Abstract  The aim of this study was to assess the childhood predictors of externalizing and internalizing symptoms in adolescence in an epidemiological sample. Behavior ratings were obtained from 609 children at two time-points, accounting for 71% of the target sample. At age 8, children were evaluated with parental and teacher Rutter scales, and with the Child Depression Inventory (CDI), and at age 16 with the Child Behavior Checklist. Evaluations by all informants had a unique contribution to later outcome. In multivariate analysis, among boys, parental reports of hyperactivity independently predicted externalizing problems and teacher reports of hyperactivity independently predicted internalizing problems. Teacher reports of conduct problems independently predicted externalizing problems among both boys and girls. Furthermore, parent reports of emotional problems independently predicted internalizing problems among both boys and girls. Children's own reports of internalized distress measured with CDI predicted a high level of internalizing problems among girls. Perceived need of treatment was the strongest predictor for outcome among girls. Change in family structure (e.g., divorce or remarriage) during follow-up independently predicted externalizing and internalizing problems among boys. The study supports the findings from earlier studies showing that the stability of behavior problems from childhood to adolescence is substantial. This implies a need for early recognition and initiation of treatment efforts.

Key words  child psychiatry – CBCL – epidemiology – follow-up

Introduction

Information about continuity of psychiatric problems from childhood to later years has implications for clinical work, research, the etiologic theory of psychiatric disorders, and early prevention efforts. Recent child psychiatric epidemiologic studies using prospective designs have shown substantial stability of psychiatric symptoms from childhood to adolescence and early adulthood [2, 7, 8, 10, 15–17, 20–23, 31]. Studies focusing on a broad range of psychopathology include follow-up studies by Achenbach et al. [2], showing that adolescent syndromes predict several adolescent and adult syndromes when using parent- and self-report versions of the Child Behavior Checklist at baseline and at follow-up. Accordingly, in Dutch longitudinal studies using a similar methodology, there was moderate stability of syndrome psychopathology from age 13 through 16 at baseline to follow-up 8 years later [10]. In the 14-year longitudinal follow-up, the Dutch group showed that high levels of childhood problems are related to DSM-IV diagnosis in adulthood [15]. In the Dunedin study, when diagnostic interviews were performed repeatedly across developmental years, half of the individuals who met the criteria for a major DSM-IV diagnosis at age 26 first had a diagnosable disorder at 11–15 years of age, and three quarters had a first diagnosis before age 18 [17]. Furthermore, in the study by Caspi et al. [7], behavioral problems at age 3 had a predictive association with psychiatric disorders at age 21.

Empirically based taxonomies of child psychopathology have yielded two broad dimensions of problems, namely, internalizing and externalizing disorders. Ex-
ternalizing problems, reflecting conflicts with other people and their expectations, include both aggressive and delinquent behaviors. Rule-breaking behavior and oppositional/conduct disorder in childhood have been shown to have a considerable predictive association with a wide range of problems in adolescence and early adulthood [7, 15–17, 19]. Internalizing problems, reflecting internal stress, such as depression, anxiety, social withdrawal and somatic complaints, may have negative effects on self-esteem, academic performance, physical health, social competence and future psychological adjustment. However, because internalizing problems are subjective perceptions of internal distress, they may not be identified by external observers. Externalizing problems have generally received more research attention than internalizing problems. Externalizing problems have been found to show considerable stability in childhood [16, 21–23]. Studies regarding specific behavioral antecedents of externalizing problems generally focus on hyperactivity and conduct behavior. Earlier studies have shown a high stability, especially in aggressivity in childhood [28]. However, boys and girls differ in symptomatology and behavior patterns predictive of later disorders. Furthermore, the rates of disorders change differentially among boys and girls. Therefore, in the present study, the continuities of psychopathology were studied separately for boys and girls. From an early prevention point of view, an important question is what information sources and what kinds of problems have the most strength in predicting later outcome [30, 32].

The first aim was to study to what extent children’s emotional and behavioral problems, perceived need of services and family variables at age 8 predict parent reports of child’s externalizing and internalizing problems at age 16. The second aim was to study the weight of different informants at age 8 (parents, teachers and children) for outcome at age 16.

### Material and methods

#### Material

The target population was all Finnish-speaking children born in 1981 and living in one of the five University hospital catchment areas of Finland (Turku University Hospital, south-west Finland). A sample of 13% of the age cohort was drawn by selecting a representative sample of communities according to their degree of urbanization: urban, suburban, rural. In the rural and suburban communities, all children born in 1981 belonged to the sample, while in the larger city, Turku, a representative subsample of the area based on school districts was drawn from all the school districts to obtain a sample in which the proportion of children living in rural, suburban and urban areas corresponds to the general child population (in southern Finland, 70% of the population live in urban, 15% in suburban, and 15% in rural communities). A child registered in the selected school district or community belonged to the sample even if he attended school outside the district because of a need or desire for special education (for example, special language classes or classes for behaviorally disturbed or disabled children). The sample is a subsample of the Epidemiological Multicenter Child Psychiatric Study in Finland, the main results of which have been published earlier [3].

At baseline, information was obtained from parents, teachers and self-reports. Data collection was organized through teachers. The teacher sent a Rutter’s Parent Questionnaire [24] via the child to the parents and the parents returned it in a sealed envelope to the teacher. The child filled in a Child Depression Inventory [18] questionnaire in the classroom. The teacher sent the parent questionnaires in the sealed envelopes, the parents’ written consent forms, the teacher questionnaires and the CDIs to the researcher. Each class also had a follow-up sheet, in which the teacher marked how many pupils, born in which years, and how many parents had returned the consent forms and questionnaires, and how many did and did not consent to participate in the study. At the end of the study, follow-up sheets and study questionnaires were returned to the researcher. The questionnaires of the few children not born in 1981 were excluded before data entry. The distribution of questionnaires was started in November 1989. The study was approved by the school authorities and by the ethics committee of Turku University Hospital.

The second assessment 8 years later, between May and September 1997, included those children who were living in seven communities within the Turku University Hospital catchment area. In one community belonging to the original sample (n = 88), the identification numbers of the questionnaires at the baseline assessments had not been saved and the respondents could not be identified. Therefore, the follow-up sample included 898 children, most of them attending the ninth grade at secondary school in 1997. The addresses of 41 families could not be found. At follow-up, parent reports including the Child Behavior Checklist [1] were obtained from 71% (609/857) of subjects included in the follow-up study and from 62% (609/986) of the original sample.

When the subjects with parent data available at follow-up were compared to the rest of the original sample, no statistically significant differences were found in family composition (two biological parents vs. others), or above cut-off scores on parent evaluations with Rutter total behavior scale or on the self-reported Child Depression Inventory. However, non-participants more often scored within clinical range in teacher evaluations with the Rutter total behavior scale (10.3% vs. 17.8%, p = 0.004).