschool age psychiatric assessment (PAPA).

**Results:** Children who were diagnosed with oppositional defiant disorder, attention deficit hyperactivity disorder, anxiety, mood, or elimination disorders had significantly higher scores on the ECI-4 than children without these disorders. Significant correlations were found for all convergent CBCL scales. Divergent validity was acceptable for emotional disorders. Inter-rater kappa coefficients for all diagnoses were good. Above noted results were similar for children with at least one positive K-SADS-PL key screen symptom. A significantly higher percentage of children with an intake diagnosis had a diagnosis approximately two years after intake compared to those without an intake disorder. Overall, there was consistency between the PAPA and the K-SADS-PL.

**Conclusions:** Pending further testing, the K-SADS-PL may prove useful for the assessment of psychopathology in preschoolers.

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### 1. Introduction

There is a growing awareness that anxiety, depression, and behavioral disorders occur in preschool children (Egger and Angold, 2006; Gadow et al., 2001; Henin et al., 2005; Keenan et al., 1997; Lavigne et al., 1996; Luby et al., 2004a; Roberts et al., 1998) with the prevalence of “any psychiatric disorders” ranging from 16% to 26% in 2–5 year old preschool children in non-psychiatric settings (Egger and Angold, 2006).

With growing awareness of the intergenerational transmission of major psychiatric disorders, and demonstration of temperamental and biological differences in young children at risk for these disorders, identification of the earliest manifestation of disorder is extremely important, both for purposes of research, and with regard to prevention and treatment.

Current interviews for the assessment of psychopathology in preschoolers include the preschool age psychiatric assessment (PAPA; Egger and Angold, 2004; Egger et al., 2006) and the diagnostic interview schedule for children version IV, modified for young children (DISC-IV-YC; Lucas et al., 1998). Both of these instruments are fully-structured interviews and the diagnoses are generated through a computer algorithm. Thus, the addition of a

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semi-structured diagnostic interview which mimics the regular clinical interview and whose final diagnoses are done through a diagnostic consensus, such as the schedule for affective disorders and schizophrenia for school-age children present and lifetime version (K-SADS-PL) (Kaufman et al., 1997), will give extra flexibility to the clinicians/researchers to further evaluate the differential diagnosis of each symptom in the context of the normal development and the environment of the child. This would provide a valuable additional tool for the assessment of psychopathology in preschoolers. Moreover, since the K-SADS is widely used for children and adolescents ages 6–18 years old, using the same instrument to longitudinally assess a child from the preschool years through adolescence would enhance data collection and analysis. The use of the K-SADS in preschoolers would therefore reduce method variance in trying to establish continuity and discontinuity between preschool and later childhood conditions, and also would be useful in defining the limits of phenotypes, given emerging evidence of very early manifestations of anxiety, mood, and other disorders (Egger and Angold, 2006).

The K-SADS-P (present version) has been used to ascertain specific diagnoses including oppositional defiant disorder (ODD) and conduct disorder (CD) (Keenan and Wakschlag, 2004; Kim-Cohen et al., 2005); attention deficit hyperactivity disorder (ADHD) (Lahey et al., 1998); major depressive disorder (MDD) (Luby et al., 2003), dysthymic disorder (Kashani et al., 1997), and post-traumatic stress disorder (PTSD) (Scheeringa et al., 2001). Also, few studies have used the K-SADS-E (epidemiological version) (Orvaschel, 1994) as a tool to interview parents about possible psychopathology in preschool children (Keenan and Wakschlag, 2004; Henin et al., 2005). However, with the exception for the psychometrics of the K-SADS-P for some of the above-noted specific disorders, the psychometrics of the K-SADS-PL for the ascertainment of psychiatric disorders in preschoolers has not been widely evaluated.

The purpose of this pilot study was to extend prior K-SADS preschool studies assessing the psychometrics for general psychopathology of preschool children as reported by their parents using the K-SADS-PL. Since it is important not to only evaluate the convergent and divergent validity of the diagnoses generated through the K-SADS-PL against instruments that yield categorical diagnoses such as the early childhood inventory-4 (ECI-4) (Gadow and Sprafkin, 1997; Gadow et al., 2001; Sprafkin et al., 2002), the K-SADS-PL will be compared with a dimensional instrument, the child behavior checklist for ages 1½–5 years (CBCL; Achenbach and Rescorla, 2000). This is particularly important because clinically significant individual symptoms that present at an early age but do not meet full threshold for a diagnostic and statistical manual-IV (DSM-IV; APA, 1994) disorder may herald the development of future syndromic psychopathology. For the same reason, we will also evaluate the psychometrics of the K-SADS-PL screens (see Section 2). It was hypothesized that the K-SADS-PL will show good psychometric properties and could be reliably used with preschoolers. Children with mood/anxiety symptoms will show similar diagnoses in the ECI-4 and significantly higher scores in the internalizing and respective subscales of the CBCL, and lower scores in the externalizing subscales of the CBCL. In contrast, children with behavioral disorders will have higher scores on the externalizing subscale of the CBCL and more disruptive disorders in the ECI-4.

## 2. Methods

### 2.1. Subjects

The sample consisted of 2- to 5-year-old children of parents with and without psychopathology consecutively recruited for an

ongoing National Institute of Mental Health (NIMH)-funded study, the bipolar offspring study (BIOS) (MH 60952, Principal Investigator: Boris Birmaher). These children were recruited from parents with bipolar disorder mainly ascertained through advertisement and from a random community control sample of community parents. The results of the comparison of these two groups of children will be presented in a different paper. The central focus of this article is the psychometrics of the K-SADS for the entire sample of preschool children.

Two-hundred and four (204) 2- to 5-year-old preschool children (mean age  $3.8 \pm 1.2$  years old) (109 from parents with BP and 95 from control parents) were included. Forty-nine percent (49%) were female; 81% Caucasian, and on average were from middle ( $2.9 \pm 1.3$ ) socioeconomic status (SES) families (Hollingshead, 1975). One hundred and forty-five children (71%) lived with both biological parents and 106 (52%) attended daycare or preschool programs. The mother was the reporter for 97% of the children. To date, 126 children have had a follow-up assessment with a mean time of  $2.1 \pm 0.6$  years since intake interview.

### 2.2. Procedures

After approval by The University of Pittsburgh Institutional Review Board informed consent was obtained from all parents.

Parents were interviewed about their children's lifetime (present and past) DSM-IV disorders using the K-SADS-PL (Kaufman et al., 1997). Briefly, the K-SADS-PL consists of screens and supplemental diagnostic assessments for 20 psychiatric disorders (for the K-SADS-PL and instructions about its administration see [www.wpic.pitt.edu/research](http://www.wpic.pitt.edu/research) under assessments). Each screen includes key symptoms for each disorder (Kaufman et al., 1996). If a subject screens positive for a key symptom, a supplement with the remaining DSM-IV symptom criteria for the specific disorder is administered. To screen positive, a score of "3" (threshold) must be given for *at least one* past or current clinically significant symptom of the disorder. For this paper, 'positive screen' will refer to this result. Definite "lifetime" diagnoses were given if the child met criteria for a past and/or current diagnosis. Enuresis and encopresis (i.e., elimination disorders) were diagnosed if the child met the DSM-IV eligible age (4-years-old and 5-years-old, respectively).

To evaluate in more detail the severity of the worst lifetime mood symptoms, the kiddie mania rating scale (K-MRS; Axelson et al., 2003) and the depression section of the K-SADS-present episode version (K-DEP; Chambers et al., 1985) were used. In contrast with the K-SADS-PL, these two instruments contain approximately six anchors per symptom item with severity ratings ranging from 'none' to 'extreme' (for cut-off values for positive symptoms (see [www.wpic.pitt.edu/research](http://www.wpic.pitt.edu/research) under assessments). All K-SADS-PL mania and depression screen items are captured in the K-MRS and K-DEP, respectively. Therefore, instead of the K-SADS-PL mood section, only ratings from the K-MRS and K-DEP were used for the analyses.

All K-SADS interviews were completed by experienced bachelor's- or master's-prepared interviewers under the supervision of the child psychiatrists involved in the study. Child psychiatrists instructed the interviewers on how to ask developmentally appropriate questions to parents regarding their children's psychopathology. The K-SADS includes many examples of questions that the interviewer may use to assess each symptom. Also, since this instrument is semi-structured, the interviewer may use their own questions. Although most K-SADS prompts and cut-off scores seem appropriate for preschoolers, the interviewers were instructed not to use prompts that were inappropriate for preschool children and to take into account whether any endorsed symptom was above and beyond of what is expected from a preschool child. For example, for preschool children it is not appropriate to ask

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