LONG-TERM OUTCOME OF PSYCHOPATHOLOGY IN CHILDHOOD AND ADOLESCENCE

A CLINICAL EPIDEMIOLOGICAL STUDY

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Chapter 1

Introduction

Chapter 1 Introduction

Changes in clinical child psychiatry have been enormous over the past 40 years, with a major contribution from epidemiological research on developmental psychopathology (Rutter, 1998, 2000; Rutter and Sroufe, 2000). Development is an active, dynamic process extending into adult life. Developmental psychopathology is the study of the origins and course of individual patterns of maladaptation, to further the understanding of processes underlying both continuity and change in patterns between normality and pathology (Rutter, 1998, 2000; Rutter and Sroufe, 2000).
A firm foundation has been achieved in developmental psychopathology by standardization of assessment procedures and operational definitions of syndromes and diagnostic categories. Empirically based taxonomies, such as described by Achenbach (1993), have enabled us to more validly compare information on psychopathology from different informants (e.g., parents versus teachers), different samples (e.g., community versus clinic), and different cultures (e.g., US versus Dutch populations). Large studies on general populations have provided us with norms, prevalence figures, impressions of continuity and outcome, and clues on developmental pathways. These studies have also shown that large numbers of children with emotional and behavioral problems do not receive care in mental health services (Verhulst and Van der Ende, 1997).
However, many questions concerning the course and prognosis of psychopathology can still not be answered based on empirical evidence. This is surprising, since much time, energy, and money is invested all over the world in mental health services for children and adolescents. For instance, little attention has so far been paid to the transition into adult life (Rutter and Sroufe, 2000; Heijmens Visser, Van der Ende, Koot, and Verhulst, 2000), especially for referred children. Of particular concern is attention to the causes of differences in levels of psychopathology, including risk and protective mechanisms that cause individuals to maintain on or deflect from psychopathology pathways (Rutter, 2000; Rutter and Sroufe, 2000). To gain insight in the course and prognosis of psychopathology of referred children and children with emotional and behavioral problems some questions should be answered. How is the course of psychopathology in referred children? Will patients be capable of normal adolescent and adult functioning? What factors influence outcome? The empirical evidence to answer such questions concerning course and prognosis of psychopathology is scarce.
In the first part of this chapter, requirements for studies investigating continuity and change of psychopathology in referred youth will be discussed. After main focuses have been formulated, the international literature on the subject will be discussed. In the second part of this chapter a description of the thesis study, performed in Rotterdam (the Netherlands) on a large outpatient sample, will be presented, and the study design will be discussed. The structure of this thesis completes this chapter.

Requirements for follow-up studies

To obtain valid information on continuity and change of psychopathology in referred youth, study designs should account for a number of factors specific to the study of child psychopathology. Information on the course and prognosis of psychopathology for referred children can only be obtained from longitudinal studies of large clinical samples spanning a

broad spectrum of problem behaviors (Stanger, MacDonald, McConaughy, and Achenbach, 1996). Samples should be chosen in such a way that results could be generalized to as much children in need of psychiatric help as possible. Studies using outpatient populations from child guidance or child psychiatric clinics can investigate various emotional and behavioral problems. In contrast, studies of inpatient samples most likely contain individuals with the higher levels of psychopathology, with mostly externalizing behavior problems, and with highest comorbidity. Thus, although very interesting and worthwhile to study, generalizability from data on inpatient samples toward referred children with a broad spectrum of problem behaviors would be difficult, and outpatient samples are preferable.
Furthermore, standardized assessment procedures with well-developed operational definitions of syndromes and diagnostic categories should be used, to improve comparability across samples and cultures. In using such assessment procedures, one has to consider that children are likely to display different behaviors, competencies, and problems in different situations (such as home versus school), and that informants differ with respect to their sensitivity to various aspects of children's functioning. Therefore, to obtain optimal information on children's behavioral and emotional problems, multiple informants are best used at all times of assessment. Use of similar statistical procedures across different studies would enhance the comparability of data and results. On the other hand, similar results obtained with different study designs or statistical techniques would increase the power of the conclusions that could be drawn, since the findings would obviously not depend on the methodological procedure used.
With these considerations in mind, we searched the international literature for studies on the course and outcome in referred children with a broad range of child psychiatric disorders. Main focuses were:

1. Studied population. Are the samples used in the studies comparable with present outpatient populations on demographic and psychopathological characteristics?
2. Methodology used. What kind of information was used, and how were psychopathology and outcome measures operationalized? What statistical strategies were used?
3. Main results. How was the overall outcome? How many of the former patients were still considered disturbed, and could subgroups be identified that had deviant (better or worse) prognosis? Which domains of functioning were affected?

Studies of referred youth

Unfortunately, there have been few systematic studies on the course and outcome of a broad range of child psychiatric disorders, none of these studies meeting all of the above-mentioned criteria. The studies that have been undertaken can be divided in studies using information from official records and registers (Robins, 1966; Curman and Nylander, 1976, and Nylander, 1979; Otto and Otto, 1978; Zeitlin, 1986; Steinhausen, Meier and Angst, 1998), and studies obtaining information directly from the individuals and/or their relatives (Robins, 1966; Aumiller, Kramer, Leidinger, and Lempp, 1981; Rey, Morris-Yates, Singh, Andrews, and Stewart, 1995, and Rey, Singh, Morris-Yates, and Andrews, 1997; Stanger, et al., 1996, and Stanger, Achenbach, McConaughy, and LaRiviere, submitted). The advantages of the former include reduction of attrition and informant bias. Disadvantages

are a lack of control over follow-up information and a limitation in outcome variables, indiscriminate categories, and the lack of differentiated information on the functioning of the individual obtained from multiple informants. Follow-up studies on outpatient clinic patients, with arbitrary selection criteria set at studies with over 100 subjects, from 1965 on, published in the English or German language, are summarized in Table 1.1.
The first traceable and well-known study was published by Robins (1966), using case-records and at follow-up official records as well as interviews. After 30 years, she followed-up 402 of 524 children (76.7%) formerly referred to the St. Louis child guidance clinic and 89 of 100 matched controls. From the children for whom first contact was made between 1924 and 1929 approximately 20% of the cases logged in by the St. Louis clinic were eligible. The study sample consisted of 73% boys and 27% girls, with 406 out of 524 referred for antisocial behavior, mostly by Juvenile Court. The median age was 13, the youngest child being 18 months, the oldest 18 years of age. The study mainly focused on antisocial behaviors and sociopathic personality. In many small ways selection or other biases may have occurred, and the lack of sophisticated statistical analyses has probably obscured results, and has led to speculation on intricate associations.
Still, judging it within its time frame, the work is exemplary. The researchers went through great lengths of trouble to reach their study population, with inventive methods, and a large amount of information was obtained on multiple subjects of interest to the field. Results included the finding that childhood antisocial behavior predicted adult antisocial behavior as well as other undesirable adjustment, and continuity for problem behaviors that could be considered externalizing and internalizing. For instance, 61% of the sociopathic group was still seriously antisocial, while 27% improved (antisocial behavior markedly reduced) and 12% remitted (had given up their antisocial behavior). Improvement occurred most commonly between ages 30 and 40. Overall, the 'other problems' group had intermediate prognosis when compared to children referred for antisocial behavior and controls. Childhood behavior disturbances were considered to be important predictors of certain psychiatric illnesses, such as juvenile antisocial behavior predicting sociopathic personality. Robins concluded, among others, that clinic children were more maladjusted and sicker adults than control subjects, and that maladjustment could show itself in family life, social contacts, work situations, and use of services as well as problem behavior.
Curman and Nylander (1976) and Nylander (1979) published a 10-year and a 20-year follow-up study of children referred to a child guidance clinic, using case-record information scored on a statistical sheet, and official registers at follow-up. These included information on registered behavioral problems (drunkenness, offenses, criminality), recruitment into Armed Forces, and application for psychiatric care. Subjects were children aged 0 to 20 years, presenting themselves between 1953 and 1955 at clinics in Stockholm, Sweden. Children from very low socio-economic classes, from higher socio-economic classes, with more serious problems, as well as children with psychosomatic problems or developmental delay were more likely to apply elsewhere. Furthermore, children with IQ's of 110 and above were over-represented and approximately 40% of the children were diagnosed 'healthy child / mild environmental reaction' or 'no diagnosis'.
At 10-year follow-up, information was obtained on 2268 (95.9%) individuals, 65.1% boys and 34.9% girls. No dropout analysis, which - given the high follow-up rate - would have

Table 1.1 Follow-up studies using outpatient samples.

Authors	Year[1]	Country	Type[2]	Follow-up Period[3]	N	Categories of psychopathology	Characteristics
Robins	1966	United States	DA & R/R	30	402	antisocial vs. other	child guidance clinic; adults; 89 control subjects
Nylander	1979	Sweden	R/R	20	2164	at follow-up: antisocial vs. mental vs. 'no registration'	child guidance clinic; adults
Otto and Otto	1978	Sweden	R/R	17	371	psychopathic vs. neurotic	child psychiatric clinic; adolescents now adult; 371 control subjects
Aumiller, et al.	1981	Germany	DA	8	711	school problems, enuresis/ encopresis, other behavior problems, physical problems, developmental problems/ autism/child psychosis	university child psychiatric clinic; adolescents, adults
Zeitlin	1986	England	R/R	3 - 25	161	depression, obsessive/ compulsive disorder, conduct/personality disorder, psychosis (broad categories: emotional vs. conduct)	child psychiatric clinic; adults; childhood and adult patients; 5013 child controls, 161 matched child controls, 161 matched adult controls
Rey, et al.	1995	Australia	DA	5 - 8	145	disruptive vs. emotional	adolescent psychiatric clinic; young adults
Stanger, et al.	1996	United States	DA	.5 - 12	1103	internalizing vs. externalizing	child psychiatric clinic; adolescents, adults; 964 matched controls
Steinhausen, et al.	1998	Switzerland	R/R	18 - 35	214	internalizing, externalizing, mixed internalizing/ externalizing, developmental, miscellaneous, subclinical	child psychiatric clinic; adults; males only; born in 1952; conscripted in the Swiss Army; 2724 control subjects

[1] = Year of publication. [2] = Type of information used at follow-up: DA= direct assessment of the subject and/or a relative, R/R= records and/or registers. [3] = Length of follow-up period in years.

been unlikely to yield important differences, was performed. Because the number of girls was relatively low, and because girls rarely entered 'asociality registers' and had not been recruited for military service, this study is primarily concerned with boys' outcome with respect to officially registered problem behaviors, since most registers were related to problem behaviors. One seemingly important finding, however, is that the frequency of application for mental health services steadily dropped with increasing age for boys, whereas for girls the trend was the opposite.

After 10 years 53.8% of the boys were entered in one of the registers, while 'only' 38.8% of the girls were registered. The authors concluded that background factors do not offer any help in predicting psychiatric complications, but do give some indication of antisocial development. Boys were believed to more likely react with symptoms causing disturbances in their surrounding environments, whereas girls more frequently reacted with symptoms more distressing to themselves than to others. Since the 20-year follow-up study was already in progress, the investigators did not subject the material to 'comprehensive and in-depth penetration'. They concluded that the follow-up period had been too short, since a large proportion of the age group youngest at discharge was not yet old enough to enter certain registers. Still, one of the essential findings was that a child guidance clinic clientele contains a large number of children who will need help and support for a long time ahead.

At the 20-year follow-up, information was obtained on 2,164 (91.5%) individuals, with 65.5% boys and 34.5% girls. Distributions according to age and sex did not differ from the primary material. Of the individuals applying for the child guidance clinic, 16.0% of the boys and 7.0% of the girls had died or become chronically invalid by addiction, criminality, or psychosis after 20 years.

Again, most analyses were performed for boys only, because too few girls were entered in the 'asociality registers'. Continuity and poor prognosis of externalizing behavior is suggested, because the majority of boys exhibiting antisocial symptoms at an early age was entered in 'asociality registers', and was in need of psychiatric care. For children with internalizing and social behavior problems like inhibition/depression (for girls), relationship difficulties (for boys), and hyperactivity (both sexes), entrance in the 'mental register' was predicted, i.e. they were found to be in need of psychiatric care. Unfortunately, because of the presentation of the results (overlap of registration in different registers, grouping of symptoms in the discussion) no figures can be given on these overall findings.

Nylander, in his discussion, concluded that a period of 20 years should be a satisfactory length for follow-up, but that this sample was not representative of a child psychiatric population, because it was relatively 'easy'. He found a difference in outcome between boys and girls, similar to the 'symptom reaction pattern' described at the 10-year follow-up: boys had social adjustment problems more often than girls did, while girls applied for psychiatric care more often than boys did. In contrast to the 10-year follow-up, the author now concluded that background factors did supply indications to the subsequent fate of the children in question. For instance, chronic addicts and hardened criminals came to a very large extent from highly unstable home environments, frequently marked by addiction. Unfortunately, the promised 'comprehensive and in-depth penetration' was not performed, most likely due to the sudden death of Hans Curman, instigator of the project.

For their follow-up study, Otto and Otto (1978) used case-record information on 371

adolescents visiting the Child and Adolescent Psychiatric Clinic of the Central Hospital in Kristianstad, Sweden in 1955. After 17 years (in 1972), follow-up information was obtained from official registers on all individuals (100%), and intermediate information was obtained on male subjects (at age 18-19: military service records). Subjects included intellectually impaired individuals (30%), and consisted of 60.1% boys and 39.9% girls, 37.7% 12-14 year olds and 62.3% 15-17 years of age at initial assessment. The authors claimed this was no longer a correct reflection of an adolescent psychiatric population. Controls (matched on sex, date of birth, county of birth) were used. Otto and Otto concluded that few connections existed between initial cause of referral and later adult 'psychical and somatic behavior', although they did list a number of associations that can be interpreted as continuity of psychopathology. They also concluded that the outlook is good for the children with 'neurotic' problems, in contrast with especially those diagnosed 'character neurotic' (psychopathic). Based on the results of this study, previous child and adolescent psychiatric patients were expected by the authors to be at a disadvantage as adults, expressing 'psycholability', mental illness, and social adjustment difficulties.
In Tübingen (Germany), Aumiller, Kramer, Leidinger, and Lempp (1981) followed up 1,368 children referred to a department of child and adolescent psychiatry after 8 years, with a 52% response to mailed questionnaires (N=711). Subjects were mainly outpatients from this university clinic, which - according to Kramer (1980) - introduced a referral bias: children from higher socio-economic classes were over-represented. At follow-up, parental information was obtained on boys (65.7%) and girls (34.3%). Aumiller et al. reported that no clear indications for attrition bias could be found, but they did not indicate what variables were investigated in this respect. Furthermore, they reported that response was higher in the group of subjects aged 6-11 at first contact as compared to those younger than 6 or older than 11. Another consideration in judging the value of this study is the fact that it was set out to provide proof of the positive long-term effect of this institute on their population, which was eventually found.
Indications of continuity and change were found. With problems divided into 5 groupings (school problems, enuresis/encopresis, other behavior problems, physical problems, and developmental problems/autism/child psychosis), problems had disappeared in 50%, improved or remained the same in 43%, and worsened in 4%. Best prognosis was for enuresis/encopresis (in 73% problems disappeared), worst prognosis was for the developmental problems/autism/child psychosis category (in only 10% problems disappeared). New problems had developed in 25%, with higher frequencies for the enuresis/encopresis and developmental problems/autism/child psychosis groups than in the school problems, other behavior problems, and physical problems groups. The existence of the institute, and the counseling and therapy provided, were justified by a 'definite positive relationship' found between improvement or cure and the treatment planned.
Within a more complicated study design, Zeitlin (1986) at the Maudsley Hospital, London, England, used case records from child and adult psychiatric departments to obtain information on demographic variables, symptoms, clinic attendance, and diagnostic categories. He compared 161 index-patients (I), who attended both the children's and the adult departments, to all children attending the children's department, but not attending any adult mental health institute (C). Furthermore, a matched subgroup from the childhood

patients not in care in adulthood (mC), and matched adult patients, who had not attended any department of child psychiatry in childhood (mA), were used. In selecting the adult controls 413 case notes were examined. About 2/3 of the rejected cases were excluded because of 'manifest symptoms prior to age 16', in itself a strong indication for continuity of psychopathology. Compared to the population of child psychiatric patients, who did not attend any adult mental health institute (C), the index group contained fewer boys (60.9 versus 66.1%) and more girls (39.1 versus 33.9%), and younger boys and older girls were over-represented in the index group.
Comparing the index cases and matched child controls (mC), the index cases more often attended the clinic over 6 months, were more often considered improved or recovered at the end of their childhood attendance, were more often described to have obsessions, sleep disturbances, tempers, and peer isolation, and less often had enuresis. No differences could be found on diagnostic categories, but a higher symptom score was found for index than for control cases. In discriminant function analysis, differences in prognosis could be identified: index cases seemed to be worse at childhood attendance than childhood controls (mC). Remarkably little difference between index cases and matched adult cases (mA) was found on symptoms or diagnosis, but index cases displayed an increased incidence of personality disorder and an overall incompetence. Zeitlin found that different formal diagnoses did not help in identifying referred children, likely to show disturbance in adult life. Environmental and social factors helped little more. In this study, the continuity of symptoms from childhood to adult life, irrespective of diagnosis, was one of the strongest findings, and symptom predictability was reported to be far better than diagnostic predictability, e.g., depressive symptoms predicted future depressive symptoms better than the diagnosis depression predicted a future diagnosis of depression. Still, emotional and conduct disorders, the distinction between these main categories being confirmed in this study, seemed to have fairly constant continuities.
Rey, Morris-Yates, Singh, Andrews, and Stewart (1995) and Rey, Singh, Morris-Yates, and Andrews (1997) studied, with an emphasis on personality disorders, the functioning of a group of adolescent psychiatric patients from the Sydney metropolitan area (Australia) after a mean follow-up interval of 6 years. Of the 370 individuals, 205 were traced and 145 were interviewed (71% of those traced). Subjects were 56% boys and 44% girls, aged 12-16 at intake and 17-23 at follow-up. No gender or age differences were found between those interviewed and those not interviewed, and no differences were found between those interviewed, those who refused, those not located, and those not searched for on Child Behavior Checklist (CBCL) Internalizing, Externalizing, and Total Problem scores, as filled out by the parents at the time of intake.
Direct assessment at follow-up with a semi-structured clinical interview (the Personality Disorder Examination) was related to DSM-III-R diagnoses, and regrouping categories 'disruptive' and 'emotional'. Furthermore, a self-report questionnaire was used to assess other outcome measures, such as education achieved, social functioning, psychiatric treatment, judicial problems, as well as the GFES, a scale that measures the quality of the family environment. Unfortunately, the before mentioned CBCL scores were not used. Instead, numbers of internalizing, externalizing, and total problems between the ages 4-12 were obtained retrospectively from the case-records.
Rey et al. concluded that individuals with disruptive disorders in adolescence had a

particularly negative personality outcome at young adulthood, with only one gender difference: among men, antisocial personality disorder was more common. On the other hand, the overall young adult functioning was found to be as poor in those with emotional disorders as in those with disruptive disorders. However, this was found after controlling for personality disorders at follow-up.

Stanger, MacDonald, McConaughy, and Achenbach (1996) studied an outpatient-clinic sample in Vermont (U.S.A.). They approached 1,731 ex-patients by mail, to obtain follow-up information from various informants, using identical or comparable questionnaires on both times of assessment, with well-validated, empirical syndromes. At initial assessment parental information was used only. Scorable ratings from at least one informant were obtained from 1,103 (63.7%) of the target subjects, at an average of six years after referral. Subjects included 774 (70.2%) males and 329 (29.8%) females, aged 5 to 27 years old at follow-up. No differences between dropouts and remainers were found on age at initial assessment, gender, socio-economic status, or initial CBCL Total Problem score. High stability and continuity for parent-reported syndromes were reported for both younger (5-18 yrs.) and older (18-27 yrs.) subjects. Furthermore, the stability of problems for the referred sample was found to be similar to that found for demographically matched non-referred subjects from a national sample. Using the older subjects from this study, Stanger, Achenbach, McConaughy, and LaRiviere (submitted) tested a developmental model of psychopathology across the transition from adolescence into adulthood. In their analyses, they combined psychopathology measures from parents and subjects at intake, with a parent-reported score on improvement after treatment to form a Time 1 latent factor of overall psychopathology, to be used in latent structure analyses. Self-reported psychopathology, number of DSM diagnoses, global functioning, and results from a 'life history chart' formed a Time 2 latent factor. They found that psychopathology was stable across this period for referred males as well as females and that females failed to improve to the same degree as males.

Finally, the study published by Steinhausen, Meier, and Angst (1998) compared the outcome - with regard to mortality, delinquency, and adult psychiatric diagnoses - of former patients from the Child and Adolescent Psychiatry Service of the Canton of Zurich (Switzerland) to a large group of controls. Case-record information of male former patients born in 1952 and conscripted into the Swiss army in 1971 was used from the initial assessment, and official register information at follow-up. Patients were 3 to 18 years old at initial assessment, and 36 to 38 years old at follow-up, with follow-up periods ranging from 18 to 35 years. Diagnostic categories were created for childhood (internalizing, externalizing, mixed internalizing and externalizing, developmental, miscellaneous, subclinical) and adult problems (internalizing, externalizing, and somatization). No significant differences were found between former patients and controls with regard to mortality or major delinquency, although the latter showed a trend towards higher rates for ex-patients. Former patients did, however, fare less well psychiatrically, showing more externalizing disorders, such as sociopathy, drug dependency, and sexual delinquency. Significant continuity was found for internalizing, but not for externalizing disorders. The authors explained this surprising finding by having relatively small numbers of specific types of adult diagnostic categories, i.e. most patients had more than one diagnosis. The type of diagnosis in childhood was not found to be a predictor of adult outcome.

Summary

Very different populations were used in these studies, two populations consisting of adolescents only (Otto and Otto, 1978 and Rey et al., 1995, 1997), one population existing of males only (Steinhausen, Meier, and Angst, 1998), and all studies differing on in- and exclusion criteria. This leads to difficulties in comparing results. Excluding the all male sample (Steinhausen, Meier, and Angst, 1998), populations consisted of an average of 64.5% males and 35.5% females. Response rates were on average 90.4% for studies using records or registers only, and 65.9% for studies using direct assessment. Only one study used standardized measures with well-validated, empirical syndromes at both times of assessment (Stanger, et al., 1996). This was also the only study in which multiple informants were used, but unfortunately at follow-up only. Analytic strategies were very different across studies, so comparison at result level is extremely difficult.
Still, some general conclusions can be drawn. Among others, these studies seem to confirm the stability and continuity of psychopathology found in general population samples, especially for externalizing problems. Unfortunately no average figures can be given, because different analytic strategies resulted in incomparable measures (e.g., percentages and stability coefficients). Furthermore, most authors agree that other domains of functioning are likely to be hampered as well, e.g., family relations, educational and professional achievements, and social functioning, and that other indices of poor functioning are increased, e.g., mental health service use and judicial contacts. Results indicate that prognosis can to some extent be predicted from factors known at initial assessment, such as age at intake, gender, length of follow-up period, socio-economic status, or initial type of problem. However, the inconsistency of results across studies on these related factors hampers drawing firm conclusions on their influence. Results led us to expect considerable stability of psychopathology, and to expect the type of problems to remain mostly the same across time, and at follow-up to be predicted by comparable problems at intake.

The thesis study

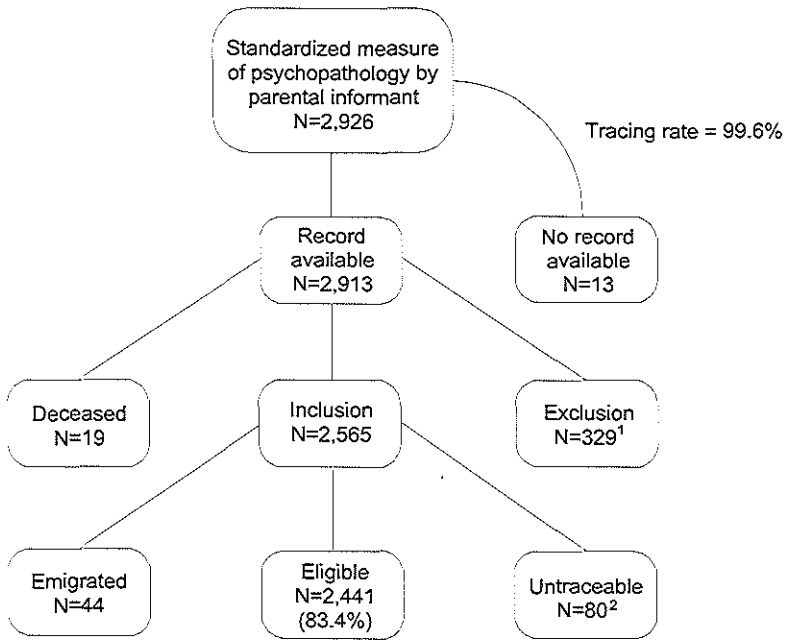
Because the studies described above have limited comparability on populations used, methodology, and description of results, and because information was in most cases obtained from only one informant at initial assessment and follow-up, investigations are needed that account for the aggregated flaws of these studies. Important questions remained, such as: which predictive factors can be identified with respect to the outcome in different domains of functioning, and: is continuity (or change) of psychopathology similar for different situations, as reported by different informants, e.g., parents reporting on behavior at home and teachers reporting on behavior at school?
Halfway 1982, the Department of Child and Adolescent Psychiatry, Sophia Children's Hospital, Rotterdam started to employ a standardized intake procedure, including standardized assessment of psychopathology in children and adolescents, using information from parents, teachers, and subjects. Thus, a large database was built on a sizeable sample of children and adolescents, referred to an outpatient psychiatric clinic. For the present study, these patients were followed-up using comparable standardized questionnaires to be completed by parents, teachers, and former patients themselves.

Data collection took 2 years, spanning from May 1995 to May 1997.
The goals were to investigate in a longitudinal study, across informants:

1. What is the long-term outcome of a broad range of child psychiatric disorders?
2. What associations exist between demographic variables (e.g., sex, age, socio-economic status), and the course of child psychopathology?
3. Which determinants (e.g., type of disorder, family structure, academic performance) predict poor outcome?

Subjects and selection procedures
Subjects were referred to the outpatient clinic of the Sophia Children's Hospital, Department of Child and Adolescent Psychiatry, Rotterdam for a new psychiatric evaluation and/or treatment between June 1982 and January 1995. This department is a university clinic, with specialist child psychiatric care. Apart from having a regional function, it has a supra-regional function, patients coming from the entire province of Zuid-Holland and other parts of the Netherlands as well.
To be included in this study, subjects had to have a valid standardized measure of psychopathology filled out by a parent or parent surrogate, approximately at the time of the first contact (Time 1 [T1]). The resulting target population consisted of 2,926 children and adolescents. Time 1 parental informants were 52.9% mothers, 11.2% fathers, 28.5% both parents, 5.8% others (e.g., other relative, residential caregiver), and 1.6% unknown.
Of the 2,441 subjects, 1,686 (69.1%) lived with their biological parents, and 501 (20.5%) lived with a biological parent with (230), or without (271) a partner. Born in the Netherlands and of Dutch nationality were 2,253 (92.3%) children. In 498 (16.7%) cases, treatment advice included inpatient or day care treatment. Medication was recommended in 306 (12.5%) cases, and parental counseling in 1,594 (65.3%). In 1,509 (85.6%) of the children for whom individual outpatient treatment was recommended, treatment was at our outpatient department. Eighty percent of them received individual psychotherapy (seventy percent of these therapies being supportive). Between Time 1 and 2, most children (92.7%) received some kind of treatment. In 17.3% of the cases, treatment included inpatient treatment. When outpatient treatment was at our department, mean duration was 17.3 months (sd=18.1; range 1 to 180). In 69.9% of the cases there were more than 10 sessions.
To assess eligibility, Time 1 case records were evaluated, except 13 records that could not be located, giving a 99.6% tracing rate (Figure 1.1). Current addresses were sought via a variety of means. Subjects were considered ineligible if one or more of the following applied to them: (1) died before the start of follow-up (N=19); (2a) never seen at the clinic (N=4); (2b) first contact after February 1st 1995 (N=6); (2c) younger than 4 years or older than 18 years at the first contact (N=11); (2d) IQ < 75 (N=241); (2e) referral primarily based on problems other than behavioral or emotional (e.g., evaluation of developmental level or intelligence, custody decision) (N=51); (2f) no behavioral or emotional problems found at evaluation (N=45); (3) emigrated (N=44); (4) no current address could be found (N=80). The remaining 2,441 subjects (83.4%) were eligible to follow-up, and consisted of 1,619 (66.3%) boys and 822 (33.7%) girls.

Figure 1.1 Path from initial target population to target subjects.



[1] = Never at clinic: N=4; new contact after Feb 1st 1997: N=6; age <4 or age >18: N=11; IQ<75: N=241; referred for evaluation of problems other than behavioral/emotional: N=51; after evaluation no behavioral / emotional problems: N=45. Total N=329: some are excluded on grounds of more than one of the criteria.
[2] = Secret address: N=28, address not found: N=52.

Instruments

The Child Behavior Checklist (CBCL), the Teacher's Report Form (TRF), and the Youth Self-Report (YSR) (Achenbach, 1991a,b,c) were used as standardized reports on children's and adolescents' adaptive functioning, and emotional and behavioral problems in the previous months, as reported by parents or parent surrogates, teachers, and adolescents (11-18 years old), respectively. Problem behaviors are scored on 8 cross-informant syndromes (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior), and two broadband scales: Internalizing (consisting of Withdrawn, Somatic Complaints, and Anxious/Depressed), and Externalizing (consisting of Delinquent and Aggressive Behavior). A Total Problem score is computed by summing the individual items. Good reliability and validity have been demonstrated for the Dutch CBCL, TRF, and YSR (Verhulst, Van der Ende, and Koot, 1996, 1997a,b).

The Young Adult Self-Report (YASR) and Young Adult Behavior Checklist (YABCL) (Achenbach, 1997) are upward extensions of the YSR and CBCL. They are designed to evaluate emotional and behavioral problems for ages 18 to 30 years, reported by the young adult him or herself, or by parents, parent surrogates, or others who know the subject well (e.g., spouses, partners, or friends). Items relevant to childhood problems were replaced by items more appropriate to adults' functioning or socially desirable items.

Problem behaviors are scored on 8 syndromes (Anxious/Depressed, Withdrawn, Somatic Complaints, Thought Problems, Attention Problems, Intrusive Behavior, Delinquent Behavior, and Aggressive Behavior), and two broadband scales: Internalizing (consisting of Anxious/Depressed and Withdrawn) and Externalizing (consisting of Intrusive Behavior, Delinquent Behavior, and Aggressive Behavior). A Total Problem score is computed by summing the individual problem items.
Achenbach (1997) has reported good reliability and validity for the American YASR and YABCL. For the Dutch YASR, Ferdinand, Verhulst, and Wiznitzer (1995b) reported an 18-day test-retest reliability of .89 for the Total Problem score, and an average Cronbach's alpha across syndromes of .84. Two-year stability was medium to large (.30-.71) for syndromes and large (.57-.75) for Internalizing, Externalizing, and Total Problem scores. Validity of the Dutch YASR is supported by the fact that problem scales showed significant differences between referred and non-referred adults with much greater accuracy than other instruments (Wiznitzer, Verhulst, Van den Brink, Spitzer, Fleiss, Koeter, Van der Ende, Giel, and Koot, 1992). Furthermore, mean Total Problem, Internalizing, and Externalizing scores were higher for individuals with SCAN derived DSM-III-R diagnoses, than for individuals without such diagnoses. Total Problem scores from SCAN and YASR correlated .69 in males and .78 in females (Ferdinand, Van der Reijden, Verhulst, Spitzer, Fleiss, Nienhuis, and Giel, 1995a). No results are available on the reliability and validity of the Dutch YABCL. Results from closely related instruments, like the Dutch CBCL and YASR, and the US YABCL, lead us to expect sufficient reliability and validity on this instrument as well.
Since no standardized questionnaire is available for multiple, differentiated outcome measures, we formulated questions based on the department's research expertise. Versions of these questionnaires were sent to subjects as well as parents. All questions concern the period since the last contact at the outpatient clinic of the Academic Hospital Rotterdam - Sophia, Department of Child and Adolescent Psychiatry. We evaluated the following outcomes: *Serious School Problems* (Has [the subject] been suspended or expelled from school due to his / her behavior?), *School Dropout* (Dropped out of school before, during or direct after primary school), *Serious Work Problems* (Has [the subject] been suspended or expelled from his / her job due to his / her behavior?), *Injuries* (Has [the subject] had an accident for which medical treatment was necessary - do not include harming oneself or suicide attempts), *Suicidal Ideations* (Did [the subject] talk about harming him / herself or committing suicide?), *Self Harm Suicide Attempt* (Has [the subject] deliberately harmed him / herself or attempted to commit suicide?), *Outpatient Mental Health* (Does [the subject] still visit Sophia's outpatient clinic of the Department of Child and Adolescent Psychiatry and/or has [the subject] been referred to, assessed at or treated at another institution for behavioral or emotional problems - not including physical problems with medical causes or inpatient treatment?), *Inpatient Mental Health* (Is [the subject] admitted at an institution for inpatient treatment of behavioral, emotional or developmental problems?), *Help Wanted* (Does [the subject] at this moment have problems for which he / she wants professional help?), *Alcohol Abuse* (Do you worry about the amount of alcohol [the subject] uses?), *Drug Abuse* (Did [the subject] use drugs in the passed 6 months - e.g., marihuana, hash, uppers, cocaine, heroin, morphine, sleeping pills), *Police Contacts* (Has [the subject] been in contact with the police or judicial system

because of his / her behavior - not including minor traffic violations or parental divorce procedures?).
The Global Assessment Scale (GAS) (Endicott, Spitzer, Fleiss, and Cohen, 1976) and Children's Global Assessment Scale (CGAS) (Shaffer, Gould, Brasic, Ambrosini, Fisher, Bird, and Aluwahlia, 1983) are instruments developed to evaluate the overall functioning of a subject during a specified period on a continuum from psychological or psychiatric sickness to health (Endicott, et al., 1976). In their original form a health care professional scores the overall functioning over a period of six months on a scale from 1 (sickest) to 100 (healthiest). Good psychometric properties were found for both GAS and CGAS, as well as for an especially designed non-clinician CGAS (Bird and Gould, 1995). We translated both GAS and CGAS into Dutch and created a self-rating version and a version to be scored by non-clinicians, e.g., parents or partners. To assess global functioning in this study, we computed the mean of the self-report and non-clinician version. We dichotomized the score at 60/61 as suggested by Bird and Gould to obtain a deviant group consisting of 25% of the sample (60 was included in the 'deviant' range, 61 in the 'non-deviant' range).

Procedures
At follow-up (Time 2 [T2]) three groups were formed, based on the current age of the subject: young adults (19 years and over, N=789), adolescents (12-18 years, N=1,288), and children (11 years and younger, N=364). Subject forms were sent to the young adults, and permission to approach a parental informant was asked for. Parent forms were sent to parental informants directly in the younger age groups, and permission to approach a teacher for information about the child was requested. In the adolescent group, subject forms were sent along with the parent forms, and parental informants were asked to deliver them to the adolescent.
If no response was received on this initial approach, a reminder was sent to subjects and/or parents. If still no response was received, potential informants were called by telephone to obtain their participation. This procedure was continued for approximately three months, after which non-responders received another written reminder. To further enhance response, a final procedure was started at the end of the project. Informants, that had previously consented and had given continued agreement to participate but had not yet responded, were visited at home without previous announcement to collect completed questionnaires or to aid informants in completing the questionnaires. If possible, information was obtained instantly, otherwise an appointment was made to collect the questionnaires. We did not approach informants who had expressed that they did not want to participate, and informants had had multiple occasions to refuse participation: participation forms accompanied the first and second reminder, and at follow-up telephone calls co-workers emphasized the right to refuse. Procedures were approved by the Committee for Medical Ethics, Academic Hospital Rotterdam / Erasmus University Rotterdam.

Response results
In this way, we gathered scorable rating forms from at least one informant for 1,830 (75.0%) of the 2,441 target subjects. Parent ratings were obtained from 1,637 (95.6%) of

the 1,712 approached parental informants of Time 2 subjects. At Time 2, the parental informants were 69.4% mothers, 17.9% fathers, 10.5% both parents, and 2.2% others. Self-ratings were obtained for 1,326 (87.6%) of the 1,514 Time 2 subjects who were over 11 years old. Teacher ratings were obtained for 689 (93.9%) of the 734 subjects who were in school at follow-up and whose parents granted permission.
To evaluate the effect of nonparticipation we compared responders and non-responders on sex, age at intake, socio-economic status (SES) scored on a 9-step scale (Netherlands Central Bureau of Statistics, 1993), Time 1 Internalizing, Externalizing, and Total Problem scores. For the entire population, the only significant difference found, was for age at intake: response was higher for younger subjects (mean age responders 9.6 years, non-responders 10.2 years, $p<.001$).
In the young adult group, a total response of 68.9% was reached over a mean follow-up period of 10.5 years, with information more often obtained on women than men (73.9% versus 65.8%, $p=.016$). Young adult responders scored lower than young adult non-responders on T1 Externalizing Behavior (15.4 versus 18.6, $p=.001$) and Total Problems (51.8 versus 58.1, $p=.003$). In the younger age group (4 - 18 years old), a total response of 77.8% was reached over a mean follow-up period of 6.2 years, with information more often obtained on boys than girls (79.5% versus 74.2%, $p=.017$).

Structure of this thesis

In **Chapters 2 and 3** results are presented on the continuity of psychopathology in children referred in childhood or adolescence, with the follow-up in youth and young-adulthood, respectively. In **Chapters 4 and 5** results are presented on change, and prediction of change, in psychopathology for the same age groups. In **Chapter 6**, information for the complete sample is provided on (the prediction of) other outcome measures, such as school problems, alcohol and drugs use, police contacts, and global functioning. Finally, in **Chapter 7**, the main findings and conclusions of the forgoing chapters are presented and discussed. Research and clinical implications, as well as recommendations for further research are given.

Chapter 2

Continuity of psychopathology in youths referred to mental health services

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Chapter 2 Continuity of psychopathology in youths referred to mental health services

Abstract

Object: To investigate the stability and predictive strength of behavioral and emotional problems in childhood and adolescence. *Method*: A referred sample (N= 1,652), aged 4 to 18 years at initial assessment, was followed up after a mean interval of 6.2 years. Problem scores derived from Child Behavior Checklist, Youth Self-Report, and Teacher's Report Form at initial assessment (T1) were related to scores on the same instruments at follow-up (T2). *Results*: Correlations between T1 and corresponding T2 problem scores averaged .41 intra-informant (range .22-.61) and .22 inter-informant (range -.09-.57). Stabilities were similar across gender, and larger for Externalizing versus Internalizing scores, except on youths' self-reports. Psychopathology scores at follow-up were predicted by corresponding T1 scores. Girls were predicted to have higher T2 Somatic Complaints, Anxious/Depressed, Thought Problems, and Internalizing scores than boys. Children younger at intake were predicted to have higher scores than older children on T2 Social and Attention Problems. *Conclusions*: Findings indicate continuity of specific behavioral and emotional problems in clinically referred children and adolescents.

Introduction

All over the world, much time, energy, and money are invested in mental health services for children (we use 'children' to include adolescents). Still, empirical evidence to answer simple questions concerning course and prognosis of psychopathology is scarce. It is essential to identify children with poor versus good prognosis and to determine factors associated with outcome to improve treatment and preventive measures.

To identify predictors of psychopathology among referred children, and to determine whether they differ from predictors for non-referred children, longitudinal studies of large clinical samples spanning a broad spectrum of psychopathology are needed (Stanger, MacDonald, McConaughy, and Achenbach, 1996). Findings obtained from broad clinical samples are more likely to be generalizable to the majority of child and adolescent psychiatric patients than are findings from samples selected for manifesting narrow ranges of psychopathology.

Because children are likely to display different behaviors, competencies, and problems in different situations (such as home versus school), and informants differ with respect to their sensitivity to various aspects of children's functioning (Achenbach, 1991d), multiple sources are needed to obtain information on children's behavioral and emotional problems. Few systematic clinical studies of the course and outcome in childhood or adolescence of a broad range of child psychiatric disorders have been published. To our knowledge, only 2 such studies exist. In Tübingen (Germany), Aumiller, Kramer, Leidinger, and Lempp (1981) followed up 1,368 children referred to a department of child and adolescent psychiatry after 8 years, with a 52% response to mailed questionnaires. Problems had disappeared in 50%, improved or remained the same in 43%, and worsened in 4%. New problems had developed in 25%. The Aumiller, et al. study has some disadvantages: a lack of standardized measures of psychopathology, arbitrarily chosen diagnostic categories, limited analytic strategies, and possible selection bias. Furthermore, follow-up information relied solely on parents.

Stanger, et al. (1996) studied an outpatient clinic sample in Vermont. Using mail and follow-up phone calls, they sought data on 1,731 former patients (from parents, teachers,

and subjects themselves - youths and young adults). Scorable ratings from at least one informant were obtained for 1,103 (63.7%) of the eligible subjects, at an average of 6 years after referral. The study by Stanger, et al. used a questionnaire with well-validated, empirical syndromes at initial assessment to obtain parent data. To obtain follow-up data, parallel forms scored to the subject's age (e.g., Child Behavior Checklist for youths and Young Adult Behavior Checklist for young adults) were used from multiple informants (parents, subjects, and teachers). They reported high quantitative and categorical stability for Internalizing, Externalizing, and Total Problem scores. Stabilities were higher when a parent was the informant at both times, with no gender differences. Especially in the younger age group (5-18 years), larger stabilities were found for externalizing problems than for internalizing problems. Stanger, et al. (1996) also found that specific types of psychopathology at intake predicted the same type of psychopathology at follow-up. For example, aggressive behavior at intake tended to predict aggressive behavior at follow-up more than any other type of behavior. Disadvantages of this study are the possible selection bias and the use of only one informant at initial assessment.
Empirical evidence should not be based on 1 or 2 studies only, as chance findings would have a major impact on preventive and clinical interventions. Replication studies are needed to confirm or deny results, and thus to obtain a solid foundation to build on. Methodologically, the studies mentioned above could be improved upon by higher follow-up rates and using multiple informants at both times of assessment. The present follow-up study assessed a sizable sample of children and adolescents, referred to an outpatient psychiatric clinic, using information from parents, teachers, and subjects at both times of assessment. Goals were to investigate across informants: (1) the long-term stability of empirically derived problem patterns and (2) the power of different types of psychopathology, gender, age, socio-economic status (SES), and follow-up interval to predict later psychopathology.
Results from studies discussed above led us to expect considerable stability of psychopathology, especially for externalizing problems. Furthermore, we expected specific types of psychopathology at follow-up to be predicted by comparable problems at intake.

Method

Subjects

Subjects were referred to the outpatient clinic of the Sophia Children's Hospital, Department of Child and Adolescent Psychiatry Rotterdam, for psychiatric evaluation and/or treatment between June 1982 and January 1995. This department is a university clinic, with specialist child and adolescent psychiatric care.
To be included in this study, subjects had to have the Child Behavior Checklist (CBCL) filled out by a parent or parent surrogate approximately at the time of first contact (T1). The target population consisted of 2,926 children and adolescents. Parental informants were 52.9% mothers, 11.2% fathers, 28.5% both parents, 5.8% others (e.g., other relative, residential caregiver), and 1.6% unknown.
To assess eligibility, T1 case records were evaluated, except 13 records which could not be located, giving a 99.6% tracing rate. Subjects were considered ineligible if one or more of the following applied: died before follow-up (N=19); never seen at the clinic (N=4); first contact after February 1, 1995 (N=6); younger than 4 or older than 18 years at first contact (N=11); IQ < 75 (N=241); referral primarily for problems other than behavioral or emotional (e.g., evaluation of developmental level or intelligence, custody decision) (N=51), no behavioral or emotional problems found at evaluation (N=45); emigrated (N=44); no

current address found (N=80). The remaining 2,441 subjects (83.4%) were eligible to follow-up. Three groups were formed, based on the age of the subject at follow-up approach (T2): young adults (19 years and older, N=789), adolescents (12-18 years, N=1,288), and children (11 years and younger, N=364). This study deals only with those aged 4 to 18 years of age at follow-up (N=1,652).
The sample originally consisted of 69.0% boys and 31.0% girls (Table 2.1), with similar mean ages at intake (8.4 versus 8.6 years, t=1.1, p=.274). Many children were in elementary school at T1 with 379 (22.9%) in special schools. According to case records, most children were living with at least one of their biological parents (N=1,500, 90.8%). The mean family SES (scored on a 9-step scale) (Netherlands Central Bureau of Statistics, 1993) was 4.7 (sd=1.9), which is comparable with that of the 1996 Dutch population (mean 4.5, sd=2.1). In a majority of patients, behavioral (62.6%) and/or emotional (61.6%) problems were reported at intake as 1 of the 5 most important symptoms. Psychopathology mean scores at intake (Table 2.1) were well above Dutch norm scores, which are 5.5, 6.3, and 18.8 for Internalizing, Externalizing, and Total Problem scores, respectively.

Procedures
After referral, initial data were collected by sending information about the intake procedure and questionnaires to parents, to be filled out and returned before or handed over at intake. If appropriate, self-report questionnaires and permission to approach a teacher were also requested. At T1 most other data were collected by one of the mental health workers in an interview with one or both parents.
At follow-up, parent forms were sent to parental informants. For adolescents (aged 12-18), self-report forms were sent along with the parent forms. Parents were asked to deliver the self-report forms to the adolescent. Permission to approach a teacher for information about the subject was requested from the parent and, in the adolescent group, from subjects themselves.
If no response was received on this initial approach, a reminder was sent to parents and/or subjects. If still no response was received, potential informants were telephoned to obtain their participation. This procedure was continued for approximately 3 months, after which non-responders received another written reminder. To improve the response rate, a final procedure was started at the end of the project. Informants who had previously consented and had given continued agreement to participate but had not yet responded were visited at home without previous announcement to collect completed questionnaires or to aid informants in completing the questionnaires. If possible, information was obtained instantly; otherwise an appointment was made to collect the questionnaires. We did not approach informants who had expressed that they did not want to participate, and informants had had multiple occasions to refuse participation: participation forms accompanied the first and second reminder, and at follow-up telephone calls coworkers emphasized the right to refuse. Procedures were approved by the Committee for Medical Ethics, Academic Hospital Rotterdam/Erasmus University Rotterdam.
We gathered scorable rating forms at T2 from at least one informant for 1,286 (77.8%) of the 1,652 eligible subjects. Parent ratings were obtained from 1,263 (76.5%) of the 1,652 approached parental informants. Parental informants were 70.4% mothers, 17.3% fathers, 9.7% both parents, and 2.6% others. Of the subjects who were in school at follow-up (1,289/1,652) and whose parents granted permission (734/1,289), teacher ratings were obtained for 689 (93.9%) individuals. Self-ratings were obtained from 820 (63.7%) of the 1,288 T2 adolescents.

Table 2.1 Descriptive data on the sample of eligible subjects (N=1,652).

	No. / Mean	% / sd
Gender		
Male	1,140	69.0
Female	512	31.0
Age (years)		
Boys	8.4	2.6
Girls	8.6	2.8
Socio-economic status[a]	4.7	1.9
School level (child)		
Not in school	119	7.2
Infant school	271	16.4
Special education	356	21.5
Elementary school	734	44.4
Advanced special school	23	1.4
Secondary school	99	6.0
Unknown	50	3.0
Place of residence		
Both biological parents	1,152	69.7
Biological parent & partner	156	9.5
Single biological parent	192	11.6
Adoptive family	45	2.7
Relatives (e.g., grandparents)	6	.4
Foster parents	22	1.3
Residential care	71	4.3
Other	4	.2
Unknown	4	.2
Symptoms at intake[b]		
Developmental	430	26.0
Academic	655	39.6
Emotional	1,018	61.6
Somatoform	386	23.4
Behavioral	1,034	62.6
Relational	832	50.4
Familial	524	31.7
Other	764	46.2
Unknown	1	.01
Internalizing score	14.6	9.1
Externalizing score	18.9	12.1
Total problem score	56.0	27.0

[a] Highest profession in the family, as scored on a 9-step scale (Netherlands Central Bureau of Statistics, 1993). [b] Most important symptoms (5 maximally) as reported by mental health worker at intake.

To evaluate the effect of nonparticipation, we compared responders and non-responders on gender, age at intake, SES, and T1 Internalizing, Externalizing, and Total Problem scores. The only significant difference found was for gender: information was more often obtained on boys than girls (79.5% versus 74.2%, N=1,652, χ^2=5.7, df=1, p=.017). Furthermore, age at follow-up did not differ significantly: means for boys and girls were 14.6 and 14.7 (with ranges 5.8-20.7 and 6.3-20.0), respectively.

Instruments

The CBCL, the Teacher's Report Form (TRF), and the Youth Self-Report (YSR) (Achenbach, 1991a,b,c) are standardized reports on children's and adolescents' adaptive functioning and emotional and behavioral problems in the previous months, as reported by parents or parent surrogates, teachers, and adolescents (11-18 years old), respectively. Problem behaviors are scored on syndromes (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior) and broadband scores (Internalizing, Externalizing, and Total Problems). Good reliability and validity have been demonstrated for the Dutch CBCL, TRF, and YSR (Verhulst, Van der Ende, and Koot, 1996, 1997a,b).

Statistical Analyses

Stability. Pearson correlations between corresponding T1 and T2 scores, i.e., same scales at different times, were computed for each instrument and for boys and girls separately, with the significance level at $p<.05$. Gender differences in stability of scores were tested and mean r-values across gender were computed for each score using the Fisher *z* transformation. We used Cohen's (1988) criteria to evaluate the magnitude of correlations: negligible (r=.00-.09), small (r=.10-.29), medium (r=.30-.49), or large ($r\geq.50$).

To assess whether stabilities were larger for externalizing than internalizing scores, we used the method for comparing dependent correlations suggested by Steiger (1980).

Longitudinal Prediction of Problem Scores. Using stepwise linear regression modeling, we tested relations between data from same and different T1 and T2 informants. In testing these models, we included T1, age, gender, and length of follow-up interval (in years). Cohen's (1988) criteria were used to evaluate the percentage of variance explained by the model: small (1.0%-5.9%), medium (5.9%-13.8%), or large (≥13.8%).

We tested 3 different sets of models. First, we evaluated the power of T1 syndromes to predict corresponding T2 syndromes, Internalizing, Externalizing, and Total Problem scores. Second, the power of T1 Internalizing and Externalizing scores was evaluated in predicting T2 Internalizing, Externalizing, and Total Problem scores. Finally, we tested the predictive strength of T1 Total Problem scores toward T2 Total Problem scores. Scores on syndromes, Internalizing and Externalizing, and Total Problems could not be used in the same analyses because of overlap of content between these predictors.

Results

Table 2.2 shows mean correlations between T1 and T2 scores, averaged across boys and girls, as well as the number of subjects and length of follow-up interval for all relations. Table 2.3 shows results of stepwise linear regression analyses predicting T2 CBCL, YSR, and TRF broadband (Total Problem, Internalizing, and Externalizing) scores from T1 syndrome scores and T1 age, gender, and length of follow-up interval for same and different informants. Table 2.4 shows results of analyses similar to those presented in Table 2.3, but only β values for corresponding scores are presented. Analyses included

psychopathology scores on the same level (Total Problem scores, Internalizing/Externalizing scores, or syndromes), and T1 age, gender, and length of follow-up interval. Therefore, the β values indicating the relationships between the same T1 and T2 scores are corrected for significant effects of all other predictors. The β values found for the effects of these predictors are not presented in Table 2.4. SES at T1 predicted variance independently only on CBCL/TRF, TRF/TRF, and TRF/CBCL, and β values were small (mean -.09, range -.12 to -.08). Only on Somatic Complaints did SES consistently predict T2 scores: higher SES predicted lower scores. Therefore, SES was not included in the models presented.

Broadband Scales

All broadband scale correlations (Table 2.2) were significant, except on TRF/YSR Total Problem scores for both sexes, YSR/TRF and TRF/YSR Internalizing scores for both sexes, and Externalizing scores on YSR/TRF for girls. Stability was large for Total Problem scores on CBCL/CBCL, and Externalizing on CBCL/CBCL and TRF/TRF. Significant models were found predicting broadband scales from all levels (syndromes [Table 2.3], Internalizing/Externalizing scores, and Total Problem scores [Table 2.4]), except for T2 Internalizing on YSR/TRF. Models including T1 broadband predictors accounted for percentages of explained variance (PEV) comparable with those of models involving syndromes. The predictive strength of T1 psychopathology (Tables 2.3 and 2.4) was mostly medium to large for T2 Total Problem scores (range PEV 1.1-33.1). For Internalizing scores, predictive strength was large for CBCL/CBCL, YSR/YSR, and YSR/CBCL models (range PEV 18.0-23.8) and medium for most other relations (range PEV .0-9.9). For Externalizing scores, predictive strength was large (range PEV 14.7-42.0), with the exception of CBCL/YSR and TRF/YSR broadband and syndrome models (medium, range PEV 6.1-13.3).

Prediction of T2 Total Problem scores was dominated by Externalizing scores, except on YSR/YSR and YSR/CBCL where Internalizing scores dominated over Externalizing scores. In most models, Internalizing behavior was an additional predictor for Total Problem scores, higher Internalizing scores at T1 predicting higher Total Problem scores. Only on CBCL/TRF higher Internalizing scores predicted lower Total Problem scores (and vice versa). T1 teacher-reported Internalizing scores did not predict T2 Total Problem scores. Prediction of Total Problems by syndromes (Table 2.3) was dominated by Aggressive Behavior across relations between the same and different T1 and T2 informants. T1 Anxious/Depressed scores, however, dominated YSR/YSR and YSR/CBCL models, and Attention Problems was a positive predictor (higher scores predicting higher scores) in 4 of 9 models.

Prediction of Internalizing scores by broadband scales (Table 2.4) was by T1 Internalizing in most models, with largest β values for YSR/YSR, YSR/CBCL, and CBCL/CBCL. Prediction by syndrome scores (Table 2.3) was not consistently dominated by any syndrome, with the possible exception of T1 Anxious/Depressed (4/9). In predicting Externalizing scores, T1 Externalizing scores dominated all models, and Internalizing scores inversely predicted T2 scores in 4 of 9 models (Table 2.4). Aggressive and Delinquent Behavior scores dominated prediction of T2 Externalizing scores by syndromes (Table 2.3).

All stabilities were larger for Externalizing than Internalizing scores: for boys 7 of 9, and for girls 5 of 9 were significantly larger at $p<.05$. When stability was not significantly larger for externalizing than for internalizing broadband or syndrome scores, self-reports were

Table 2.2 Mean r-values between T1 and T2 Total Problem, Internalizing, Externalizing, and syndrome scores.

		Time 2		
Time 1		CBCL	YSR	TRF
N	CBCL	1,253	815	689
	YSR	223	196	90
	TRF	899	557	546
Total Problems	CBCL	.51[2]	.26[1]	.21[1,F]
	YSR	.38	.47	.13[1]
	TRF	.23[1]	.07[0]	.45
Internalizing	CBCL	.39	.21[1]	.14[1]
	YSR	.36	.42	-.02[0]
	TRF	.14[1]	.05[0]	.31
Externalizing	CBCL	.62[2]	.36	.39
	YSR	.41	.47	.31
	TRF	.34	.21[1]	.53[2]
Withdrawn	CBCL	.43	.20[1]	.25[1]
	YSR	.21[1]	.34	.05[0]
	TRF	.22[1]	.11[1]	.45
Somatic Complaints	CBCL	.37	.22[1]	.06[0]
	YSR	.44	.40	-.09[0]
	TRF	.09[0]	.00[0]	.22[1]
Anxious/Depressed	CBCL	.39	.18[1]	.18[1]
	YSR	.43	.43	.21[1]
	TRF	.14[1]	.07[0]	.22[1]
Social Problems	CBCL	.46	.23[1]	.26[1]
	YSR	.39[F]	.39	.20[1]
	TRF	.27[1]	.10[1]	.36
Thought Problems	CBCL	.43	.15[1]	.16[1]
	YSR	.12[1]	.22[1]	-.06[0]
	TRF	.21[1]	.09[0]	.31
Attention Problems	CBCL	.51[2]	.22[1]	.28[1,F]
	YSR	.38	.48	.12[1]
	TRF	.28[1]	.10[1]	.47
Delinquent Behavior	CBCL	.51[2]	.26[1]	.32
	YSR	.42	.36	.57[2]
	TRF	.30	.17[1]	.38
Aggressive Behavior	CBCL	.61[2]	.38	.38
	YSR	.36	.48	.22[1]
	TRF	.34	.22[1]	.53[2]
Mean follow-up interval, in years (sd)				
CBCL		6.2 (2.9)	6.9 (2.7)	5.5 (2.6)
YSR		3.9 (1.8)	3.9 (1.8)	3.8 (1.8)
TRF		5.5 (2.4)	6.2 (2.2)	5.1 (2.3)

Note: Mean r-values are computed by averaging r-values for girls and boys after *z* transformation. Pearson correlations are medium, except as follows: [0] = no effect, [1] = small effect, [2] = large effect (Cohen, 1988). [F] = girls have significantly ($p<.05$) higher correlations than boys. CBCL = Child Behavior Checklist; YSR = Youth Self-Report; TRF = Teacher's Report Form.

involved in 6 of 6 and 36 of 46 times, respectively. As can be seen from Table 2.3, PEV were larger for Externalizing than Internalizing scores, except on YSR/YSR, where they were similar. Although not tested, this is in agreement with the results found for correlations.

Syndromes

Syndrome correlations (Table 2.2) were significant for all intra-informant scores except Thought Problems for girls on YSR/YSR. Also, most inter-informant correlations were significant (68/96). Stability was large for Attention Problems, Delinquent Behavior, and Aggressive Behavior on CBCL/CBCL, Delinquent Behavior on YSR/TRF, and Aggressive Behavior on TRF/TRF.

Significant models were found predicting syndromes on all relations (Table 2.4), except for T2 Withdrawn and Anxious/Depressed on YSR/TRF. The predictive strength of T1 psychopathology was medium to large for T2 externalizing syndrome scores (range PEV 6.3-42.9). For internalizing scores and Social Problems, Thought Problems, and Attention Problems scores, predictive strength was highly variable (range PEV .0-33.4).

Specific predictive strength was found for most models, i.e., syndromes were for large parts predicted by the corresponding T1 scores. Exceptions (13) were mostly found on YSR/TRF (6) and TRF/YSR (4), and most frequently concerned Thought Problems (4) and Somatic Complaints (3). Aggressive Behavior was an additional predictor to T2 Delinquent Behavior in 6 of 9 models, i.e., it accounted for independent variance over and above T1 Delinquent Behavior. In only 3 models, other syndromes predicted larger parts of variance than the corresponding T1 scores.

In some models, T1 syndromes affected multiple predictive relations. For instance, in CBCL/CBCL models, T1 Anxious/Depressed predicted T2 Somatic Complaints, Anxious/Depressed, and Internalizing and inversely predicted all other syndromes as well as Externalizing scores. Social Problems and Thought Problems were positive predictors of most syndromes and broadband scales. On CBCL/TRF, T1 Withdrawn and Somatic Complaints were inverse predictors, and Social Problems was a positive predictor of most syndromes and broadband scales. On TRF/TRF, Aggressive Behavior predicted Social Problems, Attention Problems, Delinquent Behavior, Aggressive Behavior, Externalizing, and Total Problem scores. On TRF/CBCL, Thought Problems was an inverse predictor of Somatic Complaints, Delinquent Behavior, Aggressive Behavior, and Externalizing scores.

Overall, stability was larger for externalizing than for internalizing syndrome scores (mean r-values .38 versus .23). When comparing r- values for externalizing versus internalizing syndrome scores, stability for externalizing scores was significantly larger at $p<.05$ in 42 of 54 comparisons for boys and in 20 of 54 comparisons for girls, while other differences did not reach statistical significance. As can be seen from Table 2.3, PEV were larger for externalizing than internalizing syndromes, except on YSR/YSR, where they were similar. Although not tested, this is in agreement with the results found for correlations.

Follow-up Interval, Gender, and Age at Intake

On CBCL/CBCL, YSR/YSR, and TRF/TRF, we found significant differences in stability between longer and shorter follow-up intervals for Externalizing and Total Problem scores and on CBCL/CBCL Internalizing scores, all indicating lower stabilities with longer intervals. However, effects were very small and partial correlations differed little from the presented bivariate correlations.

Table 2.3 Results of stepwise linear regression analyses predicting Time 2 CBCL, YSR, and TRF broadband scores from Time 1 syndrome scores.

T2 Dependent Variables	Instruments		T1 Predictors											
	T1	T2	WTH	SOM	AXD	SOC	THT	ATT	DLQ	AGG	Sex[a]	Age[b]	FU-INT[c]	PEV[d]
Total Problems	CBCL	CBCL				.13	.11	.12	.15	.21	.07	-.14	-.18	33.1
	CBCL	YSR					.12			.20	.14			7.5
	CBCL	TRF	-.12	-.18		.13		.10*		.22				13.8
	YSR	YSR			.30					.25	.17*			23.4
	YSR	CBCL			.30		-.17*	.19*	.18			-.27	-.13	27.7
	YSR	TRF								.23*		-.25*		14.7
	TRF	TRF						.17		.34				20.5
	TRF	CBCL				.09*				.18		-.11	-.13	8.3
	TRF	YSR		-.09*					.15		.15			4.2
Internalizing	CBCL	CBCL	.18	.09	.10	.10	.08			.08*	.08	-.09	-.10	20.4
	CBCL	YSR	.09*	.12			.10				.20			9.3
	CBCL	TRF		-.09*		.21	.11		-.10*					6.1
	YSR	YSR			.39						.26			22.8
	YSR	CBCL		.18	.35		-.15*					-.19		18.9
	YSR	TRF												-
	TRF	TRF	.19			.17					.11			9.9
	TRF	CBCL			.10						.07*			2.0
	TRF	YSR								.20				4.0
Externalizing	CBCL	CBCL			-.08	.07			.21	.46		-.08	-.16	42.0
	CBCL	YSR							.13	.26				13.4
	CBCL	TRF	-.19	-.16					.15	.34			-.08*	22.9
	YSR	YSR								.48				23.2
	YSR	CBCL			.18*		-.23		.21	.32		-.25	.14*	32.4
	YSR	TRF								.29		-.27		19.4
	TRF	TRF	-.11						-.10*	.46				29.4
	TRF	CBCL					-.12		.12	.29		-.08*	-.10	15.6
	TRF	YSR					-.15		.12*	.16				7.2

Note: Entries are β values derived from regression analyses, except PEV. Regression models were controlled for sex, age, and follow-up intervals. WTH = Withdrawn; SOM = Somatic Complaints; AXD = Anxious/Depressed; SOC = Social Problems; THT = Thought Problems; ATT = Attention Problems, DLQ = Delinquent Behavior; AGG = Aggressive Behavior; CBCL = Child Behavior Checklist; YSR = Youth Self-Report; TRF = Teacher's Report Form. [a] Girls are predicted to score higher than boys. [b] Older subjects (at intake) are predicted to score higher. [c] Subjects with shorter follow-up intervals are predicted to score higher. [d] Percentage of variance in the dependent variable predicted by the regression model. Only significant effects are displayed: * $p<.05$, all other β values $p<.01$.

Length of follow-up interval was an additional predictor of especially T2 parent-reported Total Problem and Externalizing scores (CBCL/CBCL, YSR/CBCL, TRF/CBCL). T2 Social Problems and Aggressive Behavior scores were consistently predicted by length of follow-up interval. Shorter intervals predicted higher T2 scores.
Only 3 significant gender differences were found in correlations between T1and T2 scores. Gender was a predictor of T2 self-reported Total Problem scores (CBCL/YSR, YSR/YSR, TRF/YSR) and of Internalizing scores (6/9 models): for prediction of Internalizing scores by syndromes, gender was the only consistent predictor. Furthermore, gender was a consistent (5/9) predictor of Somatic Complaints, Anxious/Depressed, and Thought Problems. In all instances higher T2 scores were predicted for girls than for boys.
Age at intake was consistent in inversely predicting T2 Total Problem and Externalizing scores, especially T2 parent-reported scores (CBCL/CBCL, YSR/CBCL, TRF/CBCL). Consistent predictive strength of age at intake was also found in models for Social Problems and Attention Problems scores. All results indicated higher T2 scores for children younger at intake.

Informant
Intra-informant stability (Table 2.2) for Total Problem, Internalizing, and Externalizing scores was medium to large (mean .46, range .31-.62). Inter-informant stability was negligible to medium (mean .23, range -.02-.41).
Predictive strength (Tables 2.3 and 2.4) for T2 Total Problem scores was large for intra-informant and YSR/CBCL models (range PEV 18.1-33.1) and medium for most other inter-informant relations (range PEV 1.1-14.0). For Internalizing scores, predictive strength was large for CBCL/CBCL, YSR/YSR, and YSR/CBCL models (range PEV 18.0-23.8) and medium for most other relations. For Externalizing scores, predictive strength was large intra-informant as well as inter-informant (range PEV 14.7-42.0), with the exception of CBCL/YSR and TRF/YSR broadband and syndrome models (medium, range PEV 6.1-13.3).
For syndromes, stabilities (Table 2.2) were mostly medium intra-informant (mean .41, range .22-.61) and mostly small inter-informant (mean .22, range -.09-.57). On YSR/CBCL, relatively high inter-informant correlations were found for broadband scales (mean .38, range .36-.41) and syndromes (mean .36, range .12-.44).
Predictive strength for T2 syndromes was large for intra-informant relations (range PEV 14.0-42.9), except Withdrawn on YSR/YSR (12.9), Somatic Complaints (6.9) and Thought Problems (10.6) on TRF/TRF (medium), and Anxious/Depressed (5.6) on TRF/TRF (small). For YSR/CBCL models, predictive strength was large as well (range PEV 15.8-29.4), with the exception of the Withdrawn model (PEV 10.5, medium). For other inter-informant relations, predictive strength for externalizing syndromes was medium to large (range PEV 6.3-31.2), while predictive strength of other syndrome scores was mostly small to medium (range PEV .0-18.6).
Overall, intra-informant stability was comparable across informants and intra-informant stability was larger than inter-informant stability ($t=4.8$, $df=25$, $p<.001$, and $t=6.1$, $df=70$, $p<.001$ for broadband and syndrome scores, respectively). As can be seen from Table 2.3, predictive strength was larger intra-informant and on YSR/CBCL than for other inter-informant relations. Although not tested, this finding is in agreement with the results found for stability.

Table 2.4 Significant (p<.05) regression coefficients (β values) of Time 1 Total Problems, Internalizing, Externalizing, and syndrome scores predicting corresponding Time 2 scores.

Instruments		Broadband Scales			Syndrome Scales							
T1	T2	TOT	INT	EXT	WTH	SOM	AXD	SOC	THT	ATT	DLQ	AGG
CBCL	CBCL	.51	.37	.65	.44	.34	.27	.43	.34	.40	.39	.50
CBCL	YSR	.27	.21	.37	.21	.23	.11	.27	.16	.17	.30	.37
CBCL	TRF	.12	.12	.49	.23		.17	.30	.11*	.29	.26	.33
YSR	YSR	.49	.41	.48	.32	.38	.42	.39		.46	.24	.48
YSR	CBCL	.42	.39	.47	.28	.43	.44	.34		.40	.33	.42
YSR	TRF			.30							.53	.27
TRF	TRF	.43	.26	.55	.40	.21		.35	.18	.39	.21	.53
TRF	CBCL	.19	.12	.33	.20	.08*	.13	.27	.13	.20	.25	.34
TRF	YSR			.25	.14			.20			.24	.30

Note: Entries are β values derived from regression analyses. Regression models were controlled for sex, age, follow-up intervals, and psychopathology scores on the same level. TOT = Total Problems; INT = Internalizing, EXT = Externalizing; WTH = Withdrawn; SOM = Somatic Complaints; AXD = Anxious/Depressed; SOC = Social Problems; THT = Thought Problems; ATT = Attention Problems; DLQ = Delinquent Behavior; AGG = Aggressive Behavior; CBCL = Child Behavior Checklist; YSR = Youth Self-Report; TRF = Teacher's Report Form. Only significant effects are displayed: * p<.05; all other β values p<.01.

Discussion

In the present follow-up of a variety of problem behaviors in a clinical sample (aged 4-18 at both times), we found strong stability across a mean interval of 6.2 years, across both sexes, and across multiple informants (parents, children, and teachers). Furthermore, specific predictive strength was found, i.e., T2 problem behaviors were mostly predicted by the same problem behaviors earlier in childhood or adolescence. Findings suggest strong continuity of psychopathology. Strongest stabilities and predictive strength were found for Aggressive Behavior, Delinquent Behavior, Attention Problems, and Social Problems, respectively.

Although surprisingly little is known about the continuity of psychopathology in clinical samples, in the only 2 comparable studies by Stanger, et al. (1996), and Heijmens Visser, Van der Ende, Koot, and Verhulst (2000), similar results were found. Stanger, et al. studied a U.S. child psychiatric outpatient clinic population across mean follow-up periods of 4.9 and 7.7 years for adolescents and young adults, respectively. In Heijmens Visser, et al., we studied a Dutch child psychiatric outpatient clinic population who were young adults after a mean follow-up interval of 10.5 years.

Verhulst and Van der Ende (1995) studied a Dutch general population sample after 2, 4, 6, and 8 years, with similar results. This may indicate that continuity of psychopathology does not depend on factors involved in the referral process but is a given across different samples. The similar findings in these different referred and non-referred samples suggest similar developmental courses of problem behavior for different populations of children, consistent with Stanger, et al. (1996). This stresses the importance of recognition and referral of troubled children and of developing clinically effective treatment programs. Furthermore, these results suggest that non-clinical programs (e.g., school- or community-based) may be very useful in helping troubled, but not (yet) referred children.

Stabilities were generally higher for externalizing scores than for internalizing scores. This underscores the conclusion by Ollendick and King (1994), who reported that although internalizing behavior is more persistent than once thought, externalizing behavior is even more persistent. On the other hand, stabilities for self-reported internalizing and externalizing behaviors differed little, especially for girls, suggesting comparable persistence at least in adolescence. This supports the conclusion by Koot (1995) that internalizing problems may be less stable than externalizing problems only in preschool and young schoolchildren.
Specific predictive strength was found for syndromes and broadband scales. For most syndromes, additional predictors were found in single models, but only one was consistent across intra- and inter-informant relations. T2 Delinquent Behavior was predicted not only by T1 Delinquent Behavior, but also by T1 Aggressive Behavior. Since covariance was controlled, this means that independent pathways exist: delinquent as well as aggressive children developed into children with delinquent behavior, a find identical with the one by Stanger, et al. (1996).
Few gender or age differences were found. Stabilities were generally not different for boys versus girls, but girls were consistently predicted to have higher T2 Somatic Complaints, Anxious/Depressed, Thought Problems, and Internalizing scores than boys. These findings suggest a relative increase in internalizing problems for girls in general, with those who are most troubled early in life remaining most troubled later. Independent of type or degree of psychopathology, children presenting with emotional and/or behavioral problems at a younger age developed more social and attention problems than older children.
Same and different informants were used at T1 and T2 to find strong stability and specific predictive strength. When scores from different informants are associated, one has to keep in mind that different individuals observe subjects in different environments, with different interactions with the subjects. Therefore, we expected the stronger intra-informant than inter-informant effects we found. Still, we consider longitudinal inter-informant stabilities as well as all smaller stabilities relatively strong, since they are comparable with cross-sectional agreements. On the other hand, these smaller stabilities provide some encouragement that initial problems may be attenuating over time, a find confirmed by the reported effects of the length of follow-up interval on stability and predictive strength.
The intra-informant results for teachers suggest that problem behaviors are stable in school settings. These results were comparable with other intra-informant results on similar problem behaviors, which is especially remarkable because T1 and T2 teachers were hardly ever the same individuals. Apart from supporting the validity of the diagnostic constructs, intra- and inter-informant results confirm the importance of obtaining data from multiple informants on different aspects of functioning. For instance, our results show that in adolescence subjects themselves are indispensable concerning information about their thoughts and feelings.

Limitations

This study had a number of limitations, including attrition bias, selection bias, and the widely varying follow-up interval; no standardized information from an 'expert' (e.g., a clinician) was available at follow-up; and no other psychopathology measure, such as a (standardized) DSM classification, was obtained at follow-up. Finally, only recent behavior is measured. Disadvantages of the present study are mostly problems shared by similar studies of this type (a naturalistic follow-up of an outpatient sample by mail).

Clinical Implications

The strong continuity found in this study might indicate a failure of a wide range of interventions to change the course and outcome of behavioral and emotional problems. However, this study was a naturalistic study, not designed to investigate treatment effect, so no firm conclusions concerning service outcome can be drawn. Still, children most troubled early in life remain most troubled later, and most likely by similar problems, despite the wide range of interventions used in our clinic.

Findings indicate some important and worthwhile points of action. For instance, developing and improving interventions to change the course and outcome of aggressive behavior may be especially challenging, considering strong continuity and community strain. Developing specific interventions for children displaying early aggressiveness, who are likely to develop delinquent behavior, seems profitable because these children may be more amenable to treatment than early delinquent children.

Children reported by their parents to have poor social relations were especially at risk for developing maladaptive behaviors, consistent with findings by Aumiller, et al. (1981), Stanger, et al. (1996), and Heijmens Visser, et al. (2000). This indicates that social functioning should be another important focus.

Conclusion

In this study of clinically referred children and adolescents, we tested (1) the long-term stability of empirically derived problem patterns and (2) the power of different problem scores and demographic variables to predict psychopathology. We found strong stability and specific predictive strength for comparable problem scores from multiple T1 and T2 informants. These findings indicate continuity of specific behavioral and emotional problems in clinically referred children and adolescents. In our opinion this is a strong argument for viewing different forms of psychopathology as chronic conditions. This is of consequence for all those involved: patients, parents, mental health workers, researchers, and policymakers. When a child is referred to an outpatient psychiatric clinic, the future is uncertain, but a long-lasting care program may need to be started.

Chapter 3

Predictors of psychopathology in young adults referred to mental health services in childhood or adolescence

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Chapter 3 Predictors of psychopathology in young adults referred to mental health services in childhood or adolescence

Abstract
Background: for children referred to mental health services future functioning may be hampered. *Aims:* to examine stability and prediction of behavioral and emotional problems from childhood into adulthood. *Method*: a referred sample (N=789) aged 4-18 years was followed up after a mean of 10.5 years. Scores derived from the Child Behavior Checklist, Youth Self-Report and Teacher's Report Form were related to equivalent scores for young adults from the Young Adult Self-Report and Young Adult Behavior Checklist. *Results:* correlations between first contact (T1) and follow-up (T2) scores were .12-.53. Young adult psychopathology was predicted by corresponding T1 problem scores. Social Problems and Anxious/Depressed scores were predictors of general problem behavior. *Conclusions*: Problem behavior of children and adolescents referred to outpatient mental health services is highly predictive of similar problem behavior at young adulthood. Stability is higher for externalizing than for internalizing behavior and for intra-informant than for inter-informant information. Stabilities are similar across gender. To obtain a comprehensive picture of the young adult's functioning, information from related adults may prove valuable.

Introduction

Historically, the main interest in the relation between adult and child psychopathology has been retrospective. Growing recognition of the possible continuation of childhood problems into adulthood argues for a (prospective) developmental approach (Achenbach, 1997). Within such an approach, general population samples can be used to assess etiology, prevalence and natural history of psychopathology. To identify predictors of problem patterns in young adulthood among referred children, and to determine whether they differ from predictors for non-referred children, longitudinal studies of large, diverse clinical samples are needed (Stanger, MacDonald, McConaughy, and Achenbach, 1996). In clinical samples, it is more likely that rarer conditions will be represented and levels of psychopathology and comorbidity will he higher. Each of these factors may influence outcome and thus be of clinical importance concerning prognosis. In this way, children can be identified for whom interventions must be improved. Results can also lead to a more effective planning of prevention strategies.

Literature

To our knowledge, only three such studies exist. In Tübingen (Germany), 1,368 children were followed up after eight years, with a 52% response to questionnaires sent by post (Kramer, 1980; Aumiller, Kramer, Leidinger, and Lempp, 1981). Problems disappeared in 50%, improved in 31%, remained the same in 12% and worsened in 4%. New problems developed in 25% of the children.

Stanger, et al. (1996) studied a sample from an outpatient clinic in Vermont (U.S.A.). They approached 1,731 ex-patients by post to obtain follow-up information from various informants. Scorable ratings from at least one informant were obtained from 1,103 (63.7%) of the eligible subjects at an average of six years after referral. They reported high quantitative and categorical stability for parent-reported syndromes.

Using a different study design Zeitlin (1986), at the Maudsley Hospital, UK, obtained information from case records on demographic variables, symptoms, clinic attendance and diagnostic categories. He compared 161 adult psychiatric patients who previously attended

the children's department (index cases) with children attending the children's department but not attending any adult mental health institute and to adult patients not attending any department of child psychiatry in childhood.
Zeitlin found that formal diagnosis did not help in identifying referred children who were likely to show disturbance in adult life. Remarkably little difference between index cases and other adult cases was found on symptoms or diagnosis, but index cases displayed a raised incidence of personality disorder and an overall incompetence. In this study, the continuity of symptoms from childhood to adult life, irrespective of diagnosis, was one of the strongest findings, and symptom predictability was reported to be far better than diagnostic predictability.
The studies by Aumiller, et al. and Zeitlin have the same disadvantages: a lack of standardized measures of psychopathology, arbitrarily chosen diagnostic categories and limited analytical strategies. The study by Stanger, et al. used identical or comparable questionnaires at both times of assessment, with well-validated empirical syndromes, but only parental information at time of first contact (T1) was used.

Research questions
The present study was designed to investigate, for clinically referred children and adolescents, using different informants: the long-term quantitative stability of empirically derived problem patterns, and the power of different syndromes and demographic variables to predict syndromes across the period from youth into young adulthood.

Method
Subjects
Subjects were initially referred to the outpatient clinic of the Sophia Children's Hospital, Department of Child and Adolescent Psychiatry, Rotterdam for psychiatric evaluation and/or treatment between June 1982 and January 1995. This department is a university clinic, with specialist child psychiatric care.
To be included in this study, subjects had to have the Child Behavior Checklist (CBCL) filled out by a parent or parent surrogate approximately at the time of first contact (T1). The target population consisted of 2,926 children and adolescents. Parental informants were 52.9% mothers, 11.2% fathers, 28.5% both parents, 5.8% others (e.g., other relatives, residential care-giver) and 1.6% unknown.
To assess eligibility the T1 case records were evaluated, except 13 that could not be located. Subjects were considered ineligible if one or more of the following applied: died before follow-up (N=19); never seen at the clinic (N=4); first contact after 1 February 1995 (N=6); younger than 4 years or older than 18 years at first contact (N=11); IQ < 75 (N=241); referral primarily for problems other than behavioral or emotional (e.g., evaluation of developmental level or intelligence, custody decision) (N=51); no behavioral or emotional problems found at evaluation (N=45); emigrated (N=44); no current address found (N=80). The remaining 2441 subjects (83.4%) were eligible for follow-up. At time of follow-up (T2) three groups were formed, based on the current age of the subject: young adults (19 years and over, N=789); adolescents (12-18 years, N=1,288); and children (11 years and younger, N=364). In the present report we will restrict ourselves to the young adult group.

Procedures
Subject forms were sent to the young adults and permission to approach a parent was requested. If no response was received on this initial approach, a reminder was sent. Two

weeks later, non-responders were telephoned. Those who still did not respond received a second written reminder. To encourage response a final procedure was started at the end of the project. Informants who had previously consented but had not yet responded were visited at home to collect completed questionnaires or to help informants to complete the questionnaires. If possible, information was obtained instantly; otherwise, an appointment was made.
We obtained scorable rating forms from at least one informant for 544 (68.9%) of the 789 eligible young adult subjects over a mean follow-up period of 10.5 years (sd=2.2). Self-ratings were obtained for 506 (64.1%) subjects and parent ratings were obtained for 374 (85.8%) of the 436 parental informants that were granted permission to approach. The T2 parental informants were 66.1 % mothers, 19.9% fathers, 13.2% both parents and .8% others.
To evaluate the effect of non-participation, we compared responders and non-responders on gender, age at intake, socio-economic status scored on a nine-point scale (Netherlands Central Bureau of Statistics, 1993) and T1 Internalizing, Externalizing and Total Problem scores. More females responded than males (73.9% versus 65.8%, χ^2=5.78, df=1, p=.016), and responders scored lower than non-responders on T1 Externalizing Behavior (15.4 versus 18.6, sd=12.0 versus 12.8, t=3.49, df=787, p=.001) and Total Problems (51.7 versus 58.1, sd=26.2 versus 28.9, t=3.02, df=787, p=.003).

T1 Instruments
The CBCL, Teacher's Report Form (TRF) and Youth Self-Report (YSR) (Achenbach, 1991a,b,c) are standardized reports on children's and adolescents' adaptive functioning and emotional and behavioral problems in the previous six months, as reported by parents or parent surrogates, teachers and adolescents (11-18 years old), respectively. The problem section used in this study consists of 120 questions for the CBCL. On the TRF and YSR, items are adjusted to fit the informant. Items are scored on a three-point scale: 0=not true; 1=somewhat or sometimes true; 2=very true or often true.
The questionnaires are scored on eight syndromes (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, Aggressive Behavior) and two broadband scores (Internalizing, consisting of Withdrawn, Somatic Complaints and Anxious/Depressed, and Externalizing, consisting of Delinquent and Aggressive Behavior). A Total Problem score is computed by summing the individual item scores. Good reliability and validity for the Dutch versions of the CBCL, TRF and YSR have been reported (Verhulst, Van der Ende, and Koot, 1996, 1997a,b).

T2 Instruments
The Young Adult Self-Report (YASR) and Young Adult Behavior Checklist (YABCL) (Achenbach, 1997) are upward extensions of the YSR and CBCL and have the same response format. Both are designed to evaluate emotional and behavioral problems (and adaptive functioning and substance use on the YASR) for ages 18-30 years. The YASR is to be filled out by the young adult subject, whereas the YABCL can be completed by parents, parent surrogates or others who know the subject well (e.g., spouses, partners or friends). Items more appropriate to adult functioning or 'social desirability' items replace items relevant to childhood problems.
The YASR and YABCL are scored on eight syndromes (Anxious/Depressed, Withdrawn, Somatic Complaints, Thought Problems, Attention Problems, Intrusive Behavior, Delinquent Behavior, Aggressive Behavior) and two broadband scores (Internalizing,

consisting of Anxious/Depressed and Withdrawn, and Externalizing, consisting of Intrusive Behavior, Delinquent Behavior and Aggressive Behavior). A Total Problem score is computed by summing the individual item scores.
Achenbach (1997) has reported good reliability and validity for the American YASR and YABCL. For the Dutch YASR, good reliability and validity have been reported by Ferdinand and Verhulst (1995), Ferdinand, Van der Reijden, Verhulst, Spitzer, Fleiss, Nienhuis, and Giel, and Ferdinand, Verhulst, and Wiznitzer (1995a,b) and Wiznitzer, Verhulst, Van den Brink, Spitzer, Fleiss, Koeter, Van der Ende, Giel, and Koot (1992). No published results are available on the reliability and validity of the Dutch YABCL. In this study, internal consistency across scores was .81 (average Cronbach's alpha). Alpha values were comparable to those reported by Achenbach (1997), except for Thought Problems, which was smaller.

Results

Stability

Pearson's correlation coefficient (r) between T1 and T2 scores was computed for each instrument and for males and females separately, with the significance level at $p<.05$. Differences were tested and mean r-values across gender were computed for each score using Fisher's *z* transformation (Table 3.1). We used Cohen's (1988) criteria to evaluate the magnitude of correlations: small (r=.10-.29), medium (r=.30-.49) or large ($r \geq .50$). No significant effect of length of follow-up interval on correlations was found in regression analyses for Internalizing, Externalizing or Total Problem scores.

Broadband scores

Mean r-values between T1 CBCL, TRF and YSR Total Problem scores and T2 YABCL Total Problem scores were all medium, both intra-informant (CBCL/YABCL) and inter-informant (YSR/YABCL and TRF/YABCL). The young adult T1-T2 intra-informant correlation (YSR/YASR) was large whereas inter-informant correlations (CBCL/YASR and TRF/YASR) were small. Non-significant correlations were found on TRF/YABCL and TRF/YASR for males and YSR/YABCL for females.
Correlations between T1 CBCL, TRF and YSR Internalizing scores and corresponding T2 YABCL and YASR scores were medium intra-informant (CBCL/YABCL and YSR/YASR), and mostly small inter-informant. For Externalizing scores, intra-informant correlations were large and most inter-informant correlations were medium.
Correlations between T1 CBCL, TRF and YSR scores and T2 YABCL scores were comparable across informants, whereas the T1-T2 intra-informant YSR/YASR correlations were larger than inter-informant CBCL/YASR and TRF/YASR correlations. All correlations between T1 and T2 Externalizing scores were larger than those between T1 and T2 Internalizing scores. Correlations were non-significant on YSR/YABCL for females and on YSR/YABCL and TRF/YABCL Internalizing and TRF/YASR Internalizing and Externalizing for males.

Syndrome scores

Correlations were large for YSR/YASR Anxious/Depressed and TRF/YABCL Aggressive Behavior. Other correlations were mostly medium intra-informant (10 out of 13), and small inter-informant (17 out of 27).
All intra-informant r-values were significant, except on YSR/YASR Thought Problems for males. Most inter-informant correlations were significant as well. No consistent patterns

Table 3.1 Mean Pearson correlations (r) between T1 (CBCL, YSR, TRF) and T2 (YABCL, YASR) psychopathology.

		T2	
T1		YABCL	YASR
N	CBCL	372	503
	YSR	85	103
	TRF	114	143
Total Problems	CBCL	.45	.26^{S}
	YSR	.39	.52^{L}
	TRF	.45^{F}	.17^{S,F}
Internalizing	CBCL	.33	.26^{S,F}
	YSR	.25^{S}	.48
	TRF	.36	.15^{S}
Externalizing	CBCL	.51^{L}	.34
	YSR	.49^{M}	.53^{L}
	TRF	.49^{F}	.27^{S,F}
Withdrawn	CBCL	.40	.27^{S}
	YSR	.31	.48
	TRF	.32	.17^{S}
Somatic Complaints	CBCL	.34	.18^{S,F}
	YSR	.26^{S}	.33
	TRF	.34	.29^{S}
Anxious/Depressed	CBCL	.27^{S}	.23^{S,F}
	YSR	.35	.51^{L}
	TRF	.39^{F}	.15^{S}
Thought Problems	CBCL	.26^{S}	.13^{S}
	YSR	.14^{S}	.25^{S,F}
	TRF	.33	.12^{S}
Attention Problems	CBCL	.45	.23^{S,F}
	YSR	.43	.38
	TRF	.47^{F}	.24^{S,F}
Delinquent Behavior	CBCL	.35^{M}	.23^{S}
	YSR	.26^{S,M}	.44
	TRF	.24^{S}	.18^{S}
Aggressive Behavior	CBCL	.45	.30
	YSR	.47^{M}	.49
	TRF	.53^{L,F}	.27^{S,F}
Mean follow-up interval, in years (sd)	CBCL	10.5 (2.3)	10.1 (2.2)
	YSR	6.9 (1.4)	7.0 (1.4)
	TRF	8.7 (2.2)	8.7 (2.1)

All effect sizes are medium, except: ^{S} small effect, ^{L} large effect (Cohen, 1988). ^{F} Females have significantly higher correlations; ^{M} males have significantly higher correlations.

could be found in non-significant correlations, except on TRF/YASR relations, where for females all predictive r-values were significant and for males none was significant. Overall, correlations between T1 CBCL, TRF and YSR syndromes and T2 YABCL syndromes were quite similar across informants, in contrast with the correlations between T1 syndromes and T2 YASR syndromes. In all cases, correlations between YSR syndromes and YASR syndromes were larger than between CBCL or TRF and YASR syndromes.

Prediction

Using stepwise linear regression analyses, we tested predictive relations between T1 CBCL or YSR scores and T2 YABCL or YASR scores. We included T1 age, gender and length of follow-up interval (in years). The T1 socio-economic status was also included in the analyses, but in none of the analyses did it have a significant contribution. Therefore, it was excluded in the analyses presented here, to make optimal use of the available data. Cohen's (1988) criteria were used to evaluate the percentage variance explained in the analysis: small (1.0-5.9%), medium (5.9-13.8%) or large (≥13.8%).

We tested three different sets of regressions: the power of T1 Total Problem scores to predict T2 Total Problem scores; the power of T1 Internalizing and Externalizing scores in predicting T2 Internalizing, Externalizing and Total Problem scores (Table 3.2); and the predictive strength of T1 syndromes toward T2 Internalizing, Externalizing, Total Problem and syndrome scores (Table 3.3).

BROADBAND SCORES

In the first set of analyses, T1 Total Problem scores predicted T2 Total Problems, with no additional variance explained by any of the demographic predictors. The percentage explained variance (PEV) was medium inter-informant (6.4 on CBCL/YASR) and large intra-informant (20.7 on CBCL/YABCL; 26.7 on YSR/YASR).

In the second set of analyses, PEV for T1 Internalizing and Externalizing scores predicting T2 Total Problem scores was medium inter-informant and large intra-informant (Table 3.2). The T1 Internalizing and Externalizing scores predicted T2 Total Problems on CBCL/YASR and CBCL/ YABCL. For YSR/YASR, T2 Total Problems were best predicted by T1 Internalizing scores and gender (males were predicted to score higher than females). For Internalizing scores, PEV was large for YSR/YASR and medium for CBCL/YASR and CBCL/YABCL. For T2 Externalizing scores, the predictive power of T1 psychopathology was large intra-informant as well as inter-informant. For all comparisons, PEVs were larger for Externalizing than for Internalizing scores.

SYNDROME SCORES

In the third set of analyses, PEV in T2 Total Problem scores predicted by T1 syndrome scores was medium inter-informant and large intra-informant (Table 3.3). T1 internalizing as well as externalizing scores predicted T2 Total Problems on CBCL/YASR and CBCL/YABCL. For YSR/YASR, T2 Total Problem scores were best predicted by T1 Anxious/Depressed scores and gender (males were predicted to score higher than females).

For Internalizing scores, PEV was large intra-informant (YSR/YASR and CBCL/YABCL) and medium inter-informant (CBCL/YASR). For T2 Externalizing scores the predictive power of T1 psychopathology was large intra-informant as well as inter-informant. Percentage explained variances were larger for Externalizing than for Internalizing scores.

Table 3.2 Significant (p<.05) T1 predictors (CBCL, YSR) of T2 psychopathology (YASR, YABCL): broadband scores.

	CBCL/YASR			CBCL/YABCL			YSR/YASR		
T2 outcome	Predictor	β	PEV	Predictor	β	PEV	Predictor	β	PEV
Total problems	Internalizing	.18	7.0	Internalizing	.17	18.8	Internalizing	.53	26.4
	Externalizing	.14		Externalizing	.34		Gender [M]	-.26	
Internalizing	Internalizing	.27	7.1	Internalizing	.33	11.2	Internalizing	.48	22.9
Externalizing	Externalizing	.35	15.4	Externalizing	.56	31.2	Externalizing	.59	34.5
	Gender [M]	-.09							

The β and percentage explained variance (PEV) values are derived from regression analyses. Only significant effects are displayed (p<.05). [M] Young adult males are predicted to score higher than young adult females.

Specific predictive power was found for T1 syndrome scores (i.e. T2 syndromes were largely predicted by their T1 counterparts, except Somatic Complaints and Thought Problems on YSR/YASR). The PEV in T2 syndrome scores was large in intra-informant analyses, except for Somatic Complaints on YSR/YASR and Thought Problems on CBCL/YABCL (both medium). It was medium in all inter-informant analyses except for Thought Problems and Attention Problems (both small effects) and Delinquent Behavior (large effect).

In most analyses, other variables contributed significantly in the prediction of T2 syndromes in addition to corresponding T1 syndromes. Gender appeared as a predictor in at least two different analyses (CBCL/YASR, CBCL/YABCL or YSR/YASR), showing that for Withdrawn, Intrusive Behavior and Delinquent Behavior, higher T2 scores were predicted for males than for females, whereas higher scores were predicted for females than for males on Anxious/Depressed and Somatic Complaints. Predictive power of age at intake and follow-up interval was very limited, explaining only 1.3% and .9% of variance in Anxious/Depressed (CBCL/YABCL) and Intrusive Behavior (CBCL/YABCL), respectively.

In the CBCL/YABCL analyses, Anxious/Depressed was a negative predictor for Withdrawn, as was Thought Problems for Delinquent Behavior, and Withdrawn for Intrusive Behavior, in each case showing that higher T1 scores predicted lower T2 scores, and vice versa.

Overall, the PEV in T2 broadband scores predicted from T1 broadband scores (Total Problems, Internalizing and Externalizing) was comparable to the PEV in these scores predicted by T1 syndromes. In intra-informant analyses, one T1 syndrome dominated the predictive relations. In the CBCL/YABCL analysis, T1 Social Problems was a strong predictor of T2 Total Problems and most other syndromes. Similarly, in the YSR/YASR analysis T1 self-reported Anxious/Depressed scores were predictive not only for Anxious/Depressed and Internalizing scores but also for Somatic Complaints, Aggressive Behavior and Total Problems.

Table 3.3 Significant (p<.05) T1 predictors (CBCL, YSR) of T2 psychopathology (YASR, YABCL): syndrome scores.

	CBCL/YASR			CBCL/YABCL			YSR/YASR		
	Predictor	β	PEV	Predictor	β	PEV	Predictor	β	PEV
Total Problems	Anxious/Depressed	.16	6.3	Social Problems	.32	26.6	Anxious/Depressed	.56	29.9
	Aggressive Behavior	.14		Delinquent Behavior	.15		Gender^{M}	-.25	
				Attention Problems	.14				
				Somatic Complaints	.10				
Internalizing	Anxious/Depressed	.14	7.0	Withdrawn	.21	14.7	Anxious/Depressed	.50	25.4
	Withdrawn	.11		Social Problems	.20				
	Somatic Complaints	.09		Somatic Complaints	.13				
Externalizing	Aggressive Behavior	.36	15.4	Aggressive Behavior	.31	35.4	Aggressive Behavior	.59	35.2
	Gender^{M}	-.09		Social Problems	.25				
				Delinquent Behavior	.17				
				Withdrawn	-.10				
Anxious/Depressed	Anxious/Depressed	.19	7.9	Anxious/Depressed	.14	15.6	Anxious/Depressed	.53	27.6
	Somatic Complaints	.09		Social Problems	.24				
	Gender^{F}	.11		Somatic Complaints	.13				
				Gender^{F}	.12				
				Age^{O}	.11				
Withdrawn	Withdrawn	.27	8.4	Withdrawn	.47	21.3	Withdrawn	.46	22.6
	Gender^{M}	-.14		Anxious/Depressed	-.21		Gender^{M}	-.24	
				Social Problems	.11				
				Gender^{M}	-.16				
Somatic Complaints	Somatic Complaints	.18	6.3	Somatic Complaints	.33	16.2	Anxious/Depressed	.34	11.5
	Aggressive Behavior	.12		Attention Problems	.12				
	Gender^{F}	.13		Gender^{F}	.15				
Thought Problems	Thought Problems	.13	1.7	Thought Problems	.14	12.7	Social Problems	.27	16.7
				Attention Problems	.16		Aggressive Behavior	.22	
				Social Problems	.13				

Table 3.3 continues

Table 3.3 continued

Attention Problems	Attention Problems	.22	4.8	Attention Problems	.25	27.6	Attention Problems	.30	18.6
				Social Problems	.33		Withdrawn	.21	
Intrusive Behavior	Aggressive Behavior	.30	11.7	Aggressive Behavior	.44	39.1	Aggressive Behavior	.49	33.0
	Gender[M]	-.10		Social Problems	.27		Gender[M]	-.18	
				Withdrawn	-.22				
				Anxious/Depressed	.10				
				Follow-up[S]	-.10				
Aggressive Behavior	Aggressive Behavior	.29	10.6	Aggressive Behavior	.38	26.4	Aggressive Behavior	.37	28.8
	Withdrawn	.29		Social Problems	.22		Anxious/Depressed	.27	
				Gender[F]	.10				
Delinquent Behavior	Delinquent Behavior	.24	14.4	Delinquent Behavior	.38	23.1	Delinquent Behavior	.41	31.4
	Gender[M]	-.25		Social Problems	.20		Gender[M]	-.27	
				Thought Problems	-.15				

The β and percentage explained variance (PEV) values are derived from regression analyses. Only significant effects are displayed ($p<.05$). [F] Young adult females are predicted to score higher than young adult males; [M] young adult males are predicted to score higher than young adult females; [O] older subjects (at intake) are predicted to score higher; [S] subjects with shorter follow-up intervals are predicted to score higher.

Discussion

The present study is one of the first to report on standardized longitudinal assessment of a broad range of problems in a clinical sample spanning from childhood into adulthood, using multiple informants at initial and follow-up assessments. Response to follow-up was high (68.9%) in the present study, compared with similar studies by Aumiller, et al. (1981) and Stanger, et al. (1996): 52% and 63.7%, respectively.

Stability of different problem patterns from youth into adulthood was found to be strong over a mean follow-up interval of 10.5 years for males and females, and across different informants. In addition, substantial specificity in the prediction of psychopathology was found (i.e. young adult problem behavior in most cases was predicted by corresponding problem behavior in childhood or adolescence). Length of follow-up interval did not influence the stability or prediction of psychopathology consistently. These findings indicate strong continuity of behavioral and emotional problems in clinically referred children and adolescents, and suggest a high likelihood of future problems and poor outcome.

Gender

Stability coefficients did not differ systematically for males versus females, suggesting great similarity in the developmental course of problems in males and females. Most gender differences found in predictive correlations stemmed from T1 teacher reported problems. These always indicated higher stability for females and were found on scores where T1 scores for boys were significantly higher. Similar results were described by Verhulst and Van der Ende (1991) who, in a general population sample, found higher stability for girls than boys on teacher-reported Internalizing, Externalizing and Total Problem scores, despite a generally higher level of problem behavior in boys. It can be concluded that problem behavior in girls, as reported by teachers, is relatively stable and deserves extra professional attention.

Gender independently predicted higher scores in at least two T1/T2 relations on Anxious/Depressed and Somatic Complaints scores for females, and on Withdrawn, Intrusive Behavior and Delinquent Behavior for males. Combined with the self-reported level of psychopathology being predicted by T1 self-reported Anxious/Depressed scores, these findings suggest that females generally express their worries and fears in emotions or complaints, whereas males more often keep them to themselves or act them out.

Stability

Correlations with T2 parental scores were quite similar for each T1 informant and, as judged by Cohen's criteria, were generally of medium magnitude. Correlations with T2 self-reported scores were largest for self-reported T1 scores, and generally of medium magnitude, but mostly small for T1 parent- and teacher-reported scores. Other data from the same study show that of those scored in the deviant range of CBCL Total Problems at intake, 49.5% were still scored in the deviant range about 10 years later. These results reflect not only the stability of the relative position of individual problem scores within the sample but also a strong persistence of deviancy.

Our findings are comparable with the results from Stanger, et al. (1996), Ferdinand and Verhulst (1995) and Ferdinand, et al. (1995b). Stanger, et al. found very similar CBCL/YABCL and CBCL/YASR correlations across a mean follow-up interval of 7.7 years in US samples of referred and matched non-referred subjects. Ferdinand, et al. in a Dutch general population sample, reported comparable results after a four-year interval on

YSR/YASR syndrome scores and after an eight-year interval on CBCL/YASR Internalizing, Externalizing and Total Problems. These findings suggest that developmental courses of problem behavior are similar across different samples of referred and non-referred children.
Stability in our young adult sample was usually higher for externalizing than internalizing scores. This is in agreement with Ollendick and King (1994), who reported that in children externalizing behavior is more persistent than internalizing behavior, but that internalizing behavior is more persistent than once thought.

Prediction of problem scores
Most young adult Internalizing, Externalizing, Total Problem and syndrome scores were predicted by their T1 counterparts. Many analyses showed other variables to independently predict the additional proportions of variance in T2 syndromes, representing independent pathways to the outcome. For clinicians, these predictors may represent alternative focuses in preventive and therapeutic interventions. For example, to prevent the development of anxiety or depression in girls, interventions could focus on somatic complaints as well as on anxiety or depression.
Inter-informant predictive power (CBCL/YASR) was relatively small compared with intra-informant relations. However, these inter-informant relations are of special interest because they relate to clinical practice. In child and adolescent psychiatry the main informant is the parent, whereas in adult psychiatry the main informant is the young adult subject. The use of multiple informants is not common practice in adult psychiatry. The relatively strong CBCL/YABCL relations and their specific information may indicate an additional value of such informants in young adulthood and may stress the importance of interviewing the partner or a relative. Results indicate a unique contribution of parental information in young adulthood, even though most young adults no longer lived at home.
Our findings suggest different developmental pathways for youths with specific T1 problems. For example, children scored highly by their parents on Aggressive Behavior who also exhibited Withdrawn behavior were likely to develop Aggressive Behavior in young adulthood. In addition, boys with high levels of Aggressive Behavior were likely to develop Intrusive Behavior, and girls scoring highly on Aggressive Behavior and Somatic Complaints were most likely to develop Somatic Complaints in young adulthood.
In our analyses, Social Problems (CBCL/YABCL) and Anxious/Depressed (YSR/YASR) scores were influential in predicting several different T2 syndromes, suggesting a more generic effect on psychopathology. The T1 parent-reported Social Problems was an important independent predictor in many analyses, predicting T2 parent-reported Internalizing and Externalizing scores as well as Total Problems. This is in agreement with Kramer (1980), who found 'problems in contacts' to be the strongest predictor of parent-reported poor outcome. Similarly, T1 self-reported Anxious/Depressed not only predicted self-reported Anxious/Depressed scores but also Somatic Complaints, Aggressive Behavior and a large part of Total Problems. This suggests that children reported by their parents to have poor social relations, and adolescents who report worries and fears, are predicted to have poorer outcome than others and deserve extra attention from clinicians.

Clinical implications
Psychopathology shown by young adults referred to mental health services in childhood and adolescence may largely reflect the specific type of problems already reported at the younger age, and may therefore be best addressed from a developmental perspective.

With youths referred to psychiatric services, clinicians should bear in mind that in addition to specific syndromes of psychopathology, social problems and problems of anxiety and depression are predictive of many types of young adult psychopathology.
Clinicians should obtain information from parents as well as youngsters themselves at both childhood/adolescence and young adulthood, because both should be regarded as valuable informants on psychopathology at both times.

Limitations

Despite the relatively large response rate, a considerable proportion of former child psychiatric patients was not included in this follow-up, thereby limiting the generalizability of our findings. In particular, youngsters with more severe problems at intake were underrepresented.
This study is not informative regarding formal psychiatric diagnosis as an outcome in young adulthood.
This paper does not report on the overall functioning of the young adults, for example in the domains of peer relationships or job performance. However, these outcomes will be reported in a separate paper (Chapter 6 of this thesis).

Chapter 4

Predicting change in psychopathology in youth referred to mental health services in childhood or adolescence

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Chapter 4 Predicting change in psychopathology in youth referred to mental health services in childhood or adolescence

Abstract
Background: little evidence is available on factors associated with persistence and change of psychopathology, and little is known about the predictive value of factors regarding change once problem behaviors exist. *Aims*: to evaluate change in level of scores of empirically derived problem patterns and to study factors that influence this change for children and adolescents referred to mental health services. *Method*: A referred sample (N=1,652), aged 4 to 18 years at initial assessment, was followed-up after a mean interval of 6.2 years. We used standardized information from parents, teachers, and subjects, including the CBCL, YSR, and TRF at both assessments. *Results*: Subjects at follow-up scored significantly above the expected mean norm scores, although for most scores improvement was found. The strongest predicting factor for time 2 psychopathology was the corresponding time 1 score, odds ratio's ranging from 1.6 to 21.7. Males and children older at intake improved more than females and younger children, respectively. *Conclusions*: few child, family, and treatment related factors had additional predictive value over and above earlier psychopathology, and their contribution to the prediction of outcome was small. Findings indicate continuity of behavioral and emotional problems in clinically referred children and adolescents, and these problems should be viewed as chronic conditions. Girls referred for behavioral and emotional problems may form a group especially at risk for poor outcome.

Introduction

Children (we use 'children' to include adolescents) referred for psychiatric services may be at considerable risk for continuation of maladaptive behaviors (Robins, 1966; Otto and Otto, 1978; Kramer, 1980; Zeitlin, 1986). To identify children at risk, longitudinal studies of large, diverse clinical samples are needed to study predicting factors of future problem patterns among referred children, and to determine whether they differ from predicting factors for non-referred children (Stanger, MacDonald, McConaughy, and Achenbach, 1996). Although large investments in time, energy, and money are made in mental health services for children, many questions concerning the course and prognosis of psychopathology in referred children can still not be answered based on empirical evidence.

Stability has been shown to be medium to high for a broad range of psychopathology in referred (e.g., Stanger et al., 1996; Heijmens Visser, Van der Ende, Koot, and Verhulst, 1999) as well as non-referred samples (e.g., Koot, 1995; Ferdinand and Verhulst, 1995; Hofstra, Van der Ende, and Verhulst, 2000). Findings on stability do not answer questions about the proportion of children remaining deviant from the time of referral for psychiatric services to later follow-up, or the proportion of children becoming well adapted.

Stanger, et al. (1996) reported strong persistence of Child Behavior Checklist (CBCL; Achenbach, 1991a) scores, with odds ratios (ORs) ranging from 2.8 to 10.1. Kramer (1980) reported that problems had disappeared in 50%, improved in 31%, remained the same in 12%, and worsened in 4%; new problems had developed in 25% of the former patients. Other studies indicated persistence of problems, but without presenting proportions of subjects showing change (e.g., Zeitlin, 1986).

Little evidence is available on factors associated with persistence and change. In community samples, factors predictive of poor outcome have been investigated (e.g.,

Koot, 1995; Verhulst and Van der Ende, 1997). Risk factor and resilience research has shown child and family characteristics to be related to an increased risk of developing problem behavior, but little is known about the predictive value of factors regarding change once problem behaviors exist (Mathijssen, Koot, and Verhulst, 1999). Available studies (Robins, 1966; Otto and Otto, 1978; Nylander, 1979; Kramer, 1980; Zeitlin, 1986; Rey, Morris-Yates, Singh, Andrews, and Stewart, 1995, Rey, Singh, Morris-Yates, and Andrews, 1997; Stanger, et al., 1996; Steinhausen, Meier, and Angst, 1998) show very inconsistent results regarding gender, age, other child characteristics, and family and environmental variables. Results on the predictive value of treatment-related factors are scarce and inconclusive (e.g., Aumiller, Kramer, Leidinger, and Lempp, 1981).
Robins (1966) followed-up 402 children formerly referred to the St. Louis child guidance clinic (CGC), after 30 years. The study focused on antisocial behaviors and sociopathic personality. Results included the finding that childhood antisocial behavior predicted adult antisocial behavior as well as other undesirable adjustment. At follow-up, 61% of the sociopathic group were still seriously antisocial, while 27% improved (antisocial behavior markedly reduced) and 12% remitted (had given up their antisocial behavior). Improvement occurred most commonly between ages 30 and 40. Remission and improvement were partly predicted by having close contact with siblings (increase), and an alcoholic or sociopathic father (decrease). Other predicting factors were: the kind of discipline in the home, the number of siblings, and a history of theft.
Curman and Nylander (1976) and Nylander (1979) published a 10-year and a 20-year follow-up study of children referred to a CGC. Because the number of girls was relatively low, and because girls rarely entered 'asociality registers', these studies are primarily concerned with boys' outcome with respect to officially registered problem behaviors. However, the frequency of application for mental health services steadily dropped with increasing age for boys, whereas for girls the trend was the opposite. After 10 years 53.8% of the boys and 38.8% of the girls were entered in one of the registers.
At the 10-year follow-up, the authors concluded that background factors do not offer any help in predicting psychiatric complications, but do give some indication of antisocial development. Boys were believed to more likely react with symptoms causing disturbances in their surrounding environments, whereas girls more frequently reacted with symptoms more distressing to themselves than to others. At the 20-year follow-up, continuity and poor prognosis of externalizing behavior is suggested, but no figures could be given. The author concluded that background factors did supply indications to the subsequent fate of the children in question. For instance, chronic addicts and hardened criminals came to a very large extent from highly unstable home environments, frequently marked by addiction. Other predicting factors included: being an illegitimate child, being raised by a single mother, school immaturity, and following therapy classes.
For their 17-year follow-up, Otto and Otto (1978) used 371 adolescents visiting the Child and Adolescent Psychiatric Clinic of the Central Hospital in Kristianstad, Sweden in 1955. Otto and Otto concluded that few connections existed between initial cause of referral and later adult 'psychical and somatic behavior', although they did list a number of associations that can be interpreted as continuity of psychopathology. They also concluded that the outlook is good for the children with 'neurotic' problems, in contrast with especially those diagnosed 'character neurotic' (psychopathic). For diverse outcome measures (e.g., social class, criminal records, psychiatric diagnosis, and intellectual capacity), they found intellectual capacity, parental social class, home conditions, deviating parents, age at contact, reason for contact, and duration of contact to be predicting factors.

In Tübingen (Germany), Aumiller, et al. (1981) followed up 1,368 children referred to a department of child and adolescent psychiatry after 8 years. Problems were divided into 5 groupings (school problems, enuresis/encopresis, other behavior problems, physical problems, and developmental problems/autism/child psychosis). At follow-up, problems had disappeared in 50%, improved or remained the same in 43%, and worsened in 4%. New problems had developed in 25%. This study set out to provide proof of the positive long-term effect of this institute on their population: the existence of the institute, and the counseling and therapy provided, were justified by a 'definite positive relationship' found between improvement or cure and the planned treatment. In his 'Inaugural-Dissertation', Kramer (1980) studies the effect of family and social factors, such as family environment, family stress, number of siblings, school situation, social class, and frequent parental job changes on outcome measures. For instance, educational and professional achievement was predicted by previous social problems, educational level, and parental job level. Overall predictors of pour outcome were frequent parental job changes, social problems, and family stress.

Zeitlin (1986) at Maudsley Hospital, London, England, used case records from child and adult psychiatric departments to obtain information on demographic variables, symptoms, clinic attendance, and diagnostic categories. He compared 161 index-patients, who attended both the children's and the adult departments, to all children attending the children's department, but not attending any adult mental health institute. Furthermore, a matched subgroup from the childhood patients not in care in adulthood, and matched adult patients, who had not attended any department of child psychiatry in childhood, were used. In selecting the adult controls, about 2/3 of the rejected cases were excluded because of 'manifest symptoms prior to age 16', in itself a strong indication for continuity of psychopathology. Zeitlin found that formal diagnoses did not help in identifying referred children, likely to show disturbance in adult life. Environmental and social factors helped little more, but duration of attendance was correlated with poor outcome. In this study, the continuity of symptoms from childhood to adult life, irrespective of diagnosis, was one of the strongest findings.

Rey, et al. (1995) and Rey, et al. (1997) studied the functioning of a group of adolescent psychiatric patients from the Sydney metropolitan area (Australia) after a mean follow-up interval of 6 years, with an emphasis on personality disorders. Outcome measures were DSM-III-R diagnoses, regrouping categories 'disruptive' and 'emotional' problems, education achieved, social functioning, psychiatric treatment, and judicial problems. Rey, et al. concluded that individuals with disruptive disorders in adolescence had a particularly negative personality outcome at young adulthood, with only one gender difference: among men, antisocial personality disorder was more common. Poor overall young adult functioning was predicted by the quality of the family environment and having received treatment.

Stanger, et al. (1996) studied an outpatient-clinic sample in Vermont (U.S.A.). High stability and continuity for parent-reported syndromes were reported for both younger (5-18 yrs.) and older (18-27 yrs.) subjects. In the young-adult group, they found that psychopathology was stable across the follow-up period for referred males as well as females and that females failed to improve to the same degree as males.

Steinhausen, Meier, and Angst (1998) compared the outcome - with regard to mortality, delinquency, and adult psychiatric diagnoses - of former patients from the Child and Adolescent Psychiatry Service of the Canton of Zurich (Switzerland) to a large group of controls. Diagnostic categories were created for childhood (internalizing, externalizing,

mixed internalizing and externalizing, developmental, miscellaneous, subclinical) and adult problems (internalizing, externalizing, and somatization). No significant differences were found between former patients and controls with regard to mortality or major delinquency, although the latter showed a trend towards higher rates for ex-patients. Former patients did, however, fare less well psychiatrically, showing more externalizing disorders, such as sociopathy, drug dependency, and sexual delinquency. Significant continuity was found for internalizing, but not for externalizing disorders. The authors explained this surprising finding by having relatively small numbers of specific types of adult diagnostic categories, i.e. most patients had more than one diagnosis. The type of diagnosis in childhood was not found to be a predictor of adult outcome, but there was some indication that deprived environments, broken homes, and parental psychiatric disorders increased the likelihood of poor adult outcome.

The overall impression from these studies is that the level of initial problem behavior is the strongest predictive factor of later functioning for children referred to mental health services. To measure the contribution of other variables to the prediction of change, analyses should take both the initial level of problem behavior and the level at follow-up into account.

Only one study investigating a broad range of psychopathology used widely accepted, standardized procedures, with known reliability and validity, which were comparable at initial and follow-up assessment (Stanger, et al., 1996). Other studies relied strongly on case-record information assessed in retrospect (Robins, 1966; Otto and Otto, 1978; Nylander, 1979; Zeitlin, 1986; Steinhausen, et al., 1998). Furthermore, the studies cited above focused on dissimilar types of psychopathology (e.g., sociopathic personality, 'disruptive' and 'emotional' problems), defined similar predicting factors differently (e.g., broken home, single mother, unstable home environment), and operationalized outcome measures differently (e.g., poor outcome operationalized as personality disorders or registration in 'asociality registers'). These factors reduce comparability, and thus hamper the interpretation of results. For instance, no average figures can be given, because different analytic strategies resulted in incomparable measures (e.g., percentages and stability coefficients).

In the present study, our goals were to determine (a) the change in level of scores of empirically derived problem patterns and (b) factors that influence the change in level of psychopathology. We assessed a sizeable sample of children and adolescents referred to an outpatient psychiatric clinic, using standardized information from parents, teachers, and subjects at both times of assessment.

Since the evidence from earlier studies on referred samples is limited, the choice of candidate predictive factors was mainly based on information from studies on community samples. We also included a number of rather crude treatment-related factors. These have, to our knowledge, received little attention so far in studies on the course and prognosis of psychopathology in referred children.

Methods

Subjects

Subjects were 2,441 children, aged 4 to 18, referred to the outpatient clinic of the Academic Hospital Rotterdam - Sophia, Department of Child and Adolescent Psychiatry, between June 1982 and January 1995 (Time 1 [T1]). This department is a university clinic, with specialist child and adolescent psychiatric care.

At follow-up, between June 1995 and June 1997 (Time 2 [T2]), three groups were formed,

based on the current age of the subject: young adults (19 years and over, N=789), adolescents (12 - 18 years, N=1,288), and children (11 years and younger, N=364). For further information on eligibility, sample composition, and follow-up procedures, see Heijmens Visser, et al. (1999).
This study deals only with those aged 4 - 18 years of age at follow-up (N=1,652). The mean length of the follow-up period was 6.2 years (sd 2.9). Scorable rating forms were obtained at T2 from at least one informant for 1,286 (77.8%) of the 1,652 eligible subjects. Parent ratings were obtained from 1,263 (76.5%) of the 1,652 approached parental informants, self-ratings from 820 (63.7%) of the 1,288 subjects over 11 years old at T2, and teacher ratings for 690 (94.0%) of the 734 subjects who were in school at follow-up and whose parents granted permission to obtain information from the teacher.
To evaluate the effect of nonparticipation we compared responders versus non-responders on gender, age at intake, SES (scored on a 9-step scale with 1 lowest and 9 highest, Netherlands Central Bureau of Statistics, 1993), and parent-reported T1 Internalizing, Externalizing, and Total Problem scores. The only significant difference was for gender: information was more often obtained on males than females (79.5% versus 74.2%, chi-square=5.7, df=1, p=.017).

Instruments

CHILD BEHAVIOR CHECKLIST, TEACHER'S REPORT FORM, AND YOUTH SELF-REPORT

The Child Behavior Checklist (CBCL), the Teacher's Report Form (TRF), and the Youth Self-Report (YSR) (Achenbach, 1991a,b,c) are standardized reports on children's adaptive functioning, and emotional and behavioral problems in the previous months, as reported by parents or parent surrogates, teachers, and adolescents (11-18 years old), respectively. Problem behaviors are scored on syndromes (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior) and broadband scales (Internalizing, Externalizing, and Total Problems). For those analyses, in which we needed to categorize subjects as 'deviant' versus 'non-deviant', we dichotomized scale scores at the cut-off points suggested by Achenbach (1991a,b,c), based on Dutch normative scores for each instrument, and for each gender and age-group separately. Good reliability and validity have been demonstrated for the Dutch CBCL, TRF, and YSR (Verhulst, Van der Ende, and Koot, 1996, 1997a,b).

Case-record information

At initial contact, mental health workers collected information on subjects as part of the intake procedure. This information was registered on standardized intake forms in case-records, and in letters to referring mental health workers. These case-records, forms, and letters were used to collect the T1 information from.
For this study, ten raters were trained to collect and code the T1 information in a standardized way. To this end, fifteen case-records were coded into 'consensus forms' by experienced researchers. Five were used to familiarize the raters with the procedure (training), after which the remaining ten case-records were used to establish cross-rater agreement and increase the reliability of coding (by discussing the scores afterwards). For the variables used in this study, raters' scores agreed in 96.0 percent (median) with consensus scores (range 75.4 - 100%, 14 variables). The reliability of obtaining information was further enhanced by continuous supervision during the actual coding process. Case-records were scored on multiple characteristics with descriptive as well as

standardized information.
Coded demographic, family, child, and diagnostic/treatment characteristics regarding the period prior to intake were used as factors predicting change (Table 4.1). The factor labels are self-explanatory, except for the following. For *ethnicity*, only children born in the Netherlands out of Dutch parents were considered as Dutch. *Changes in family composition* were mostly loss of a parent (by separation, divorce or death) or placement in a foster home or in residential care. *Parental psychosocial problems* were scored present when the mental health worker had registered mental health service (MHS) use for either parent, or had clearly indicated that a parent would have benefited from such help (e.g., father alcoholic). A *treatment advice* concerning best possible treatment was given after assessment, and categorized as 'no treatment necessary', 'outpatient treatment required only', or 'inpatient treatment necessary with or without outpatient treatment' (e.g., for parents or family).

Follow-up information
Information on change in family composition and MHS use by subjects and family was obtained from parents, using structured, pre-coded questionnaires. Follow-up information was collected on the period following the last appointment until follow-up. *Change in family composition* was evaluated similar to intake-information, and *MHS use* was scored in four factors. Subjects had received outpatient treatment or not, and inpatient treatment or not. For relatives, two factors were considered: MHS use as a child for one of the family members ever, and whether any family member had used MHS during the follow-up period.

Statistical Analyses
To investigate the change in level of problem scores, we used repeated measures analyses of variance for each psychopathology score separately, with gender as factor and length of follow-up interval as covariate. Age at intake was included as a covariate where parents and teachers were informants. We tested differences between the mean T2 scores for the referred sample and norm scores obtained in a non-referred gender and age-matched sample (Verhulst, et al., 1996, 1997a,b) by using t-tests. Cross-tabulations were used to present change from deviant to non-deviant categories (and vice versa) for these scores.
To evaluate the power of different factors in predicting change of psychopathology, we used stepwise logistic regression analyses. In these analyses, the outcome is categorical, i.e. deviant or non-deviant. The outcome is associated with predicting variables, which are introduced in steps (blocks). In our analyses, factors were introduced in three blocks. In the first block, we entered the T1 score corresponding to the T2 score of interest. Thus, influences of other factors were corrected for the T1 score. Therefore, significantly associated factors predict change.
In the second block, factors representing information obtained at initial assessment were added. In testing Internalizing and Externalizing, Externalizing and Internalizing scores were added in the second block respectively. In evaluating change in syndromes, the seven remaining syndrome scores were entered in the second block. The other factors in this block were gender, age at intake and length of follow-up interval, ethnicity, special education, physical disorder, SES, T1 change in family composition, living with a single parent, being only child, parental psychosocial problems, and previous inpatient treatment.

Table 4.1 Demographic characteristics, predicting factors and broadband psychopathology outcome with their distribution.

Factors			% or mean (sd)
T1 CHILD (N=1,286)			
gender		boys	70.5
		girls	29.5
age (yrs.)	*boys*		8.4 (2.7)
	girls		8.6 (2.7)
ethnicity (Dutch vs.)		other	7.2
special education		yes	23.2
physical disorder		present	22.2
history of residential MHS[1] use		yes	15.7
psychopathology (CBCL[2])			
Internalizing		deviant	74.2
Externalizing		deviant	63.8
Total Problems		deviant	80.6
T1 FAMILY (N=1,286)			
SES[3]			4.4 (2.1)
change in family composition		yes	27.8
single parent		yes	12.8
only child		yes	15.0
psychosocial problems			
mother		yes	25.7
father		yes	13.1
T1 OTHER (N=1,286)			
treatment advice[4]		outpatient	76.0
		inpatient	19.8
T2 FAMILY AND TREATMENT (N=1,256)			
length of follow-up period (yrs.)			6.2 (3.0)
change in family composition		yes	36.7
family MHS use in youth		yes	12.7
MHS use in the family		yes	18.5
outpatient treatment		yes	92.1
inpatient treatment		yes	17.2
psychopathology (CBCL) (N=1,253)			
Internalizing		deviant	52.0
Externalizing		deviant	48.4
Total Problems		deviant	56.3

[1] MHS = mental health service; [2] CBCL = scored on the Child Behavior Checklist; [3] SES = socio-economic status; [4] type of advice: no treatment, outpatient treatment only, and inpatient treatment.

The third block consisted of factors representing events occurring after the initial assessment, including treatment advice, change in family composition as reported by parents at follow-up, and MHS use parameters.
Data were missing incidentally from case-records and at follow-up, even after efforts to obtain the information in alternative ways. However, the number of missing values was

small (e.g., N=30, for the parent-parent associations). When data were missing incidentally, their values were prorated by the most frequent value of the factor (Table 4.1). Compared to analyses without prorating, results were very similar, but with higher power for analyses with prorating.

Results

Persistence and Change

Table 4.2 shows mean T1 and T2 scores and their mean differences, as reported by the similar type of informant at both times (e.g., parents at T1 and T2). After dividing scores into 'deviant' and 'non-deviant' categories, we evaluated percentages of individuals scoring in the deviant range at both times, non-deviant at both times, and changing from deviant to non-deviant or vice versa.

Broadband scores

For all broadband scores, change indicating improvement was found. At T2, subjects scored significantly above the expected mean norm scores. According to adult informants most individuals scoring in the deviant range at T1 still scored as deviant at T2 (on average 63.0% for both parents and teachers). Considerably fewer adolescents reported deviant scores at T1, and more adolescents changed from deviant to non-deviant than remained scoring in the deviant range (on average 59.6%). Across informants, over 60% remained in the same category. Relatively low percentages of scores changing from T1 non-deviant to T2 deviant were found.
Males' scores improved more than females' scores, with only one exception (Internalizing reported by parents). Children older at intake improved more on Internalizing than younger children. Longer follow-up intervals were associated with more improvement on Externalizing.

Syndromes

For each syndrome, except Delinquent Behavior, change indicating improvement was found. Non-significant changes were found for Withdrawn and Thought Problems (teachers) and Somatic Complaints (adolescents). At T2, subjects scored significantly above the expected mean norm scores. The only exceptions were Somatic Complaints and Aggressive Behavior scored by adolescents themselves. Change in the percentages of deviant or non-deviant scorers, showed that most T1 deviant scorers scored non-deviant at T2 (on average 35.8% remained deviant). Across informants, over 60% remained in the same category. Relatively high percentages of children scoring non-deviant at T1 and deviant at T2 were found, especially for teacher ratings.
Gender affected change in syndromes, males' scores improving significantly more than females' scores on Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, and Aggressive Behavior. Children older at intake improved more than younger children on Somatic Complaints, Anxious/Depressed, and Social Problems. Longer follow-up intervals were associated with more improvement in scores on Social Problems and Aggressive Behavior.

Longitudinal prediction

We computed odds ratios (ORs) for similar informants based on the cross-tabulations of deviant versus non-deviant scores at T1 and T2, corrected for T1 age, gender, and length of follow-up interval. ORs for broadband scores ranged from 3.0 (Internalizing scored by

Table 4.2 Time 1 (T1) and Time 2 (T2) scores and their difference, for parents (P; N=1,253), adolescents themselves (A; N=196), and teachers (T; N=546).

Score[1]		mean score[2]			norm	percentage of scorers[4]			
		T1	T2	difference	score[3]	HH	HL	LH	LL
TOTAL PROBLEMS	P	56.1^{M}	40.5^{YS}	15.7^{MOL}	18.9	52.0	28.6	4.4	15.1
	A	49.6	39.0	10.7^{M}	33.2	18.4	28.6	8.2	44.9
	T	52.4^{MY}	42.4^{MY}	10.0^{M}	19.3	46.7	24.9	9.5	18.9
INTERNALIZING	P	14.6^{O}	11.6^{S}	3.0^{OL}	5.4	43.6	30.5	8.5	17.5
	A	15.4	12.1^{F}	3.4^{M}	9.1	18.4	28.6	8.2	44.9
	T	13.0^{O}	11.6	1.4^{MO}	5.4	34.2	22.0	14.8	28.9
EXTERNALIZING	P	18.9^{MY}	13.7^{MYS}	5.2^{ML}	6.4	42.1	21.6	6.3	30.0
	A	14.3^{ML}	12.0^{Y}	2.4^{ML}	10.8	14.3	18.9	6.6	60.2
	T	16.5^{MYS}	12.5^{MYS}	4.0^{M}	5.5	35.9	21.1	9.0	34.1
Withdrawn	P	5.3^{O}	4.1^{Y}	1.2^{OL}	2.0	14.0	27.4	6.1	52.5
	A	4.0	3.4^{F}	.6^{M}	2.4	3.1	10.7	6.6	79.6
	T	4.8	4.3	n.s.	2.1	8.6	13.6	8.4	69.4
Somatic Complaints	P	2.4^{FO}	1.9^{FS}	.5^{O}	1.0	8.0	17.2	8.1	66.8
	A	3.7	2.7^{F}	n.s.	2.3$^{\#}$	3.6	12.2	4.1	80.1
	T	1.1^{O}	.9^{F}	.2^{O}	.3	3.7	12.1	8.6	75.6
Anxious/Depressed	P	7.6^{O}	6.1^{S}	1.5^{OL}	2.6	17.0	25.9	10.9	46.2
	A	8.3	6.3^{F}	2.0^{M}	4.4	8.7	18.9	6.6	65.8
	T	7.5^{O}	6.8	.7MO	3.0	8.4	15.6	17.0	59.0
Social Problems	P	5.1^{MO}	3.8^{YS}	1.3^{MOL}	1.1	23.8	22.3	11.4	42.5
	A	4.2^{ML}	3.0	1.2^{ML}	2.5	5.1	18.9	5.1	70.9
	T	6.0^{M}	5.2^{Y}	.8^{O}	1.8	12.6	15.8	16.8	54.8
Thought Problems	P	2.4^{MS}	1.6^{YS}	.7MO	.4	14.8	21.3	9.7	54.2
	A	2.7	1.7^{FY}	1.0^{M}	1.2	4.6	16.8	5.6	73.0
	T	2.0^{Y}	1.8	n.s.	.4	13.9	16.1	21.4	48.5
Attention Problems	P	9.2^{M}	6.9^{MYS}	2.3^{MOL}	3.2	27.9	27.9	8.7	35.4
	A	6.5^{M}	5.4	1.1^{M}	4.7	5.1	13.3	2.6	79.1
	T	16.1^{MY}	12.8^{MY}	3.4^{M}	6.8	12.3	18.5	10.8	58.4
Delinquent Behavior	P	3.4^{MO}	3.2^{M}	n.s.	1.4	16.8	21.3	7.2	54.7
	A	3.9^{M}	3.9	n.s.	3.4	2.0	6.1	7.1	84.7
	T	1.9^{M}	2.0^{M}	.1^{L}	.8	6.6	9.3	10.3	73.8
Aggressive Behavior	P	15.5^{MY}	10.5^{MYS}	5.1^{ML}	5.0	24.7	21.9	5.2	48.3
	A	10.5^{ML}	8.1^{Y}	2.4^{ML}	7.4$^{\#}$	6.6	14.3	3.1	76.0
	T	14.6^{MYS}	10.5^{MYS}	4.0^{M}	4.6	14.3	20.0	6.2	59.5

[1] P=parent, A=adolescent, T=teacher; [2] differences between T1 and T2 scores: n.s.=non-significant; [3] mean scores in norm population, weighted for T2-age and gender: [#] not significantly different from T2 score; [4] percentages scorers: HH= above cut-off point at both times, HL= above cut-off at T1, below at T2, LH= below cut-off at T1, above at T2, LL= below cut-off at both times; [M] males score higher than females; [F] females score higher than males; [Y] younger subjects score higher; [O] older subjects score higher; [S] subjects with shorter follow-up intervals score higher; [L] subjects with longer follow-up intervals score higher.

teachers at both times) to 9.3 (Externalizing scored by parents at both times). ORs for syndrome scores ranged from 1.9 (Anxious/Depressed scored by teachers at both times) to 17.3 (Attention Problems scored by adolescents themselves at both times). Since results were very similar to values found in the multivariate analyses presented in Tables 4.3 and 4.4, they are not presented in detail.
Tables 4.3 and 4.4 show, for similar T1 and T2 informants, predictive relations between categorical T1 problem scores and the corresponding T2 scores, evaluating other factors as well, for broadband scores (Table 4.3) and syndromes (Table 4.4). Only significant effects are shown.

Table 4.3 Prediction by risk factors (Odds Ratios, or e^B): deviant broadband scores as scored by parents (P), adolescents (A), or teachers (T) at both times.

	T2 psychopathology[1]								
	TOTAL PROBLEMS			INTERNALIZING			EXTERNALIZING		
Predicting factors	P	A	T	P	A	T	P	A	T
T1 PSYCHOPATHOLOGY									
Total Problems	5.8	4.1	2.9	X[4]	X[4]	X[4]	X[4]	X[4]	X[4]
Internalizing	X[4]	X[4]	X[4]	2.8	4.2	2.8			
Externalizing	X[4]	X[4]	X[4]	1.6			8.1	7.0	5.7
DEMOGRAPHIC FACTORS									
gender					2.2				
age at intake	.88			.89			.92		
SES[2]						.89	.93		
ethnicity				1.8			1.8		
length of follow-up period	.84			.86			.90		
T1 ASSESSMENT FACTORS									
special education	2.0		2.1	1.6			1.4		1.6
physical disorder							.72		
change in family composition									1.8
history of residential MHS[3] use			2.0						
POST-INTAKE FACTORS									
treatment advice									
no treatment vs. outpatient treatment		.47							
change in family composition	1.6			1.4			1.6		
outpatient treatment	2.5						2.5		
inpatient treatment	3.1		2.0	2.1		2.0	2.2		2.3

[1] P=parent, A=adolescent, T=teacher; [2] socio-economic status; [3] Mental Health Service; [4] X=factor not included in this analyses. Only significant effects are shown.

BROADBAND SCORES

Analyses showed that the strongest predicting factor was the T1 score predicting the corresponding T2 score. For instance, in all cases T1 Internalizing was the strongest predicting factor of T2 Internalizing scores. ORs ranged from 2.8 to 8.1.
Values found for other factors can be considered corrected for this 'continuity effect', i.e. the other factors add significant predictive value over and above the predictive value of the corresponding T1 score. For instance, individuals scored (by parents) in the deviant range of the T1 Externalizing scores have a 1.6 times higher probability to score in the deviant

range of T2 Internalizing than those who do not, regardless of the effect of T1 Internalizing. No other effects from Internalizing to Externalizing or vice versa were found.

Syndromes

The strongest predicting factor in each analysis was the T1 score predicting the corresponding T2 score. ORs ranged from 1.6 (Thought Problems as reported by teachers) to 21.7 (Attention Problems reported by adolescents themselves). Results were very similar across syndromes. ORs generally ranged from 2 to 4, ORs for Aggressive Behavior ranged from 6.0 to 7.8 (Table 4.4).
For some syndromes, syndromes other than the corresponding T1 syndromes or other factors were the strongest predicting factor. For T2 Delinquent Behavior reported by parents and adolescents, T1 Aggressive Behavior was the stronger predicting factor. Having had special education prior to intake was the stronger predicting factor for T2 Attention Problems scored by teachers. For T2 Somatic Complaints and Thought Problems as reported by adolescents, gender and Delinquent Behavior were the stronger predicting factors, respectively.

Other predicting factors

Gender was not consistently related to outcomes, whereas age at intake and length of follow-up interval were, as far as parent-reported scores were concerned. Age at intake, length of follow-up interval, and SES were included as continuous factors.
Ethnicity was a predicting factor as far as parent-reported problems were concerned: higher risks on Internalizing and Externalizing were found for children not born in the Netherlands and/or born to at least one non-Dutch parent. Other important predicting factors were being in the special education system (T2 Total Problems, Externalizing, and Social Problems), having a history of inpatient care at intake, change in family composition reported at intake (T2 Delinquent Behavior), maternal psychosocial problems reported at intake (T2 Withdrawn and Delinquent Behavior), change in family composition during the follow-up period, and receiving inpatient care during the follow-up period. Very few significant predicting factors were found for scores reported by adolescents themselves, which was most likely due to the smaller power (N=191) for these analyses.

Discussion

Referred children fared considerably worse at follow-up across a mean interval of 6.2 years compared to a normative sample of similar age and gender, although an overall improvement on mean scores was found. For broadband scores, according to parents and teachers 63.0% of the T1 high scorers still scored as deviant at T2, adolescents reported that 40.4% scored as deviant at both times of assessment. For syndrome scores, 35.8% of the T1 high scorers scored as deviant at T2. These results were very similar for different types of psychopathology. Across informants, over 60% of the children remained in the same category (i.e. those scoring in the deviant or non-deviant range at both times) for broadband as well as syndrome scores. Furthermore, in predicting different types of problems at follow-up, similar problems earlier in childhood or adolescence were the strongest predictive factors in most analyses, indicating the chronic nature of specific types of psychopathology.

Table 4.4 Prediction by risk factors (odds ratios, or e^B): deviant problem scores as scored by parents (P), adolescents (A), or teachers (T) at both times.

	T2 psychopathology[1]																							
	Withdrawn			Somatic Complaints			Anxious/ Depressed			Social Problems			Thought Problems			Attention Problems			Delinquent Behavior			Aggressive Behavior		
Predicting factors	P	A	T	P	A	T	P	A	T	P	A	T	P	A	T	P	A	T	P	A	T	P	A	T
T1 Psychopathology																								
Withdrawn	4.2	4.0	5.5																					
Somatic Complaints				3.4	5.5	2.7													.56					
Anxious/Depressed				1.6			2.1	4.4	1.7							.59		.56						
Social Problems	1.5				3.6		1.4			4.1	3.6	2.1				1.7							3.2	
Thought Problems							1.8			1.4			2.8	3.3	1.6	1.5								
Attention Problems													1.5			2.6	21.7	2.7				1.5		
Delinquent Behavior														17.2		1.5		2.4	3.0		2.5	2.0		
Aggressive Behavior												1.7			1.7			1.9	3.4	5.9	2.3	6.2	7.8	6.0
Demographic factors																								
gender			1.9		6.2															3.3				
age at intake	.88						.88			.84			.89			.88								
length of follow-up period	.89			.93			.89			.90			.92			.92			.93			.93		
T1 Assessment Factors																								
special education										1.6		2.0						3.1					4.1	
physical disorder				1.7																				
psychosocial problems mother		2.8	1.8																1.6					
change in family composition																			1.8		2.1			1.9
history of MHS[2] use										1.7			1.5			1.5						1.9		
Post-Intake Factors																								
treatment advice																								
no treatment vs. outpatient treatment												.65					.34							
change in family composition	1.7						1.8						1.6		.52	1.5								
family MHS use in youth										.66														
inpatient treatment				1.6					1.7	1.7			2.0		3.3	1.7			2.3		2.7	2.0		2.3

[1] P=parent, A=adolescent, T=teacher; [2] Mental Health Service. Only significant effects are shown.

Few child, family, and treatment related factors were found to have predictive value over and above earlier psychopathology, and their contribution to the prediction of outcome was small. This may indicate that predictive factors mainly influence T1 problem behaviors, and that once problem behaviors exist, risk (and resilience) factors have little influence on the degree of change.
Ethnicity was a predictive factor of psychopathology reported by parents: higher risks on broadband scores were found for children not born in the Netherlands and/or born from at least one non-Dutch parent. However, this effect was eliminated for prediction of Total Problems when information about factors occurring during the follow-up interval was added.
Gender was a factor affecting change on most scales according to all informants, in that males' scores improved more than females' scores. This seems in contrast with the higher referral rates for boys than girls. An explanation for this gender-paradox may be that girls must display higher levels of problem behaviors to be referred to mental health services. However, data generally did not show higher T1 scores for females than for males. Since higher scores indicate more different symptoms within a syndrome, the explanation may be that females display similar amounts of symptoms more frequently or more seriously, and therefore form a group especially at risk for poor outcome.
Children older at intake improved more on most scales than younger children, and longer follow-up intervals were associated with more improvement on all scales. This may indicate that psychopathology presenting earlier in life is more serious, or that psychopathology presenting itself later in life has less influence on development and therefore is more accessible to improvement over time.
Our findings also showed that children who are in schools for special education at intake are at increased risk for poor outcome, especially regarding externalizing and overall problem scores. Because we included the level of behavioral problems in the analyses, the learning disabilities experienced by these children should be considered a separate, significant predictor of poor outcome. From our data, we cannot conclude what the significance of this factor is, i.e. whether it is a risk factor in itself, or an indicator of an underlying cause (e.g., a specific neurobiological deficit).
Children with a history of mental health service use at intake or obtaining inpatient treatment at follow-up fare worse later, indicating that those children receiving help at multiple points in time are probably the children with the most severe and most chronic problems. This is in agreement with Verhulst and Van der Ende (1997) who concluded that mental health professionals devote their time predominantly to children (and families) who need it most. However, it also shows that we are far from having an adequate strategy to prevent or treat these problems.
Improvement was found for the majority of scales except for Delinquent Behavior, which only showed improvement when taking the categorical data into consideration. The stability of delinquency is well documented (e.g., Robins, 1966; Loeber and Farrington, 1994). Although similar percentages of children as with other syndromes improve or start to show delinquent behavior during follow-up, the children remaining delinquent obtain higher scores, resulting in comparable levels of scores at initial and follow-up assessment. This explanation is supported by the finding that longer follow-up intervals indicated higher scores on teacher reported Delinquent Behavior in the present study.
A clue to the identification of children with high probability of persistent delinquent behavior is suggested by our results: high levels of delinquent behavior at follow-up are best predicted by aggressive behavior at intake. Especially children displaying both delinquent

and aggressive behaviors at intake are at an increased risk of high levels of delinquent behavior at follow-up. Another factor consistently predicting delinquent behavior was having had a change in family composition before intake.

Limitations

Although an overall response rate of 77.8% was reached, self-ratings were obtained for 820 out of a total of 1,652 subjects, and teacher ratings for 690 subjects. Self-ratings on the present instruments can only be obtained from subjects over 10 years old. For information from teachers, we needed permission from parents and, over 10 years old, from subjects themselves. The self- and teacher-reported information is therefore gathered from specific subgroups, a (possible) selection bias. However, with these limitations in mind, we feel numbers are sufficiently large to provide relevant and valuable information. This study was not designed to determine treatment effect, although most children in this sample were treated. Therefore, it is difficult to determine what part, if any, of the improvement is attributable to spontaneous recovery, treatment, or - for that matter - statistical effects, such as regression-to-the-mean. That the latter would be the only explaining factor is contradicted by consistent findings, such as improvement being larger for males than for females, which was found regardless of the difference in level - initially and at follow-up. The odds ratios reflecting concordance between T1 and T2 parent-reported scores were comparable to results found by Stanger, et al. (1996). This further reduces the probability that our results reflect chance findings, and indicates that results may be generalized to populations from other outpatient clinics.
Most limitations of the present study are shared by similar studies: attrition bias, selection bias, a one-clinic sample, and a widely varying follow-up interval. Furthermore, only a limited number of predictive factors were assessed using standardized measures. Another limitation concerns the different operationalization and use of predictive factors across studies. In our study, we used predictive factors spanning the history at intake and the follow-up period in one analysis, an approach not used in earlier research. We feel this approach may improve insight in the underlying mechanisms, and may help develop treatment and preventive measures, and identify children with poor versus good prognosis.

Clinical Implications

It is sobering to find that a large proportion of children referred to mental health services still show problematic behaviors across a six-year follow-up period on average. However, these findings should be a challenge to mental health care professionals to increase their efforts to improve prevention, early identification, and treatment statistics.
From our findings a number of subgroups of children referred to mental health services may be identified, who may need special attention because they are most at risk for a poor prognosis. These are children: with both delinquent and aggressive behaviors; with learning disabilities; from one-parent families; from ethnic minorities; and females.

Chapter 5

Predicting change in psychopathology in young adults referred to mental health services in childhood or adolescence

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Chapter 5 Predicting change in psychopathology in young adults referred to mental health services in childhood or adolescence

Abstract

Objective: To investigated change in psychopathology, and factors influencing these changes for children and adolescents referred to mental health services. *Method:* A referred sample (N=789), aged 7 to 18 years at initial assessment, was followed-up as young-adults (19 years and over), after a mean interval of 10.5 years. We used standardized information from parents and subjects at both assessments, including the CBCL, YSR, YASR, and YABCL. *Results*: Compared to a normative sample, subjects fared considerably worse as young-adults at follow-up, although an overall improvement on mean problem scores was found. At time 2, levels of delinquent behavior were still high. For broadband and syndrome scores respectively, across informants 62% and 41% of the children remained scoring deviant. Generally, the strongest predicting factor for time 2 psychopathology was the corresponding time 1 score, odds ratios ranging from .9 to 15.6. Few child, family, and treatment-related factors were found to have consistent predictive value over and above earlier psychopathology, and their contribution to the prediction of outcome was mostly small. Gender was not a factor affecting change into adulthood. Conduct problems in adulthood were predicted by childhood attention problems. *Conclusions:* Findings indicate continuity of behavioral and emotional problems in clinically referred children and adolescents. These problems should be viewed as chronic conditions. Treatment programs for aggressive behavior should include treatment of attention problems. Young children with delinquent behavior may form a group especially at risk for poor outcome.

Introduction

Children referred for psychiatric services may be at considerable risk for continuation of maladaptive behaviors. To identify children at risk, longitudinal studies of large, clinical samples with a broad range of psychopathology are needed in which factors can be studied that are predictive of future problems (Stanger, MacDonald, McConaughy, and Achenbach, 1996; Rutter, 2000).

Psychopathology outcome has been investigated in few large, diverse samples of children referred to mental health services. Stanger, et al. (1996) reported strong persistence of Child Behavior Checklist (CBCL; Achenbach, 1991a) scores for referred children, who were adult at follow-up, with odds ratios (ORs) ranging from 3.3 to 10.1. Kramer (1980) reported that problems had disappeared in 50%, improved in 31%, remained the same in 12%, and worsened in 4%; new problems had developed in 25% of the former patients. Most of Kramer's subjects were still children at follow-up. Other studies indicated persistence of problems, but without presenting proportions of subjects showing change (Robins, 1966; Zeitlin 1986).

Little evidence is available on factors associated with persistence and change, partly because of the lack of reliable, valid, measures of environmental risk and protective factors (Rutter, 2000). In community samples, factors predictive of poor outcome have been investigated (e.g., Verhulst and Van der Ende, 1997). Risk factor and resilience research has shown child and family characteristics to be related to an increased risk of developing problem behavior, but little is known about the predictive value of factors regarding change once problem behaviors exist (Mathijssen, Koot, and Verhulst, 1999). Available studies show very inconsistent results regarding gender, age, other child characteristics, and family

and environmental variables (Stanger, et al., 1996; Kramer, 1980; Robins, 1966; Zeitlin, 1986; Nylander, 1979; Rey, Morris-Yates, Singh, Andrews, and Stewart, 1995; Steinhausen, Meier, and Angst, 1998). Results on the predictive value of treatment-related factors are scarce and inconclusive (e.g., Zeitlin, 1986).

Only one study investigating a broad range of psychopathology used widely accepted, standardized procedures, with known reliability and validity, which were comparable at initial and follow-up assessment (Stanger, et al., 1996). Other studies relied strongly on case-record information assessed in retrospect (Robins, 1966; Zeitlin, 1986; Nylander, 1979; Steinhausen, Meier, and Angst, 1998). Studies differed strongly in assessment procedures and definitions of psychopathology, predicting factors, and outcome measures, reducing comparability, and thus hampering the interpretation of results.

The overall impression from these studies is that the level of initial problem behavior is the strongest predictor of later functioning for children referred to mental health services. To measure the contribution of other variables to the prediction of change, analyses should take both the initial level of problem behavior and the level at follow-up into account.

In the present study, our goals were to determine for a sample of 789 young-adults who were referred to an outpatient psychiatric clinic as children: (a) the change in level of scores of empirically derived syndromes across a 10.5 year interval and (b) factors that influence the change in level of psychopathology, using standardized information from parents, and subjects at both times of assessment.

Since the evidence from earlier studies on referred samples is limited, the choice of candidate predictive factors was mainly based on information from studies on community samples. We also included a number of treatment-related factors, which have received little attention so far in studies on the course and prognosis of psychopathology in referred children.

Methods

Subjects

The initial sample included 2,441 children, aged 7 to 18 at first contact, referred to the outpatient clinic of the Erasmus Medical Center - Sophia, a university clinic, with specialist child and adolescent psychiatric care, between June 1982 and January 1995 (Time 1[T1]). At follow-up, between June 1995 and June 1997 (Time 2 [T2]), three groups were formed, based on the current age of the subject: young-adults (19 years and over, N=789), adolescents (12-18 years, N=1,288), and children (11 years and younger, N=364) (Heijmens Visser, Van der Ende, Koot, and Verhulst, 2000).

This study deals only with the young-adult group. The mean length of follow-up period was 10.5 years (sd=2.2). We obtained scorable rating forms from at least one informant for 540 (68.9%) of the 789 eligible subjects. Self-ratings were obtained for 506 (64.1%) subjects and parent ratings were obtained for 374 (85.8%) of the 436 parental informants we were granted permission to approach. T2 parental informants were 66.1% mothers, 19.9% fathers, 13.2% both parents, and .8% others.

To evaluate the effect of nonparticipation, we compared responders and non-responders on sex, age at intake, socio-economic status (SES) scored on a 9-step scale (Netherlands Central Bureau of Statistics, 1993), and T1 Internalizing, Externalizing, and Total Problem Child Behavior Checklist (Achenbach, 1991a; Verhulst, Van der Ende and Koot, 1996) scores. More females responded than males (73.9% versus 65.8%, chi-square=5.78, df=1, p=.016). Responders scored lower than non-responders on Externalizing behavior (15.4 versus 18.6, sd=12.0 versus 12.8, t=3.49, df=787, p=.001) and Total Problems (51.8 versus 58.1, sd=26.2 versus 28.9, t=3.02, df=787, p=.003).

T1 Instruments
The Child Behavior Checklist (CBCL) and Youth Self-Report (YSR) (Achenbach, 1991a,c) are standardized reports on children's and adolescents' adaptive functioning and emotional and behavioral problems in the previous six months, as reported by parents and adolescents (11-18 years old) respectively. Problem behaviors are scored on syndromes (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior), and broadband scales (Internalizing, Externalizing, and Total Problems). For analyses in which we needed to categorize subjects as 'deviant' versus 'non-deviant', we dichotomized scores at the cut-off points suggested by Achenbach (1991a,c), based on Dutch normative scores for each instrument, and for each gender and age-group separately. Good reliability and validity for the Dutch versions of the CBCL and YSR have been reported (Verhulst, Van der Ende, and Koot, 1996, 1997b).

T2 Instruments
The Young Adult Self-Report (YASR) and Young Adult Behavior Checklist (YABCL) (Achenbach, 1997) are upward extensions of the YSR and CBCL, and have the same response format. Both are designed to evaluate emotional and behavioral problems (and adaptive functioning and substance use on the YASR) for ages 18 to 30 years. Problem behaviors are scored on syndromes (Anxious/Depressed, Withdrawn, Somatic Complaints, Thought Problems, Attention Problems, Intrusive Behavior, Delinquent Behavior, and Aggressive Behavior), and broadband scales (Internalizing, Externalizing, and Total Problems). For analyses in which we needed to categorize subjects as 'deviant' versus 'non-deviant', we dichotomized scores at the cut-off points suggested by Hofstra (Hofstra, Van der Ende, and Verhulst, 2000) based on Dutch general population scores for each gender separately.
Achenbach (1997) has reported good reliability and validity for the American YASR and YABCL. The Dutch YASR is a reliable and valid instrument (Ferdinand and Verhulst, 1995). The internal consistency of the Dutch YABCL is high (Heijmens Visser, et al., 2000), but no other results are available.

Case-record information
At initial contact with the clinic, mental health workers collected information on subjects as part of the intake procedure. This information was registered on standardized intake forms in case-records, in intake notes and reports, and in letters to referring mental health workers. For this study, ten raters were trained to collect and code the information collected at intake onto standardized research forms. To this end fifteen case-records were coded into 'consensus forms' by experienced researchers. Five of these were used to familiarize the raters with the procedure, after which the remaining ten case-records were used to increase the reliability of coding. For the information used in this study, raters found consensus scores in 93.8 percent of the cases (mean; range 75.4 - 100%, median 96.0%, 14 variables). The reliability of obtaining information was further enhanced by continuous supervision during the actual recoding process. Case-records were scored on multiple characteristics with descriptive (such as 'other characteristics', or 'diagnostic description') as well as standardized information. Coded demographic, family, child, and diagnostic/treatment characteristics regarding the child's life period before intake were used as factors predicting change (Table 5.1). The factor labels are self-explanatory, except for the following. For *ethnicity*, only children born in the Netherlands from two Dutch parents

were considered Dutch. *Changes in family composition* were mostly loss of a parent (by separation, divorce or death) or placement in a foster home or in residential care. *Parental psychosocial problems* were scored present when the mental health worker had registered mental health service (MHS) use for either parent, or had clearly indicated that a parent would have benefited from such help (e.g., father alcoholic). A *treatment advice* concerning best possible treatment was given after careful assessment, and categorized as 'no treatment necessary', 'outpatient treatment required only', or 'inpatient treatment necessary with or without outpatient treatment' (e.g., for parents or family).

Follow-up information

Information on change in family composition and MHS use by subjects and family was obtained from parents, using structured, mostly pre-coded questionnaires. Follow-up information was collected on the period following the last appointment at our department until follow-up. *Change in family composition* was evaluated similar to intake-information and *MHS use* was scored in four factors. Subjects had received outpatient treatment or not, and inpatient treatment or not. For relatives two factors were considered: first, MHS use as a child for one of the family members ever, and second, whether any family member had used mental health services during the follow-up period.

Statistical Analyses

To determine the change in level of YSR/YASR and CBCL/YABCL problem scores, we used repeated measures analyses of variance for each separate psychopathology score, with gender as factor, and age at intake and length of follow-up interval as covariates. Since we used different instruments at T1 and T2, these analyses were performed with scores including only those items present in both instruments. We tested differences between the mean T2 scores for the referred sample and scores obtained in a general population sample followed up by Hofstra (e.g., Hofstra, Van der Ende, and Verhulst, 2001). We used one-sample t-tests, after computing for the general population a mean, weighed for gender (norm score). Cross-tabulations were used to present change from deviant to non-deviant categories (and vice versa) for these scores.

To evaluate the contribution of different factors in predicting categorical change of psychopathology, we used stepwise logistic regression analyses. Factors were entered in three blocks. First, we entered the T1 YSR or CBCL score corresponding to the T2 score of interest, except for Intrusive Behavior, which has no T1 counterpart. Thus, influences of other factors were corrected for the T1 score. Therefore, significantly associated factors predict change. Second, factors representing information obtained at initial assessment were added. In testing Internalizing and Externalizing, Externalizing and Internalizing scores were added in the second block respectively. In evaluating change in syndromes, the seven remaining syndrome scores were entered in the second block. The other factors in this block were gender, age at intake and length of follow-up interval, ethnicity, special education, somatic disorder, SES, T1 change in family composition, living with a single parent, being only child, paternal psychosocial problems, and previous inpatient treatment. Third, factors representing events occurring after the initial assessment were added, including advised treatment, change in family composition as reported by parents at follow-up, and MHS use parameters.

The third block contained 3 factors with frequently missing values (change in family composition during follow-up, family MHS use in youth, and MHS use in the family). These

Table 5.1 Demographic characteristics, predicting factors and broadband psychopathology outcome with their distribution (N=540, total response).

Factors			N (%) or mean (*sd*)	
T1 CHILD				
gender		boys vs. girls	312 (57.8)	228 (42.2)
age (yrs.)	*boys*		12.2 (2.4)	
	girls		12.9 (2.4)	
ethnicity		Dutch vs. other	497 (92.0)	43 (8.0)
special education		no vs. yes	412 (76.3)	128 (23.7)
physical disorder		absent vs. present	417 (77.2)	123 (22.8)
history of residential MHS[1] use		no vs. yes	469 (86.9)	71 (13.1)
psychopathology (CBCL[2])				
Internalizing		non-deviant vs. deviant	136 (25.2)	404 (74.8)
Externalizing		non-deviant vs. deviant	246 (45.6)	294 (54.4)
Total Problems		non-deviant vs. deviant	127 (23.5)	413 (76.5)
T1 FAMILY				
SES[3]			4.9 (1.7)	
change in family composition		no vs. yes	363 (67.2)	177 (32.8)
single parent		no vs. yes	477 (88.3)	63 (11.7)
only child		no vs. yes	462 (85.6)	78 (14.4)
psychosocial problems				
mother		no vs. yes	384 (71.1)	156 (28.9)
father		no vs. yes	446 (82.6)	94 (17.4)
T1 OTHER				
treatment advice[4]		none vs. outpatient	39 (7.2)	389 (72.0)
		vs. inpatient		112 (20.7)
T2 FAMILY AND TREATMENT				
length of follow-up period (yrs.)			10.5 (2.2)	
change in family composition*		no vs. yes	237 (64.1)	133 (35.9)
family MHS use in youth*		no vs. yes	333 (90.0)	37 (10.0)
MHS use in the family*		no vs. yes	302(81.6)	68 (18.4)
outpatient treatment		no vs. yes	57 (10.6)	483 (89.4)
inpatient treatment		no vs. yes	437 (80.9)	103 (19.1)
psychopathology (YASR[5])				
Internalizing[#]		non-deviant vs. deviant	292 (58.1)	211 (41.9)
Externalizing[#]		non-deviant vs. Deviant	338 (67.2)	165 (32.8)
Total Problems[#]		non-deviant vs. deviant	302 (60.0)	201 (40.0)

[1] MHS = mental health services; [2] CBCL = Child Behavior Checklist; [3] SES = socio-economic status; [4] type of advice: outpatient treatment only, inpatient treatment; [5] YASR = Young Adult Self-Report.
*= 170 missing scores; [#]= 37 missing scores; see text.

variables were assessed through information from parents only, hence their number of missing values. To optimally use our data, analyses were re-run without these 3 factors if they did not contribute significantly. When data were missing incidentally, their values were imputed by the most frequent value of the factor (Table 5.1). Compared to analyses without imputation, results were very similar, but with higher statistical power.

Results

Persistence and Change

Table 5.2 shows mean T1 and T2 scores and their mean differences, as reported by the similar type of informant at both times (e.g., parents at T1 and T2). After dividing scores into 'deviant' and 'non-deviant' categories, we evaluated percentages of individuals scoring deviant at both times, non-deviant at both times, and changing from deviant to non-deviant or vice versa.

For all broadband and syndrome scores, change indicating improvement was found. A non-significant change was found for self-reported Delinquent Behavior. At T2, according to both types of informant, subjects scored significantly above the mean norm scores. Many individuals scoring deviant at T1 still scored deviant at T2 [HH/(HH+HL)]: for broadband scores 61.5% across informants, for syndromes 46.8% (self-reported), 34.6% (parental information). Across informants, for broadband scores over 60%, and for syndromes over 70% remained in the same category.

Longitudinal prediction

We computed ORs for similar informants (e.g., young-adults at both times) and for T1 parent / T2 young-adult (inter-informant; CBCL/YASR), based on the cross-tabulations of deviant versus non-deviant scores at T1 and T2, corrected for T1 age, gender, and length of follow-up interval. ORs for broadband scores ranged from 2.0 (inter-informant Total Problems) to 6.8 (Total Problems scored by subjects at both times). ORs for syndrome scores ranged from 1.3 (inter-informant Thought Problems) to 19.7 (Delinquent Behavior scored by subjects at both times, 95%confidence interval [95%CI] 4.1 - 94.5). Since results were very similar to values found in the multivariate analyses presented in tables 5.3 and 5.4, they are not presented in detail.

Tables 5.3 and 5.4 show, for similar T1 and T2 informants and for T1 parent / T2 young-adult, predictive relations between categorical T1 problem scores and the corresponding T2 scores, evaluating other factors as well, for broadband scores (Table 5.3) and syndromes (Table 5.4).

Broadband scores

Analyses showed that a strong predicting factor was the T1 score predicting the corresponding T2 score, except for inter-informant Total Problems, which was not significant. ORs ranged from 1.7 to 6.7. OR values found for other factors can be considered corrected for this 'continuity effect'.

Other predicting factors did influence T2 broadband scores. However, gender, age at intake, length of follow-up interval, and SES were not consistently related to outcomes. Paternal psychosocial problems was a predicting factor for Internalizing (self-report and inter-informant): higher risks were found for children whose fathers were at intake judged to have problem behaviors worth seeking help for.

Receiving inpatient care during the follow-up period, change in family composition during the follow-up period, and MHS use in the family were important predicting factors as well.

Syndromes

The T1 score predicting the corresponding T2 score was a strong predicting factor in most analyses. ORs ranged from .9 (inter-informant Thought Problems) to 15.6 (self-reported Delinquent Behavior). For some syndromes, syndromes other than the corresponding T1 syndromes were strong predicting factors.

Table 5.2 Time 1 (T1) and Time 2 (T2) intra-informant scores, and their cross-time differences. Only items present in scores at both times are included.

Intra-informant scale[1]		mean score			norm	percentages of scorers[4]			
		T1	T2	Difference[2]	score[3]	HH	HL	LH	LL
TOTAL PROBLEMS	YA	43.7	32.7	10.2	23.4	31.1	15.5	12.6	40.8
	P	46.1 ^{M}	26.6	18.9 ^{M}	13.5	44.1	30.9	6.2	18.8
INTERNALIZING	YA	10.9 ^{F}	8.3	2.4 ^{A}	5.5	31.1	15.5	15.5	37.9
	P	10.6 ^{F}	7.1	3.3	3.6	42.5	32.5	6.7	18.3
EXTERNALIZING	YA	9.4 ^{M}	6.1 ^{M}	3.3	4.8	17.5	12.6	16.5	53.4
	P	11.1 ^{M}	5.7 ^{M}	5.2 ^{M}	2.9	35.2	17.5	11.3	36.0
Withdrawn	YA	3.5	2.5	1.0 ^{AF}	2.1	10.7	9.7	7.8	71.8
	P	3.3 ^{O}	2.1 ^{M}	1.0 ^{FO}	1.2	11.6	24.2	6.5	57.8
Somatic Complaints	YA	3.4 ^{F}	2.5	.9 ^{A}	1.8	6.8	7.8	10.7	74.8
	P	2.9 ^{F}	1.9 ^{F}	.7	1.3	6.2	17.7	5.6	70.4
Anxious/Depressed	YA	7.4 ^{F}	5.8 ^{O}	1.5 ^{A}	3.4	16.5	15.5	9.7	58.3
	P	7.3 ^{F}	5.0 ^{F}	2.4	2.4	12.9	33.3	10.8	43.0
Thought Problems	YA	.8	.4 ^{M}	.5 ^{A}	.1	7.8	10.7	22.3	59.2
	P	1.8	1.1	.7	.4	13.2	20.4	16.4	50.0
Attention Problems	YA	2.8 ^{O}	2.2	.5 ^{AB}	1.6	6.8	10.7	16.5	66.0
	P	4.2 ^{M}	2.6 ^{M}	1.6	1.4	20.7	28.2	6.2	44.9
Delinquent Behavior	YA	1.2 ^{M}	.9 ^{M}	n.s. ^{AB}	.7	7.8	6.8	5.8	79.6
	P	1.3 ^{MO}	1.0 ^{M}	.3 ^{AO}	.5	10.2	17.5	9.1	63.2
Aggressive Behavior	YA	4.9 ^{M}	2.8	2.3	1.9	8.7	11.7	9.7	69.9
	P	5.3 ^{M}	2.0	3.2 ^{M}	1.0	12.9	21.2	7.3	58.6

[1] P=parent, YA=young adult; [2] difference between T1 and T2 score (n.s.=non-significant); [3] mean YASR and YABCL scores in norm population, weighed for gender (only items also present in scores on YASR and YABCL, respectively, are included): all mean T2 scores were significantly higher than their corresponding norm scores; [4] scoring above (H=high) or below (L=low) the cutoff at T1 and T2; ^{A} males' scores did not change; ^{B} females' scores did not change; ^{M} males score higher than females; ^{F} females score higher than males; ^{O} T1 older subjects score higher than younger subjects.

Other predicting factors influenced T2 syndrome scores. However, gender, length of follow-up interval, and SES were not consistently related to outcomes. Age at intake consistently predicted T2 Anxious/Depressed (parent and inter-informant analyses).
Change in family composition during the follow-up period was a predicting factor for T2 Attention Problems (parent and self-report), Delinquent (parent), and Aggressive Behavior (self-report). Another (less specific) predicting factor was receiving inpatient care during the follow-up period, contributing significantly to the prediction of Withdrawn (using parental information), and Somatic Complaints, Anxious/Depressed Thought Problems, Attention Problems, and Aggressive Behavior (inter-informant). Living in a single parent family at intake was a strong predicting factor for Intrusive Behavior in self-report analyses (OR=19.6, 95%CI: 3.1-122.0).

Table 5.3 Odds ratios (e^B) for prediction by risk factors in multiple logistic regression analyses: deviant broadband scores as scored by parents (P; N=372) and self-report (YA; N=103) at both times, and T1 parent and T2 young-adult (I= inter-informant; N=333).

	T2 psychopathology[1]								
	TOTAL PROBLEMS			INTERNALIZING			EXTERNALIZING		
PREDICTING FACTORS	P	YA	I	P	YA	I	P	YA	I
T1 PSYCHOPATHOLOGY									
Total Problems	3.6	6.7	*1.7*	≠[3]	≠[3]	≠[3]	≠[3]	≠[3]	≠[3]
Internalizing	≠[3]	≠[3]	≠[3]	3.8	5.9	1.8		2.4	
Externalizing	≠[3]	≠[3]	≠[3]				5.8	4.1	2.6
DEMOGRAPHIC FACTORS									
gender		.4							
length of follow-up interval									1.1
T1 ASSESSMENT FACTORS									
special education				2.2					
psychosocial problems father					7.4[4]	2.6			
history of residential MHS[2] use	2.8								
POST-INTAKE FACTORS									
treatment advice									
no treatment vs. outpatient treatment						1.6			
change in family composition	2.3			2.0			2.3		
MHS use in the family	1.9					2.3	2.4		
outpatient treatment						3.2			
inpatient treatment			3.3			4.8			2.8

[1] P=parent, YA=young-adult, I=inter-informant; [2] MHS = mental health services; [3] ≠ factor not included in the analyses; [4] 95%-confidence interval 1.7-31.3. Only significant effects are shown, except for T1 corresponding scores: when non-significant, they were kept in the analysis. In this table these are underscored. Age at intake, length of follow-up interval, and SES were included as continuous factors.

Discussion

This study aimed to assess the change in psychopathology, and the predictability of this change, in children referred for mental health services over an average period of 10.5 years. Factors associated with such change could be seen as risk or resilience factors. Compared to a normative sample of similar age and gender, subjects fared considerably worse as young-adults at follow-up, although an overall improvement on mean problem scores was found. According to parents and adolescents 61.5% of the initial (T1) high scorers still scored deviant at follow-up (T2) on broadband scores, which is very similar to the 63.0% found for parents and teachers in a sample of referred children still in their childhood at follow-up (Heijmens Visser, Van der Ende, Koot, and Verhulst, in press). For syndrome scores, 40.7% of the T1 high scorers scored deviant at T2 (compared to 35.8% in the childhood sample). These results were fairly similar for different types of psychopathology. Across informants, close to 70% of the children remained in the same category (i.e. those scoring deviant or non-deviant at both times) for broadband as well as syndrome scores. In predicting different types of problems at follow-up,

Table 5.4 Odds ratios (e^B) for prediction by risk factors in multiple logistic regression analyses: deviant problem scores as scored by parents (P) and self-report (YA) at both times, and T1 parent and T2 young-adult (I).

	T2 psychopathology[1]																							
	WITHDRAWN			SOMATIC COMPLAINTS			ANXIOUS / DEPRESSED			THOUGHT PROBLEMS			ATTENTION PROBLEMS			INTRUSIVE BEHAVIOR			DELINQUENT BEHAVIOR			AGGRESSIVE BEHAVIOR		
PREDICTING FACTORS	P	YA	I	P	YA	I	P	YA	I	P	YA	I	P	YA	I	P	YA	I	P	YA	I	P	YA	I
T1 PSYCHOPATHOLOGY																								
Withdrawn	3.9	9.4[4]	1.9																					
Somatic Complaints				5.3	5.4	1.8	1.9																	
Anxious/Depressed							*1.1*	6.4	*1.5*														4.9	
Social Problems		3.7											3.9						1.9					
Thought Problems						1.8				*1.6*	*1.6*	*.9*												
Attention Problems							2.0			1.9		1.8	*1.8*	*5.1*	2.8	2.2		3.7				3.0		1.8
Delinquent Behavior				2.0									1.9		.5				2.2	15.6[7]	*1.7*	2.1		
Aggressive Behavior											5.5					3.1					2.0	2.3	*3.2*	1.9
DEMOGRAPHIC FACTORS																								
gender												.6						.5						
age							1.1		1.1				1.2											
SES[2]				.8					1.2												1.2			
ethnicity			2.5																2.5					
T1 ASSESSMENT FACTORS																								
special education										1.9			1.9									1.9		
psychosocial problems mother				.4																				
psychosocial problems father					4.1																			
change in family composition										.5														
single parent																	19.6[6]							
history of residential MHS[3] use										2.7						2.7								
POST-INTAKE FACTORS																								
change in family composition													1.9	8.8[5]					2.8				5.1	
family MHS use in youth										2.2														
MHS use in the family							2.1						2.9			2.1								
outpatient care									2.7				6.2											
inpatient care	2.1					1.9			1.8			2.1			1.8									2.3

[1] P=parent, YA=young-adult, I=inter-informant; [2] SES = socio-economic status; [3] MHS = mental health services; [4] 95%CI 2.9-29.9; [5] 95%CI 2.2-35.2; [6] 95%CI 3.1-122.0; [7] 95%CI 4.2-57.9. Only significant effects are shown, except for T1 corresponding scores: when non-significant, they were kept in the analysis. In this table these are underscored. Age at intake, length of follow-up interval, and SES were included as continuous factors.

similar problems earlier in childhood or adolescence were strong predicting factors in most analyses, indicating the continuity and chronic nature of specific types of psychopathology. Percentages of children scoring deviant at both times in this sample were very similar to percentages in a general population sample followed-up after 14 years (Hofstra, Van der Ende, and Verhulst, 2000). For parent-reported information, odds ratios were similar to those found by Stanger, et al. (1996). These similarities add to the generalizability of our findings.

Few child, family, and treatment-related factors were found to have consistent predictive value over and above earlier psychopathology, and their contribution to the prediction of outcome was mostly small. This is consistent with findings by Robins (1966) and Zeitlin (1986). Robins, in predicting sociopathic personality, found that cumulating childhood predictors was more efficient than using any single predictor. Zeitlin concluded that environmental and social factors helped little in identifying children likely to show further disturbance in adult life, after presenting in a psychiatric clinic.

For broadband as well as syndrome scores, experiencing change in family composition during follow-up was a predictor. Most consistently, it predicted attention problems. Children receiving inpatient treatment during follow-up, with a history of mental health service use at intake, or obtaining special education fare worse later, indicating that those children receiving help at multiple points in time are probably the children with the most severe and most chronic problems. This is in agreement with Verhulst and Van der Ende (1997), who concluded that mental health professionals devote their time predominantly to children (and families) who need it most. Unfortunately, it also means that strategies to prevent or treat problems are far from adequate.

Contrary to what was found in a childhood sample (Heijmens Visser, et al., in press), and a general population sample (Hofstra, Van der Ende, and Verhulst, 2001), gender was not a factor affecting change into adulthood. The 'gender-paradox' seems to indicate that girls must display higher levels of problem behaviors than boys to be referred to mental health services, and therefore form a group especially at risk for poor outcome. This may not be the case when referred adolescents enter adulthood. In our sample, males did change more than females in parent-reported Total Problems, Externalizing, and Aggressive Behavior scores, but not in self-reports on the same problem scores. Since parental information includes children aged 4-11, whereas self-reports are available for 12-18 year olds only, this suggests that changes may have taken place before turning from adolescence to adulthood, and that adolescence is a turning point for the development of psychopathology (Hofstra, Van der Ende, and Verhulst, 2000). However, the effect might also be explained by a difference in informant (parent versus self-report), or by more divergent pathways for males' behavioral problems.

Attention problems at intake not only predicted future thought problems and attention problems, but intrusive and aggressive behavior as well, even after adjustment for associations with (amongst others) aggressive behavior at intake. This is in contrast with findings by Fergusson, Lynskey, and Horwood (1997) and Hofstra, Van der Ende, and Verhulst (2001). In their general population samples, for attention problems they found no predictive value for later conduct problems when taking into account early conduct problems. The suggestion that poor outcome in clinical samples can be explained by other problem behaviors than attention problems does not seem to hold. This has implications for treatment and prevention programs in clinical practice for for instance aggressive behavior. Such programs should not focus on aggressive behavior alone, but should include treatment of attention problems.

A strong predicting factor for aggressive behavior at follow-up was self-reported emotional problems at intake. This was also reflected in the prediction of Externalizing behavior by Internalizing problems. Contrary to what was found by Hofstra, Van der Ende, and Verhulst (2001), there was no gender effect linked to this association. Further research is needed to investigate the meaning of these findings, and differences between clinical and non-clinical populations.
Like in the childhood sample (Heijmens Visser, et al., in press), little change was found in levels of delinquent behavior. Furthermore, we found a strong predictive value (OR 15.6, 95%CI 4.2-57.9) for self-reported delinquent behavior from intake to follow-up. Both findings, again, indicate strong continuity for this type of behavior. However, parents reported that older children improve more than younger children. This is consistent with the early-starter/late starter pathways as described by McMahon (1994), and life-time persistent/adolescence limited developmental patterns of antisocial behavior as described by Moffit (1993).

Limitations

This study was not designed to determine treatment effect, although most children in this sample were treated. Therefore, it is difficult to determine what part, if any, of the improvement is attributable to spontaneous recovery, treatment, or - for that matter - statistical effects, such as regression-toward-the-mean. That the latter would be the only explaining factor is contradicted by consistent findings across different samples. This also indicates that results may be generalized to other populations, e.g., other outpatient clinics.
Most limitations of the present study are shared by similar studies: attrition bias, selection bias, a one-clinic sample, and a widely varying follow-up interval. Furthermore, only a limited number of predictive factors were assessed using standardized measures. Another limitation concerns the different operationalization and use of predicting factors across studies. In our study, we used predicting factors spanning the history at intake and the follow-up period in one analysis, an approach not used in earlier research. We feel this approach may improve insight in the underlying mechanisms, and may help develop treatment and preventive measures, and identify children with poor versus good prognosis.

Clinical Implications

It is sobering to find that a large proportion of children referred to mental health services still show problematic behaviors across a ten-year follow-up period on average. However, these findings should be a challenge to mental health care professionals to increase their efforts to improve prevention, early identification, and treatment statistics.
From our findings a number of subgroups of children referred to mental health services may be identified, who may need special attention because they are most at risk for a poor prognosis.

Chapter 6

Predicting poor outcome in individuals referred to mental health services in childhood or adolescence

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Chapter 6 Predicting poor outcome in individuals referred to mental health services in childhood or adolescence

Abstract

Objective: To investigate, across a 7.5-year mean interval, poor outcome and the factors that influence poor outcome, for children and adolescents referred to mental health services. *Method*: For 1,826 children, aged 4 to 18 years at initial assessment, parents completed the Child Behavior Checklist. Parents and subjects completed questionnaires at follow-up. *Results*: Frequencies of poor outcome ranged from 2.0% (alcohol abuse in females) to 44.1% (help wanted in males). Young-adults in our sample fared considerably worse at follow-up than a comparable general population sample for all outcome events except alcohol abuse. Poor outcome was predicted by emotional and behavioral problems, with odds ratios ranging from 1.3 to 3.9. Child related factors (e.g., gender, age, being in special education, and previous mental health service use) contributed to the prediction of poor outcome. Family related factors predicted little more. *Conclusions*: High frequencies for future poor outcome and poor global functioning were found. With the stability and limited improvement of psychopathology found before, findings show that psychopathology is to be regarded as a chronic disease, with implications for all involved. Short-term treatment may cure the crises in which children are referred, but may not reduce the risk of future malfunctioning.

Introduction

Changes in clinical child psychiatry have been enormous over the past 40 years, with a major contribution from epidemiological research on developmental psychopathology, the study of the origins and course of individual patterns of maladaptation (Rutter, 1998, 2000; Rutter and Sroufe, 2000). Standardization of assessment procedures and operational definitions of syndromes and diagnostic categories (e.g., the empirically based taxonomy described by Achenbach, 1993) have enabled us to more validly compare information from different informants, samples, and cultures in developmental psychopathology. Large general population studies have provided us with norms, prevalence figures, impressions of continuity and outcome, and clues on developmental pathways. These studies have also shown that large numbers of children with emotional and behavioral problems do not receive care in mental health services (Verhulst and Van der Ende, 1997).

However, many questions concerning the course and prognosis of psychopathology can still not be answered based on empirical evidence. This is surprising, since much time, energy, and money is invested all over the world in mental health services for children and adolescents. For instance, little attention has so far been paid to the transition into adult life, especially for referred children (Rutter and Sroufe, 2000; Heijmens Visser, Van der Ende, Koot, and Verhulst, 2000). Zeitlin (1986) found that poor outcome was not correctly predicted by psychiatrists, indicating the need for longitudinal research. There have been few systematic studies on the course and outcome of a broad range of child psychiatric disorders that include other outcome measures than psychopathology. In these studies, very different populations and analytic strategies were used, making comparison of results extremely difficult.

The first traceable study was published by Robins (1966). After 30 years, she compared children formerly referred to a child guidance clinic with matched controls. Results included the finding that childhood antisocial behavior predicted adult antisocial behavior as well as other undesirable adjustment, and continuity for problem behaviors that could be

considered externalizing and internalizing. Clinic children were found to be more maladjusted as adults than control subjects. Maladjustment could show itself in family life, social contacts, work situations, and use of services as well as problem behavior.
Nylander (1979) published a 20-year follow-up study on children referred to a child guidance clinic, after participating in the 10-year follow-up by Curman and Nylander (1976). Whereas a follow-up period of 10 years was found to be to short, 20 years was judged a satisfactory length for follow-up. However, the sample was found not representative of a child psychiatric population, because it was relatively 'easy' (children with grave social maladjustment, developmental disorders, or psychosomatic symptoms were treated elsewhere). Furthermore, both studies were primarily concerned with boys' outcome with respect to officially registered problem behaviors. One seemingly important finding, however, was that the frequency of application for mental health services steadily dropped with increasing age for boys, whereas for girls the trend was the opposite. At 20-year follow-up, 16.0% of the boys and 7.0% of the girls had died or become chronically invalid by addiction, criminality, or psychosis. Similar numbers were found for alcohol offences and crimes (including drugs): for boys 23% and for girls 3%. Outpatient help received 34% of the boys and 46% of the girls, while 12% of the boys and 16% of the girls received inpatient help. Continuity and poor prognosis of externalizing behavior is suggested, because the majority of boys exhibiting antisocial symptoms at an early age was entered in 'asociality registers', and was in need of psychiatric care. For children with internalizing and social behavior problems like inhibition/depression (for girls), relationship difficulties (for boys), and hyperactivity (both sexes), entrance in the 'mental register' was predicted, i.e. they were found to be in need of psychiatric care. Boys had social adjustment problems more often than girls did, while girls applied for psychiatric care more often than boys did. Background factors did supply indications to the subsequent fate of the children in question. For instance, chronic addicts and hardened criminals came to a very large extent from highly unstable home environments, frequently marked by addiction.
Otto and Otto (1978) obtained follow-up information after 17 years on adolescents visiting a child psychiatric clinic in Sweden in 1955. Subjects included 30% intellectually impaired individuals, and the population was judged no longer a correct reflection of an adolescent psychiatric population. IQ was found the strongest predictor of outcomes, such as marital status, drinking offences, crimes, special education, and even psychiatric diagnoses. Behavioral problems predicted future divorces and crimes, whereas anxiety predicted fewer marriages. Diagnoses (e.g., deviating personality, character neurosis, neurosis), and family and child factors (e.g., deviating parents, incomplete family, unstable homes, age at intake) were found to be useful in predicting poor outcome as well.
Kramer (1980) studied a mixed in- and outpatient sample in Germany 8 years after initial contact. He found 7.3% of the patients receiving outpatient and 1.3% inpatient treatment. Twenty-two percent of the children still going to school, and 15% of those no longer going to school were in special education. Patients with developmental disorders were most at risk for these poor outcome signs. Compared to the general population, subjects were as frequently married. Child (e.g., social incompetence) and family factors (e.g., frequent changes in living conditions, familial strain at initial contact, and paternal occupation) were found to predict outcomes, such as new symptoms, living arrangements, school and work achievement, having hobby's, and satisfaction with the received treatment.
Zeitlin (1986) compared individuals who were psychiatric patients in childhood and adulthood (index patients) to controls and individuals patient in childhood alone. He found that receiving help in adulthood was predicted by 'being worse initially', educational

retardation, longer attending the children's clinic, more symptoms, and more adverse character traits (e.g., shyness, moodiness, aggressiveness, irritability, and dependence). Controls abused alcohol more compared to index patients, male index patients scored higher on aggression and delinquency, and female index patients behaved more inadequate and immature than controls. Compared to control cases, index patients abused alcohol less frequently, but exhibited more antisocial behavior. Zeitlin found that different formal diagnoses did not help in identifying referred children likely to show disturbance in adult life. Environmental and social factors helped little more.

Rey, Singh, Morris-Yates, and Andrews (1997) investigated poor functioning (deceased or 3 of 8 parameters, including being unemployed, living in a sexual relationship (!), not having completed secondary school, and having problems with the law) in a group of adolescent psychiatric patients from the Sydney metropolitan area (Australia) after a mean follow-up interval of 6 years. They found poor family environment (including a parental history of drugs or alcohol abuse) and externalizing problems to predict future poor functioning. Living in an intact family reduced the risk of future poor functioning.

Steinhausen, Meier, and Angst (1998) compared former child psychiatric patients to a large group of controls in an all male sample conscripted into the Swiss army in 1971, with follow-up periods ranging from 18 to 35 years. Former patients less frequently attended secondary school, and showed more externalizing disorders, such as sociopathy, drug dependency, and sexual delinquency. No difference in alcoholism between the groups was found. The type of diagnosis in childhood was not found to be a predictor of adult outcome, but living in a deprived environment predicted later major delinquency and maladjustment, and parental psychiatric disorder predicted later maladjustment (including psychiatric disorder) as well.

Despite the differences, some general conclusions can be drawn. Among others, these studies seem to confirm the stability and continuity of psychopathology found in general population samples. Furthermore, most authors agree that other domains of functioning are likely to be hampered as well, e.g., family relations, educational and professional achievements, and social functioning, and that other indices of poor functioning are increased, e.g., mental health service use and judicial contacts. Results indicate that prognosis can to some extent be predicted from factors known at initial assessment, such as age at intake, gender, length of follow-up period, socio-economic status, or initial type of problem. However, the inconsistency of results across studies on these related factors hampers drawing firm conclusions on their influence.

In the present study, our goals were to determine, across a 7.5 year mean interval, using standardized information, for a sample of 1,826 individuals who were referred to an outpatient psychiatric clinic in childhood or adolescence: (a) the frequencies of outcome measures other than psychopathology, including serious school problems, being an early school dropout, serious problems at work, proneness to injuries, self harm or suicide ideas, harming oneself or attempting suicide, need for help, receiving outpatient help, receiving inpatient help, alcohol abuse, drugs use, judicial contacts, and global functioning, and (b) factors that can predict future poor outcome.

Methods

Subjects

Subjects were 2,441 children, aged 4 to 18, referred to the outpatient clinic of the Academic Hospital Rotterdam - Sophia, Department of Child and Adolescent Psychiatry, between June 1982 and January 1995 (Time 1 [T1]). This department is a university clinic,

with specialist child and adolescent psychiatric care.
At follow-up, between June 1995 and June 1997 (Time 2 [T2]), three groups were formed, based on the current age of the subject: young adults (19 years and over, N=789), adolescents (12 - 18 years, N=1,288), and children (11 years and younger, N=364). For further information on eligibility, sample composition, and follow-up procedures, see Heijmens Visser, Van der Ende, Koot, and Verhulst (1999, 2000).
Scorable rating forms were obtained at T2 from at least one informant for 1,830 (75.0%) of the 2,441 eligible subjects. Parent ratings were obtained from 1,632 (78.4%) of the 2,088 approached parental informants, self-ratings from 1,326 (63.8%) of the 2,077 subjects over 11 years old at Time 2. The mean length of the follow-up period was 7.5 years (sd=3.4).
To evaluate the effect of nonparticipation we compared responders versus non-responders on gender, age at intake, SES (scored on a 9-step scale with 1 lowest and 9 highest; Netherlands Central Bureau of Statistics, 1993), T1 Internalizing, Externalizing, and Total Problem scores. The only significant effect was for age: information was more often obtained on children younger at intake than on older subjects ($t=-3.845$, $p<.001$, $df=2439$). Tables 6.1a and 6.1b show the distribution by gender of demographic characteristics and other predicting factors.

Instruments

CHILD BEHAVIOR CHECKLIST

The Child Behavior Checklist (CBCL, Achenbach, 1991a) is a standardized report on children's adaptive functioning, and emotional and behavioral problems in the previous six months as reported by parents or parent surrogates. Problem behaviors are scored on syndromes (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior) and broadband scales (Internalizing, Externalizing, and Total Problems). For the analyses we categorized subjects as 'deviant' versus 'non-deviant' based on Dutch normative scores by dichotomizing scale scores at the cut-off points suggested by Achenbach (1991a) for each gender and age-group separately. Good reliability and validity have been demonstrated for the Dutch CBCL (Verhulst, Van der Ende, and Koot, 1996).

OUTCOME QUESTIONNAIRE

Since no standardized questionnaire is available for multiple, differentiated outcome measures, we formulated questions based on the department's research expertise. Versions of these questionnaires were sent to subjects as well as parents. Information from the primary informant was used in this study. All questions concern the period since the last contact at the outpatient clinic of the Academic Hospital Rotterdam - Sophia, Department of Child and Adolescent Psychiatry. We evaluated the following outcomes: *Serious School Problems* (Has [the subject] been suspended or expelled from school due to his / her behavior?), *School Dropout*[1] (Dropped out of school before, during or direct after primary school), *Serious Work Problems* (Has [the subject] been suspended or expelled from his / her job due to his / her behavior?), *Injuries* (Has [the subject] had an accident for which medical treatment was necessary - do not include harming oneself or suicide attempts), *Suicidal Ideation* (Did [the subject] talk about harming him / herself or committing suicide?), *Self Harm* (Has [the subject] deliberately harmed him / herself or attempted to commit suicide?), *Outpatient Help* (Does [the subject] still visit Sophia's

[1] Multiple questions used

Tables 6.1a and 6.1b Distribution (%) by gender of demographic characteristics and other factors predicting outcome (N=1,826, total response; females=608, males=1,218).

		Females		Males		Gender difference [A]		
Factor		%	missing	%	missing	χ^2	p	OR
T1 CHILD								
ethnicity (Dutch vs.)	other	6.9	0	7.7	0	n.s.	-	-
special education	yes	13.7	0	28.2	0	47.7	<.001	2.5
physical disorder	present	27.5	0	19.9	0	13.5	<.001	1.5[F]
history of residential MHS[1] use	yes	9.9	0	17.5	0	18.5	<.001	1.9
psychopathology (CBCL[2])								
Internalizing	deviant	72.7	0	75.2	0	n.s.	-	-
Externalizing	deviant	51.6	0	65.7	0	33.6	<.001	1.8
Total Problems	deviant	72.7	0	82.7	0	24.7	<.001	1.8
T1 FAMILY								
change in family composition	yes	26.8	0	69.5	0	n.s.	-	-
single parent	yes	10.5	0	13.5	0	n.s.	-	-
only child	yes	14.0	0	15.3	0	n.s.	-	-
psychosocial problems								
mother	yes	27.1	0	26.4	0	n.s.	-	-
father	yes	14.5	0	14.3	0	n.s.	-	-
OTHER								
T1 treatment advice[3]	outpatient	80.4	0	72.1	0	25.1	<.001	-
	inpatient	13.5		23.3				
family MHS use in youth	yes	10.7	14.3	10.8	9.3	n.s.	-	-
MHS use in the family	yes	16.1	14.3	16.6	9.3	n.s.	-	-

[1] MHS = mental health service; [2] CBCL = scored on the Child Behavior Checklist; [3] type of advice: no treatment, outpatient treatment only, and inpatient treatment with or without outpatient treatment; [4] SES = socio-economic status. [A] χ^2 = chi square, OR = odds ratio, n.s. = non-significant; [F] = females score higher

	Females		Males		
Factor	mean	sd	mean	sd	Gender difference
age at intake	10.2	3.3	9.4	3.1	F>M (p<.001)
SES[4]	4.9	2.0	4.7	1.9	F>M (p=.018)
length of follow-up interval	7.7	3.4	7.3	3.3	F>M (p=.026)

outpatient clinic of the Department of Child and Adolescent Psychiatry and/or has [the subject] been referred to, assessed at or treated at another institution for behavioral or emotional problems - not including physical problems with medical causes or inpatient treatment?), *Inpatient Help* (Is [the subject] admitted at an institution for inpatient treatment of behavioral, emotional or developmental problems?), *Help Wanted* (Does [the subject] at this moment have problems for which he / she wants professional help?), *Alcohol Abuse* (Do you worry about the amount of alcohol [the subject] uses?), *Drug Abuse* (Did [the subject] use drugs in the passed 6 months - e.g., marihuana, hash, uppers, cocaine, heroin, morphine, sleeping pills), *Police Contacts* (Has [the subject] been in contact with

the police or judicial system because of his / her behavior - not including minor traffic violations or parental divorce procedures?). Tables 6.2a and 6.2b show the distribution by gender of outcome measures.

GLOBAL ASSESSMENT SCALE AND CHILDREN'S GLOBAL ASSESSMENT SCALE

The Global Assessment Scale (GAS) (Endicott, Spitzer, Fleiss, and Cohen, 1976) and Children's Global Assessment Scale (CGAS) (Shaffer, Gould, Brasic, Ambrosini, Fisher, Bird, and Aluwahlia, 1983) are instruments developed to evaluate the overall functioning of a subject during a specified period on a continuum from psychological or psychiatric sickness to health (Endicott et al., 1976).

In their original form a health care professional scores the overall functioning over a period of six months on a scale from 1 (sickest) to 100 (healthiest). Good psychometric properties were found for both GAS and CGAS, as well as for an especially designed non-clinician CGAS (Bird and Gould, 1995). We translated both GAS and CGAS into Dutch and created a self-rating version and a version to be scored by non-clinicians, e.g., parents or partners. To assess *Impaired Global Functioning* in this study, we computed the mean of the self-report and non-clinician version. After analysis of the data, we dichotomized the score at 60/61 as suggested by Bird and Gould to obtain a deviant group consisting of 25% of the sample (60 was included in the 'deviant' range, 61 in the 'non-deviant' range).

Statistical Analyses

To evaluate gender differences in predictor and outcome variables, we used chi-square tests with risk estimates for dichotomized variables (Tables 6.1a and 6.2a), and independent-samples t-tests for continuous variables (Tables 6.1b and 6.2b). Similar analyses were used to evaluate one-to-one associations between predictors and outcome measures (results are not presented). Predictors with significant ($p<.10$) associations with an outcome measure were then used in stepwise logistic regression analyses.

In the first analyses, significant factors were entered in one block. To optimally use our data, the resulting model was tested: elimination of variables reduced the number of missing variables, and therefore the number of excluded subjects (Table 6.3). To test gender and age differences, we included gender and age interactions with psychopathology measures in a second series of analyses. In these analyses, we entered all significant factors in a first block, and sex and age interactions with syndrome scores were introduced stepwise in a second block. Subsequently, we entered significant interactions and their primary factors (e.g., gender and Withdrawn) in a first block, followed by a stepwise second block containing factors contributing significantly in the former analyses. Since results were very similar, results are not presented separately.

Finally, a linear regression was used to investigate predictive factors for Impaired Global Functioning, including factors when significant ($p<.10$) in one-on-one associations, for the entire population, and for males and females separately (Table 6.4).

Results

Frequencies

Tables 6.2a and 6.2b show the frequencies of outcome measures, with results from statistical tests for gender differences. Females have higher incidence of self-harm or suicide attempt only. In males, outcomes with a behavioral component are more frequent (school problems, obtaining injuries, problems at work, alcohol and drugs abuse, and judicial contacts), they receive help more frequently, and more often dysfunction.

Tables 6.2a and 6.2b Distribution (% of non-missing) by gender of outcome variables (N=1,826, total response; females=608, males=1,218).

	Females		Males		Gender difference [A]	
OUTCOME MEASURES	yes	missing	yes	missing	χ^2 (p)	OR
Serious School Problems	3.8	3.8	10.1	4.7	21.6 (<.001)	2.9
School Dropout	3.0	.2	3.6	.3	n.s.	-
Serious Work Problems	3.3	19.9	6.1	24.6	5.2 (.023)	1.9
Injuries	19.9	4.3	27.9	4.8	13.3 (<.001)	1.6
Suicidal Ideation	13.8	5.1	11.2	6.0	n.s.	-
Self Harm	7.2	4.4	3.6	5.2	10.8 (.001)	2.1[F]
Outpatient Help	20.1	3.4	24.5	4.4	4.3 (.037)	1.3
Inpatient Help	4.8	3.4	8.5	4.4	8.1 (.005)	1.9
Help Wanted	40.1	4.1	44.1	4.8	n.s.	-
Alcohol Abuse	2.0	18.7	7.1	21.7	16.6 (<.001)	3.7
Drug Abuse	5.7	18.9	14.6	23.0	25.2 (<.001)	2.8
Police Contacts	2.9	2.6	11.9	1.9	40.1 (<.001)	4.6
Impaired Global Functioning	19.4	6.2	25.7	8.5	8.2 (.004)	1.4

[A] χ^2 = chi-square, OR = odds ratio, n.s. = non-significant; [F] = females score higher.

	Females		Males		
OUTCOME MEASURES 2	mean	sd	mean	sd	Gender difference
parental (c)gas[1]	73.9	16.7	71.0	17.0	F>M (p=.002)
self-report (c)gas	75.8	15.4	76.6	15.2	-
Impaired Global Functioning	74.4	15.6	72.5	16.0	F>M (p=.019)

[1] (c)gas = combined Global Assessment Scale (GAS, Endicott et al., 1976) and Children's Global Assessment Scale (CGAS, Shaffer et al., 1983).

Prediction of outcome

We investigated one-on-one associations between predictors and outcome measures (at p<.10, results are not presented), and then used significant predictors in logistic regression analyses to investigate predictability of outcome measures (Table 6.3). To test gender and age differences, we included gender and age interactions with syndrome scores in a second series of analyses. Results are not presented separately, because few differences were found apart from the interaction terms themselves. We found interactions for 8 out of 13 outcome variables.

For all outcome measures, T1 syndrome scores significantly contributed. Delinquent Behavior predicted poor outcome in 9 out of 13 measures, with the largest OR (3.9) for police contacts. Somatic Complaints at referral predicted less frequent inpatient care. Whereas few family factors contributed to the prediction of poor outcome, child factors did. Males were found more likely than females to function problematic at school or work, to more frequently obtain injuries, abuse alcohol and drugs, and commit offences. Age at intake and length of follow-up interval behaved similar in predicting outcome. Children older at intake and with longer follow-up intervals were predicted to have more school problems, for instance. For mental health care outcome, however, prediction was in the opposite direction: children younger at intake and with shorter follow-up periods were more likely to still receive help or want help. These children were also more likely to globally

dysfunction. Children without siblings were more likely to experience problems at school, but less likely to abuse alcohol than children from larger families.
For various outcomes, clues on their predictability have been found, and subgroups of children particularly at risk for that outcome may be identified.
Serious School Problems. Especially males with delinquent and aggressive behavior, and females with attention problems, being an only child and referred later in their youth, are at risk for being suspended or expelled from school.
School Dropout. Children with delinquent behavior, in special education, from lower socio-economic classes, and referred later in youth are more likely to drop out of school before, during or directly after primary school.
Serious Work Problems. Aggressive behavior in males with fathers with psychosocial problems, referred later in youth, and advised to have themselves admitted to inpatient mental health care are at risk. For this outcome event only part of the population could be used, since many had not had a job yet - either because of age or because of advanced learning (e.g., university).
Injuries. Especially males with delinquent behavior, and females with attention problems, are at risk for injuries.
Suicidal Ideation. Anxious or depressed children, showing delinquent behavior and having somatic complaints are at risk. These findings may indicate that these children have learned to express their anxiety or depressed feelings in inadequate coping styles.
Self Harm. At intake older children that are socially withdrawn are at risk. Results for prediction are poor. Part might be explained by the type of informant. For parents, as well as other caregivers, it may be difficult to see what emotional state causes withdrawn behavior and later self harm. However, analysis with parents and subjects as T1 informants did not improve our insight, since no significant results were found. Trends were for children reporting somatic complaints, withdrawn behavior, and thought problems to be at greater risk.
Outpatient Help. Previously admitted children that present at an earlier age with social and thought problems are more likely to (still) receive outpatient help, especially after shorter follow-up periods. With less time to improve, these children may be recognized as the ones most in need of (outpatient) help. This is consistent with findings by Verhulst and Van der Ende (1997). For children with aggressive behavior, first contact later in life reduces the risk at future outpatient mental health care.
Inpatient Help. Younger children with thought and attention problems, that have already received inpatient help and special education, from less stable families, are recognized as in need of further inpatient treatment, as can be concluded from the significant contribution from 'treatment advise'. Especially after shorter follow-up periods, these children actually receive residential treatment more frequently. Presenting with somatic complaints reduces the risk of inpatient psychiatric treatment.
Help Wanted. Children that present at an early age with social and thought problems, from special education schools, but without previously being admitted, that also show delinquent behavior are most likely to be judged to need help, especially if they come from families where another member (has) received mental health care and after shorter follow-up periods. For children with aggressive behavior, first contact later in life reduces the probability of them wanting help at follow-up.

Table 6.3 Odds ratios for prediction by risk factors in multiple logistic regression analyses: outcome variables as reported by the primary informant.

	Outcome												
Predicting factors	Serious School Problems	School Dropout	Serious Work Problems	Injuries	Suicidal Ideation	Self Harm	Outpatient Help	Inpatient Help	Help wanted	Alcohol Abuse	Drug Abuse	Police Contacts	Impaired Global Functioning
T1 PSYCHOPATHOLOGY													
Withdrawn						1.7					[i]		
Somatic Complaints					1.5			.53		[i]			
Anxious/Depressed					1.8								
Social Problems							1.6		1.3			[i]	1.5
Thought Problems							1.3	1.7	1.6				
Attention Problems	[i]			[i]				1.7					
Delinquent Behavior	2.4	2.5		1.3	1.6				1.5	2.5	2.0	3.9	1.4[i]
Aggressive Behavior	2.2		2.3				[i]		[i]			1.9	1.7
CHILD FACTORS													
gender	.33[i]		.48	.63[i]						.29	.33	.25	
age at intake	1.2	1.3	1.3			1.2	.89[i]	.85	.91[i]	[i]	1.1[i]	1.1[i]	.90[i]
only child	1.8									.22			
somatic disorder											.47		
special education		2.9						2.6	1.4				1.4
history of residential MHS[1] use							1.8	2.2					2.2
therapy advise after intake			1.8					2.2	1.5			1.5	
FAMILY FACTORS													
SES[2] at intake		.75											
change in family composition								1.5			1.6		
single parent												1.6	
psychosocial problems father			1.9									1.6	
MHS use in the family									1.8				
length of follow-up interval	1.2	1.2	1.1	1.1	1.1	1.1	.87	.90	.92	1.2	1.2	1.1	.90
INTERACTION	#			#			#		#	#	#	#	#

[1] MHS = mental health services; [2] SES = socio-economic status; # and [i] show interactions. Only significant effects are shown. Age at intake, length of follow-up interval, and SES were included as continuous factors.

Alcohol Abuse. Especially males showing delinquent behavior are, in time, most at risk for alcohol abuse. Being an only child is found to be a protective factor. For children with somatic complaints, first contact later in life increases the risk at future alcohol abuse.
Drug Abuse. Males from unstable families, presenting later in life with delinquent behavior are, in time, most at risk for drug abuse. Children with a somatic disorder, however, are found to be resilient. For withdrawn children, first contact earlier in life increases the risk at future drug abuse.
Police Contacts. Males from single parent families with paternal psychosocial problems presenting later in life with aggressive and delinquent behavior and advised inpatient treatment are, in time, most at risk for legal problems. For children with social problems, first contact later in life increases the probability of police contacts.
Impaired Global Functioning. Children presenting early in life with social problems, aggressive and delinquent behavior, that have previously been recognized to need help (either inpatient treatment or special education) are after shorter follow-up periods found to function most insufficiently. For children with delinquent behavior, impaired global functioning at follow-up is more likely if first contact was earlier in life.
When examining the contributing predictors for specific outcomes, some findings are especially interesting. For instance, suicidal ideation was not only predicted by internalizing problems (Somatic Complaints and Anxious/Depressed), but also by Delinquent Behavior. On the other hand, self-harm was only predicted by Withdrawn behavior, not giving any clues of further risk increasing emotions, cognitions or behaviors. Inpatient help was not only predicted by psychopathology, but also by help related factors, such as receiving special education, a history of MHS use, and a therapy advise indicating residential help.

Dimensional Impaired Global Functioning

In Table 6.4, results from linear regression analyses are presented for Impaired Global Functioning. Most syndromes were significant predictors. In contrast to the other syndromes, higher T1 scores for Anxious/ Depressed predicted better global functioning. A gender difference was found, but Aggressive Behavior, history of residential MHS use, and length of follow-up interval were predictors for males as well as females.

Discussion

This study aimed to assess, over an average period of 7.5 years, poor outcome events and factors that can predict future poor outcome in children referred for mental health services. Frequencies of poor outcome ranged from 2.0% (alcohol abuse in females) to 44.1% (help wanted in males). Results can not easily be compared to other outpatient samples, since their operationalizations were dissimilar. A global comparison on frequencies of some outcome measures could be made with data from a general population sample (Hofstra, Van der Ende, and Verhulst, submitted) for the young-adult group. In our referred population, we found in the young-adult group, for males and females respectively, with general population frequencies between brackets: deficient education 9.1% (3.6) and 5.5% (2.8), school or work problems 25.5% (1.6) and 6.4% (.5), self harm 6.8% (.3) and 11.8% (1.3), alcohol abuse 11.0% (10.0) and 8.7% (11.5), and judicial contacts 15.1% (.8) and 1.3% (.3). Receiving help (referred sample 12.2 and 16.3% versus general population sample 3.1 and 9.0% for males and females respectively) was less comparable, because time periods were dissimilar. In this study, we measured receiving help at the moment of follow-up, whereas Hofstra included a

Table 6.4 Results (beta) from prediction by risk factors in linear regression analyses: Impaired Global Functioning as a continuous measure.

	Impaired Global Functioning		
Predicting factors	All	Males	Females
T1 PSYCHOPATHOLOGY			
Withdrawn	-.059		-.145
Somatic Complaints			
Anxious/Depressed	.123	.133	
Social Problems	-.122	-.145	
Thought Problems	-.081	-.112	
Attention Problems			
Delinquent Behavior	-.081	-.155	
Aggressive Behavior	-.145	-.107	-.156
CHILD FACTORS			
gender	-.053		
age at intake		.122	
special education			-.103
history of residential MHS[1] use	-.129	-.129	-.153
therapy advise after intake	-.075		-.094
FAMILY FACTORS			
MHS use in the family	-.053		
length of follow-up interval	.140	.167	.096

[1] MHS = Mental Health Service.

period of 1 year prior to the moment of assessment. Differences, however, would be expected greater if similar time-periods could have been used.
Compared to a general population sample of similar age, young-adults in our sample fared considerably worse at follow-up for all outcome events except alcohol abuse. On alcohol abuse referred males differed little from general population males, and referred females abused alcohol considerably less often then general population females. Although surprising, this is consistent with previous findings. Zeitlin (1986), for instance, found less alcoholism in his index cases versus both controls and control cases. Nylander (1979) found alcohol offences for 23% of the males and for 3% of the females aged 16-21 years. Robins (1966) did not test results, but found excessive alcohol use in males and females referred for antisocial behavior (53 and 33%), other referrals (38 and 13%), and controls (29 and 14%). The larger numbers, and differences between Robins' antisocial and other subjects may in part be explained by the time frame and cross-cultural factors.
All events were predicted by emotional and behavioral problems (as scored with the CBCL at initial contact) with odds ratios ranging from 1.3 to 3.9. Inpatient mental health care was predicted by Somatic Complaints with an odds ratio of .53, indicating resilience: few children who scored deviant on this scale at intake were later admitted. Children with delinquent behavior not only improve the least over time (Heijmens Visser, Van der Ende, Koot, and Verhulst, in press), but they are most at risk in other domains than psychopathology as well, including school problems, injuries, suicidal ideation, wanting help, alcohol and drugs abuse, police contacts, and poor global functioning. Special attention for this group is therefore warranted.
The predictive strength of the length of follow-up combined with the age at intake suggest

that a mean follow-up period of 7.5 years is to short, which is consistent with Nylander (1979), and Curman and Nylander (1976). With most poor outcomes, prevalence is not at its peak. When a longer follow-up interval gives higher risks at poor outcome, the (former) patients with short follow-up intervals could still develop such poor outcome. Children younger at intake and with shorter follow-up periods receive and want help most, and function less well globally. This suggests that these children will decrease use of mental health care in the future, and may improve their global functioning. Robins found that improvement occurred most commonly between ages 30 and 40, and Nylander considered a follow-up period of 20 years adequate, with most entrances in poor outcome registers occurring before age 35.
Child related factors (such as gender, T1 age, being in special education, and having a history of mental health service use [MHS]) contributed to the prediction of poor outcome. Family related factors predicted little more.
Few gender differences were found by testing interactions. Females were predicted to have more serious school problems, and were more likely to obtain injuries than males if they had attention problems.

Clinical implications
High frequencies for future poor global functioning and poor outcome in other domains than psychopathology were found over a mean follow-up period of 7.5 years. Previously, we found stability and limited improvement of psychopathology. These findings show, in our view, that children referred to an outpatient psychiatric clinic in youth could and should be considered handicapped for a long period. Psychopathology is to be regarded a chronic disease, with implications for all involved: patients, parents, mental health workers, and policy makers. Short-term treatment may cure the crises in which children are referred, but may not be able to reduce the risk of future malfunctioning. This is consistent with Curman and Nylander (1976) who concluded that 'one of the essential findings was that a child guidance clinic clientele contains a large number of children who will need help and support for a very long time ahead'.

Limitations
This study was not designed to determine treatment effect, although most children in this sample were treated. Therefore, it is difficult to determine what part, if any, of the improvement is attributable to spontaneous recovery, treatment, or methodological effects. That the latter would be the only explaining factor is contradicted by consistent findings across different samples. This also indicates that results may be generalized to other populations, e.g., other outpatient clinics.
Most limitations of the present study are shared by similar studies: attrition bias, selection bias, a one-clinic sample, and a widely varying follow-up interval. Furthermore, only a limited number of predictive factors were assessed using standardized measures. Another limitation concerns the different operationalization and use of predicting factors as well as outcome measures across studies.

Chapter 7

General discussion

Chapter 7 General discussion

Outcome for children and adolescents referred to a university psychiatric outpatient clinic was investigated in several ways. Using multiple informants, we investigated continuity and change of psychopathology, dimensionally as well as categorically, and signs of maladaptation other than psychopathology (poor outcome events). We also investigated predictors of continuity, change, and maladaptation. The sample was divided into two groups, based on subject's age at follow-up. The younger ones, ages 4 through 18, form the youth group. The older group, ages 18 trough 31, are considered young-adults.

Response

Overall response was high (75%), compared to other studies using direct assessment strategies at follow-up. To evaluate the effect of nonparticipation we compared responders and non-responders on gender, age at intake, socio-economic status (SES, scored on a 9-step scale with 1 lowest and 9 highest, Netherlands Central Bureau of Statistics, 1993), Time 1 Internalizing, Externalizing, and Total Problem scores. In the overall sample, the only significant effect was for age: information was more often obtained on children younger at intake than on children older at intake. This is also reflected in the responses for the youth and young-adult group: 77.8% versus 68.9%, respectively). Possibly, this is due to the informant that was approached first. In the young-adult group, subjects were approached first (64.1% responded). Subjects were approached second (parents were asked to give their child the questionnaires) in the youth group (63.7% responded). Considering the similar responses for subjects in the two groups, age at follow-up does not seem to be the explanation for this difference in response. Since the age at follow-up is associated with the age at intake, it seems that not the age at intake but the informant is the limiting factor. Similarly, parents were first approached in the youth group (76.5% responded), and second (after permission was granted) in the young-adult group (85.8% responded). Again, responses for the same informant can be considered comparable, if one keeps in mind that granting permission to approach parents may have introduced a selection bias. Almost all subjects that gave permission participated in the study. This positive attitude may have influenced the parental response in a positive way.

To obtain information on more individuals, and to increase the overall response, parents in the young-adult group could have been approached directly. However, a 10% increase in response in the young-adult group would have resulted in an overall increase in response of only 3 percent to 78% (77.8 and 78.9, the first being the larger group).

In the younger study sample, response was 5.3% higher for males than females, whereas in the young-adult sample 8.1% more females than males responded. Again, this difference may in part be explained by the primary informant. Age is not an explanation, since in both age groups age at intake or follow-up did not differ significantly for males versus females. Mean ages at follow-up were 14.6 and 14.7 (youth), and 22.8 and 23.1 (young-adults), for males and females respectively. It is common knowledge that more boys than girls are referred for mental health services, which is usually explained by the lower 'tolerance' from their environment for similar behavior. This leads to the conclusion that parents may more readily report on (externalizing behavior in) boys. Furthermore, we found higher scores for boys than girls on externalizing behaviors at follow-up, increasing the likelihood of being reported upon. In the young-adult group, especially males with externalizing behavior (e.g.,

delinquency, aggressive behavior) may have refused to respond: young-adult responders had lower scores than non-responders on T1 Externalizing Behavior and Total Problems. This selection bias may have influenced our results in various ways. Based on our findings, it is most likely that continuity of externalizing problem behaviors would have been found to be even stronger, and higher frequencies of poor outcome would have been found. However, the magnitude of the influence on results of this relatively small group is expected to be small.

Follow-up interval

In the youth group, we found significant, though small, differences in continuity between longer and shorter follow-up intervals for especially Externalizing and Total Problem scores, indicating lower stabilities with longer intervals. Furthermore, length of follow-up was an additional predictor of Total Problem, Externalizing, Social Problem and Aggressive Behavior scores, shorter intervals predicting higher Time 2 scores. Longer follow-up intervals were associated with more improvement on all scales.

In the young-adult group, length of follow-up interval did not influence continuity or prediction of psychopathology consistently, nor did it influence change in psychopathology.

When investigating the total sample, we found the follow-up interval to influence poor outcome, indicating that the population has not fully developed: results indicate that, in time, more individuals will experience poor outcome events, such as problems at school or work, harming oneself, and alcohol or drug abuse. On the other hand, fewer individuals will receive - and want - help, or feel they are hampered in their global functioning. This is consistent with Robins (1966), who found improvement to occur most commonly between ages 30 and 40, and Nylander (1979), who considered a 20-year follow-up interval more adequate than a 10-year interval for a longitudinal study on a clinical sample, with most poor outcome occurrences before age 35. However, the before mentioned lack of significance of the follow-up interval in the young-adult group indicates that most changes (improvement or deterioration), as well as poor outcome events, will have already occurred. Therefore, we conclude that the follow-up period in the young-adult sample was sufficiently long for our purposes. Further follow-up of the youth sample is expected to reveal a development toward the findings in the young-adult sample.

Continuity

Dimensional continuity was investigated by computing Pearson correlations for continuous scores from the initial assessment (T1) with their counterparts at follow-up (T2), for instance T1 and T2 Aggressive Behavior. Categorical continuity, for deviant versus non-deviant scores, was investigated by computing odds ratios, indicating the risk of scoring deviant at both times on for instance Attention Problems. Intra-informant associations, i.e. using similar informants at both assessments (e.g., parents), were very consistent across the youth and young-adult samples. Dimensional continuity was generally medium to large judged by Cohen's (1988) criteria: correlations for broadband scores .31 to .62, for syndrome scores .22 to .61. Categorical continuity, using odds ratios, ranged for broadband scores from 3.2 to 9.3, for syndrome scores from 2.0 to 19.7. Inter-informant associations, i.e. using different types of informants at both assessments (e.g., parents initially, subjects at follow-up) were generally less strong then intra-informant associations. Not only the different informant in itself may influence the association, but also the fact that different informants observe psychopathology in different environments. With this in mind, teacher intra-informant results

seem even more remarkable, since chances are that at follow-up different teachers than at initial assessment have responded, and children most likely were in new classes.
Continuity was, across sub-samples, generally higher for externalizing scores than for internalizing scores. This underscores the conclusion by Ollendick and King (1994), who reported that although internalizing behavior is more persistent than once thought, externalizing behavior is even more persistent. On the other hand, stabilities for self-reported internalizing and externalizing behaviors differed little, suggesting comparable persistence at least in adolescence. This supports the conclusion by Koot (1995) that internalizing problems may be less stable than externalizing problems only in preschool and young schoolchildren. Results indicate strong continuity over a mean interval of 7.5 years. Entering adulthood does not influence this much, which in itself is a strong argument against the rather strict division around the age of 18 used in clinical practice and classification systems. In our opinion, the strong continuity has consequences for treatment and prevention programs as well. Short-term programs will help patients through the crisis at hand, but may neglect the possibly long-lasting vulnerability that was presented. Therefore, treatment and prevention programs need to be developed that focus on long-term effects as well.

Change

Change was also investigated dimensionally and categorically. Comparing continuous scores, referred children fared considerably worse at follow-up than a normative sample of similar age and gender, although an overall improvement on mean problem scores was found. Across informants, close to 65% of the children remained scoring deviant or non-deviant at both times for broadband as well as syndrome scores, indicating change - mostly from deviant to non-deviant - for only 30 to 40 percent.
In the young-adult sample, on broadband scores 61.5% of the initial (T1) high scorers still scored as deviant at follow-up (T2) according to parents and adolescents. This is very similar to the 63.0% found for parents and teachers in the youth sample. However, adolescents reported that 40.4% remained deviant when follow-up was in youth. For syndrome scores, 35.8% and 40.7% of the T1 high scorers scored as deviant at T2, for youth and young-adult sample respectively. Results were fairly similar for different types of psychopathology. These findings add to the continuity of psychopathology, but also provide some encouragement that initial problems may attenuate over time for children referred in childhood, a finding confirmed by the reported effects of the length of follow-up interval described above. However, findings by Robins (1966) and Nylander (1979) suggest that little further change is to be expected.
Improvement was found for all continuous emotional and behavioral problem scores, except for Delinquent Behavior, which is consistent with the well documented continuity of delinquency (e.g., Robins, 1966; Loeber and Farrington, 1994). However, compared to other syndrome scores, similar percentages of children turn from deviant to non-deviant, improving, or turn from non-deviant to deviant, worsening. Although this change was found for subgroups, continuous scores remained the same - in contrast with other syndromes. That the dimensional score does not change, may be explained by the fact that the children remaining delinquent progress from less serious to more serious forms of delinquent behavior and that the repertoire is expanded, as suggested by McMahon (1994). This results in higher scores for those individuals and comparable overall scores at initial and follow-up assessment.

Outcome

Outcome was evaluated for psychopathology, and other dimensions of functioning as well. Children referred to a psychiatric outpatient clinic scored higher than non-referred children on emotional and behavioral problems (broadband as well as syndrome scores), and the young-adult group scored more frequent than a non-referred sample on deficient education, school or work problems, self harm or suicide attempts, receiving help, and judicial contacts. Alcohol abuse was similar for referred and non-referred males, whereas non-referred females abused alcohol more often than referred females. The impression of the prevalence of poor outcome is that it is high, e.g., global functioning at follow-up was hampered in 19.4% of the females and in 25.7% of the males. Further comparison between our results and results from other referred or non-referred samples is difficult, due to operationalization differences across studies.

Results indicate that children referred to mental health services in childhood are at risk in multiple domains. Focusing treatment and prevention strategies on psychopathology only must therefore be considered an error of judgement. Programs need to be developed that focus on the prevention of future complications as well.

Prediction

Gender

For continuity, few gender differences were found, suggesting great similarity in the developmental course of problems in males and females. Gender differences that were found in the young-adult group stemmed from T1 teacher-reported problems. These always indicated higher continuity for females and were found on scores where T1 scores for boys were significantly higher. Together with comparable results from Verhulst and Van der Ende (1991), it can be concluded that problem behavior in girls, as reported by teachers, is relatively stable and deserves extra professional attention.

Across age groups, females were consistently predicted to score higher than males on Somatic Complaints and Anxious/Depressed at follow-up. Combined with the continuity found, these findings suggest a relative increase in internalizing problems for girls in general, with those who are most troubled early in life remaining most troubled later on.

In the young-adult group, gender independently predicted higher scores on Anxious/Depressed and Somatic Complaints scores for females, and on Withdrawn, Intrusive Behavior, and Delinquent Behavior for males. Combined with self-reported level of psychopathology being predicted by T1 self-reported Anxious/Depressed scores, these findings suggest that females generally express their worries and fears in emotions or complaints, whereas males more often keep them to themselves, or act them out.

Contrary to the young-adult sample, gender was a factor affecting change in the youth group, indicating that males improved more than females. This effect was mainly visible in the dimensional data. Two explanations with respect to methodological aspects are possible. Dimensional data as well as the larger sample sizes in the youth group may allow for more subtle effects to emerge. On the other hand, when considering the fact that referral rates are in youth higher for males, and in adulthood higher for females, it may indicate that this reversal takes effect before adulthood.

The 'gender-paradox' seems to indicate that girls must display higher levels of problem behaviors than boys to be referred to mental health services. However, data generally did not show higher T1 scores for females than for males. The explanation may be that females display similar amounts of symptoms more frequently or more seriously, and therefore form

a group especially at risk for poor outcome.
Independent of psychopathology, males are more at risk than females for serious school and work problems, injuries, alcohol- and drugs abuse, and police contacts. However, developmental pathways toward poor outcome are similar for all poor outcome measures, except: females were more at risk for serious school problems and injuries if they had attention problems.

Age at intake
In the youth group, children presenting with emotional and/or behavioral problems at a younger age developed more problem behaviors at follow-up than older children, and children older at intake improved more on most scales than younger children. Similar to the gender effect, this was not found in the young-adult group. This effect was visible in the dimensional as well as categorical data, but in the latter for parental intra-informant relations only. Here, the larger sample sizes in the youth group seem to allow for more subtle effects to emerge. This finding may indicate that psychopathology presenting earlier in life is more serious, or that psychopathology presenting itself later in life has less influence on development and therefore is more accessible to improvement over time.
For other domains of functioning, results showed that children younger at intake receive and want help most, and function less well globally. Children older at intake are more at risk for serious school and work problems, self-harm, drug abuse and police contacts. This may suggest that children younger at intake present with more overt psychopathology and hampered overall functioning, while children older at intake may be more likely to present themselves to mental health care with hampered functioning in other domains.

Psychopathology
For the entire sample, whether investigated dimensionally or categorically, specific predictive strength was found, i.e. T2 problem behaviors were mostly predicted by the same problem behaviors in earlier childhood or adolescence. Many analyses showed other syndrome scores to independently predict T2 syndromes, representing independent pathways to the outcome, but only a few seem consistent across age groups. Aggressive and delinquent behaviors seem related both ways: initial delinquency may develop into aggressive behavior and vice versa. On a categorical level, delinquency may also predict attention problems, and attention problems may result in later thought problems. These findings mean that independent pathways exist, e.g., delinquent as well as aggressive children can develop into children with delinquent behavior. For clinicians, these pathways may represent alternative focuses in preventive and therapeutic interventions. For example, developing and improving interventions to change the course and outcome of aggressive behavior may be especially challenging, considering strong continuity and community strain. Developing specific interventions for children displaying early aggressiveness, likely to develop delinquent behavior, seems profitable since these children may be more amenable to treatment than early delinquent children.
Children reported by their parents to have poor social relations were found to be especially at risk for developing emotional and behavioral problems, consistent with findings by Aumiller, Kramer, Leidinger, and Lempp (1981), and Stanger, MacDonald, McConaughy, and Achenbach (1996). This indicates that poor social functioning should be another important focus.
Our findings suggest different developmental pathways for youth with specific T1 problems.

Children with attention problems at initial assessment may still have attention problems at follow-up, but may also develop thought problems (multifinality, dispersion of outcomes) On the other hand, different initial problems (e.g., attention problems and thought problems) may lead to the same outcome (thought problems). This is called equifinality: diversity of pathways leading to similar outcomes.

Other predictors

Few child, family, and treatment related factors were found to have predictive value over and above earlier psychopathology, and their contribution to the prediction of outcome was generally small. This is consistent with findings by Robins (1966) and Zeitlin (1986). It may indicate that predictive factors mainly influence T1 problem behaviors, and that once problem behaviors exist, risk (and resilience) factors have little influence on the degree of change.

Across samples and psychopathology, the only consistent predictors were change in family composition during follow-up, and receiving inpatient care. The first predicted broadband internalizing and externalizing problems, as well as total problems, and from syndrome scores attention problems most consistently. Furthermore, it predicted inpatient mental health care and drug abuse. Changes in family composition may not cause specific psychopathological problems, but do seem to have an effect on the well-being of an individual in a broader sense. On multiple emotional and behavioral problems, children receiving inpatient treatment during follow-up fare worse later, indicating that those children receiving help at multiple points in time are probably the children with the most severe and most chronic problems. This is in agreement with Verhulst and Van der Ende (1997) who concluded that mental health professionals devote their time predominantly to children (and families) who need it most. Unfortunately, it also means that strategies to prevent or treat problems are far from adequate.

These results were mostly visible in the largest samples, i.e. when parent reported information was used at both assessments, indicating that a methodological explanation is possible for these findings, or lack thereof. Similarly, results found in the youth sample, but not in the young-adult sample may be explained by a lack of sensitivity. Alternatively, turning into adulthood may reduce the effect of predictors because of a different position in life.

Multiple Informants

Apart from supporting the validity of the diagnostic constructs, intra- and inter-informant results confirm the importance of obtaining data from multiple informants on different aspects of functioning. For instance, our results show that in adolescence subjects themselves are indispensable concerning information about their thoughts and feelings.

Inter-informant predictive power (CBCL/YASR) was relatively small compared to intra-informant relations. However, this inter-informant relation is of special interest, since it relates to clinical practice. In child and adolescent psychiatry the main informant is the parent, while in adult psychiatry the main informant is the subject him- or herself. The use of multiple informants is not common practice in adult psychiatry. The relatively strong CBCL/YABCL relations, and their specific information, may indicate an additional value of such informants in young-adulthood and may stress the importance of interviewing the partner or a relative. Results indicate a unique contribution of parental information in young adulthood, even though most young adults no longer lived at home.

Limitations of the Study

The main limitation of the present study, shared by similar studies, concerns the generalizability of findings. Although an overall response rate of 75.0% was reached, limited selective attrition was found. Parent-, self-, and teacher ratings were not obtained for all individuals. In the young-adult group, permission to approach parents was required, self-ratings on the present instruments can only be obtained from subjects over 10 years old, and for information from teachers we needed permission from parents and, over 10 years old, from subjects themselves. Information is therefore gathered from specific subgroups, which may introduce further selection bias. The widely varying follow-up interval, a one-clinic sample, different operationalizations and use of predictive factors across studies reduce comparability. Furthermore, only a limited number of predictive factors were assessed using standardized measures. On the other hand, findings form a Dutch general population sample and a U.S. outpatient sample are very similar, indicating limited effects from these limitations.

Another limitation to this study is that no standardized information from an 'expert' (e.g., a clinician) and no other psychopathology measures, such as a (standardized) DSM-classification, were obtained at follow-up. Though a considerable proportion may be expected to have one, the present study does not include a formal psychiatric diagnosis at follow-up. Such data could provide further information on the validity of results, and could have clinically significant implications.

The present study was not designed to determine treatment effect, although most children in this sample were treated. To determine what part, if any, of change and reduction of continuity is attributable to spontaneous recovery, treatment, or methodological and statistical effects, is difficult. That the latter would be the only explaining factor is contradicted by consistent findings across sub-group studies, a Dutch general population sample, and a U.S. outpatient sample.

In evaluating psychopathology at follow-up, the present study is limited in that only recent behavior (past 6 months) is measured. No information about the course of psychopathology is at hand. Such information may be important, because children referred to an outpatient psychiatric clinic may be expected to be in some kind of crisis. Case-record information and the limited number of individuals on which multiple CBCL's were available during follow-up, lead us to believe that individuals may function at a specific personal level of psychopathology, to which they return after a crisis. How strong they react to a crisis-inducing factor, or what such a factor might be, may also be highly individual. However, we do not know about our present data what time in life is reported upon. The large number of subjects is expected to reduce the effect of children in crisis or functioning extremely well for their personal level, but information on these groups may add to our knowledge.

Finally, this thesis did not report on domains of social behavior, such as self-care, civic sense, relationships with family, partner, and friends, and daily activities.

Clinical and Research Implications

The similar findings in referred and non-referred samples suggest similar developmental courses of problem behavior for different populations of children and stress the importance of recognition and referral of troubled children, and of developing clinically effective treatment programs. Furthermore, these results suggest that preventive intervention programs (e.g., school or community-based) may be useful for preventing psychopathology. The studies on referred samples lead to conclusions with regard to continuity and change of

psychopathology, and poor outcome, and have clinical implications as well. Results show strong continuity of psychopathology in children and adolescents who were referred for outpatient mental health services. Although at average referred children show a change for the better, their levels of psychopathology tend to remain high. Furthermore, children are at risk of being hampered in multiple domains of functioning, as well as overall functioning. In our opinion this is a strong argument for viewing different forms of psychopathology, such as withdrawn, anxious/depressed, delinquent and aggressive behavior, as chronic conditions. This is of consequence for all those involved: patients, parents, mental health workers, researchers, and policy makers.

For patients and their family, findings may indicate a need to adjust family functioning to a long lasting 'disease', but they also indicate some hope for improvement. Although specific problems may persist, for a significant number of patients adjustment into satisfactory adult functioning can be achieved.

Mental health workers may experience the need to focus even more on helping patients and their family getting adjusted to the new circumstances, and learning to accept and live with the handicap than to try to 'cure the patient of the disease'.

For researchers many old and new questions emerge, that need to be answered. How can problems be prevented to occur? Is early detection by screening (for instance at school) profitable? Does clinical therapy work? How can current preventive and therapeutic interventions be improved?

Finally, policy makers will have to adjust their management in child and adolescent psychiatry toward providing care for the chronically ill. A focus on short-term therapies only is ill advised, and more should be invested in providing long-term care.

Future Research

Since reproducing results is the only way to promote findings to a form of commonly accepted truth, similar studies are needed: prospective follow-up studies for psychiatric outpatient populations. Future studies would preferably use fixed follow-up periods (for instance 5 years), or might approach former patients at a fixed age - to increase within group comparability. Multiple assessment points in time may shed light on the theory of individual levels of psychopathology, and can identify specific groups most at risk for impaired functioning: those scoring high at all assessments. Follow-up passed the 35 to 40 year point could present information on the further development of former child or adolescent psychiatric patients.

Future studies should investigate domains of social functioning, and the relationship across time between standardized measures of psychopathology, such as used in this study, and measures related to the classification systems used in clinical practice.

To increase response, especially in an older sample, one could consider approaching parents first. Still, results indicate that it is worthwhile to use multiple informants at all assessments, since each informant may provide specific information. Furthermore, studies are needed to investigate the 'multiple informant contribution'.

Other studies that are needed to increase our knowledge on developmental psychopathology are studies on inpatient populations, preferably using a similar design, and prevention and treatment effect studies.

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Summary

Summary

The primary objective of the present study was to investigate the longitudinal course of a broad range of psychopathology, and the factors influencing this course, in children and adolescents referred to a mental health institution. In **Chapter 1**, the background and the main goals of the thesis study were presented. These goals were to investigate in a longitudinal study, across informants: (1) the long-term outcome of a broad range of child psychopathology, (2) the associations between demographic variables and the course of child psychopathology, and (3) the contribution of other determinants in predicting poor outcome.

In **Chapter 2**, the continuity of psychopathology in children and adolescents referred to mental health services was tested. After a mean interval of 6.2 years, follow-up information was obtained for 1,652 children, aged 4 to 18 years at initial assessment. Problem scores derived from Child Behavior Checklist, Youth Self-Report, and Teacher's Report Form at initial assessment were related to scores on the same instruments at follow-up. Correlations between initial and corresponding follow-up problem scores averaged .41 intra-informant (range .22-.61) and .22 inter-informant (range -.09-.57). Stabilities were similar across gender, and larger for Externalizing versus Internalizing scores, except on youths' self-reports. Psychopathology scores at follow-up were predicted by corresponding T1 scores. Girls were predicted to have higher Somatic Complaints, Anxious/Depressed, Thought Problems, and Internalizing scores than boys at follow-up. Children younger at intake were predicted to have higher follow-up scores than older children on Social and Attention Problems. Findings indicate continuity of specific behavioral and emotional problems in clinically referred children and adolescents.

In **Chapter 3**, predictors of psychopathology in young adults referred to mental health services in childhood or adolescence were investigated. After a mean interval of 10.5 years, follow-up information was obtained for 789 young-adults, aged 4 to 18 years at initial assessment. Scores derived from the Child Behavior Checklist, Youth Self-Report and Teacher's Report Form were related to equivalent scores for young adults from the Young Adult Self-Report and Young Adult Behavior Checklist. Correlations between initial and follow-up scores were .12-.53. Young adult psychopathology was predicted by corresponding problem scores at initial assessment. Social Problems and Anxious/Depressed scores were found to be predictors of general problem behavior. Problem behavior of children and adolescents referred to outpatient mental health services was highly predictive of similar problem behavior at young adulthood. Stability was higher for externalizing than for internalizing behavior and for intra-informant than for inter-informant information. Stabilities were similar across gender. Our findings suggest that to obtain a comprehensive picture of the young adult's functioning, information from related adults may prove valuable.

In **Chapter 4**, we investigated change and the prediction of change in psychopathology in youth referred to mental health services in childhood or adolescence, using the same population and instruments as in chapter 2. Subjects at follow-up scored significantly above the expected mean norm scores, although for most scores improvement was found. The strongest predicting factor for psychopathology at follow-up was the corresponding initial score, odds ratios ranging from 1.6 to 21.7. Males and children older at intake improved more than females and younger children, respectively. Few child, family, and treatment related factors had additional predictive value over and above earlier psychopathology, and

their contribution to the prediction of outcome was small. Findings indicate continuity of behavioral and emotional problems in clinically referred children and adolescents, and that these problems should be viewed as chronic conditions. Girls referred for behavioral and emotional problems may form a group especially at risk for poor outcome.

In **Chapter 5**, we investigated change and the prediction of change in psychopathology in young adults referred to mental health services in childhood or adolescence, using the same population and instruments as in chapter 3. Compared to a normative sample, subjects fared considerably worse as young-adults at follow-up, although an overall improvement on mean problem scores was found. At follow-up, levels of delinquent behavior were still high. For broadband and syndrome scores respectively, across informants 62% and 41% of the children remained scoring deviant. Generally, the strongest predicting factor for psychopathology at follow-up was the corresponding initial score, odds ratios ranging from .9 to 15.6. Few child, family, and treatment-related factors were found to have consistent predictive value over and above earlier psychopathology, and their contribution to the prediction of outcome was mostly small. Gender was not a factor affecting change into adulthood. Conduct problems in adulthood were predicted by childhood attention problems. Findings indicate continuity of behavioral and emotional problems in clinically referred children and adolescents, and that these problems should be viewed as chronic conditions. Our findings suggest that treatment programs for aggressive behavior should include treatment of attention problems. Young children with delinquent behavior may form a group especially at risk for poor outcome.

In **Chapter 6**, we investigated the prediction of poor outcome in individuals referred to mental health services in childhood or adolescence. For 1,826 children, aged 4 to 18 years at initial assessment, parents completed the Child Behavior Checklist. Parents and subjects completed questionnaires at follow-up. Frequencies of poor outcome ranged from 2.0% (alcohol abuse in females) to 44.1% (help wanted in males). Young-adults in our sample fared considerably worse at follow-up than a comparable general population sample for all outcome events except alcohol abuse. Poor outcome was predicted by emotional and behavioral problems, with odds ratios ranging from 1.3 to 3.9. Child related factors (e.g., gender, age, being in special education, and previous mental health service use) contributed to the prediction of poor outcome. Family related factors predicted little more. High frequencies for future poor outcome and poor global functioning were found. With the stability and limited improvement of psychopathology found in chapters 2 to 5, findings show that psychopathology is to be regarded as a chronic disease, with implications for all involved. Short-term treatment may cure the crises in which children are referred, but may not reduce the risk of future malfunctioning.

In **Chapter 7**, the main findings and conclusions of the present study were summarized and discussed. Strong continuity in referred children was found for a broad range of psychopathology, over a mean interval of 7.5 years. Referred children fared considerably worse at follow-up than a normative sample of similar age and gender, although an overall improvement on mean problem scores was found - with an exception for delinquent behavior. The prevalence of poor outcome was high, and the young-adult group scored more frequent than a non-referred sample on all comparable outcome measures, except alcohol abuse. Entering adulthood did not influence results much, which in itself is a strong argument against the rather strict division around the age of 18 used in clinical practice and classification systems.

In predicting future psychopathology, few gender differences were found, suggesting great similarity in the developmental course of problems in males and females. Results for the age

at intake indicate that psychopathology presenting earlier in life is more serious, or that psychopathology presenting itself later in life has less influence on development and therefore is more accessible to improvement over time. Few child, family, and treatment related factors were found to have predictive value over and above earlier psychopathology, and their contribution to the prediction of outcome was generally small.
Specific predictive strength was found, i.e. problem behaviors at follow-up were mostly predicted by the same problem behaviors in earlier childhood or adolescence. Many analyses showed other syndrome scores to independently predict T2 syndromes, representing independent pathways to the outcome, but only a few seem consistent across age-groups, e.g., aggressive and delinquent behavior seem related both ways: initial delinquency may develop into aggressive behavior and vice versa.
For clinicians, these pathways may represent alternative focuses in preventive and therapeutic interventions. For example, developing and improving interventions to change the course and outcome of aggressive behavior may be especially challenging, considering strong continuity and community strain. Developing specific interventions for children displaying early aggressiveness, likely to develop delinquent behavior, seems profitable since these children may be more amenable to treatment than early delinquent children. Children reported by their parents to have poor social relations were found to be especially at risk for developing emotional and behavioral problems: poor social functioning should be another important focus.
Strong continuity of psychopathology indicates that whereas short-term intervention programs can help patients through the crisis at hand, they may neglect the possibly long-lasting vulnerability that was presented. Therefore, treatment and prevention programs need to be developed that focus on long-term effects. Furthermore, results indicate that children referred to mental health services in childhood are at risk in multiple domains. Focusing treatment and prevention strategies on psychopathology only must be considered an error of judgement. Programs need to be developed that focus on the prevention of future complications.
Intra- and inter-informant results confirm the importance of obtaining data from multiple informants on different aspects of functioning. In child and adolescent psychiatry the main informant is the parent, while in adult psychiatry the main informant is the subject him- or herself. The use of multiple informants should be common practice in adult psychiatry as well as in child and adolescent psychiatry.
The similar findings in referred and non-referred samples suggest similar developmental courses of problem behavior for different populations of children and stress the importance of recognition and referral of troubled children, and of developing clinically effective treatment programs. Furthermore, these results suggest that preventive intervention programs (e.g., school or community-based) may be useful for preventing psychopathology.
Finally, we conclude that different forms of psychopathology, such as withdrawn, anxious/depressed, delinquent and aggressive behavior, should be viewed as chronic conditions. This is of consequence for all those involved: patients, parents, mental health workers, researchers, and policy makers.

Samenvatting

Samenvatting

De belangrijkste doelstelling van dit onderzoek was het bestuderen van het beloop van een breed scala aan psychopathologie en de factoren die dit beloop beïnvloeden bij kinderen en adolescenten die verwezen zijn naar een instelling voor geestelijke gezondheidszorg. In **Hoofdstuk 1** werden de achtergronden en de vraagstellingen van het onderzoek beschreven. Het doel van dit onderzoek was om met informatie van verschillende informanten in een longitudinale studie te onderzoeken: (1) de lange termijn prognose van een breed scala aan psychopathologie bij kinderen; (2) de relatie tussen demografische variabelen en het beloop van psychopathologie bij kinderen en (3) de bijdrage van andere determinanten in het voorspellen van een ongunstig beloop.
In **Hoofdstuk 2** werd de continuïteit onderzocht van psychopathologie bij kinderen en adolescenten die werden aangemeld bij een instelling voor geestelijke gezondheidszorg. Na een gemiddelde periode van 6.2 jaar werd follow-up informatie verzameld over 1652 kinderen, die bij aanmelding (initiële meting) een leeftijd hadden van 4 tot en met 18 jaar. Child Behavior Checklist (CBCL), Youth Self-Report (YSR) en Teacher's Report Form (TRF) scores verkregen bij initiële meting werden vergeleken met scores behaald op dezelfde instrumenten bij follow-up. Correlaties tussen de initiële en follow-up scores waren gemiddeld .41 wanneer gebruik werd gemaakt van dezelfde informant (range .22-.61) en gemiddeld .22 wanneer de informatie werd verkregen van verschillende informanten (range -.09-.57). De mate van stabiliteit van psychopathologie was onafhankelijk van geslacht en groter voor externaliserend dan voor internaliserend gedrag, dit met uitzondering van zelf gerapporteerd probleemgedrag. Psychopathologie scores ten tijde van de follow-up werden voorspeld door de overeenkomstige scores bij initiële meting (T1). Voor meisjes werden bij follow-up hogere scores voorspeld dan voor jongens op Lichamelijke Klachten, Angstig/Depressief, Denkproblemen en Internaliserend gedrag. Voor kinderen die jonger waren toen ze werden aangemeld werden bij follow-up hogere scores voorspeld op Sociale Problemen en Aandachtsproblemen dan voor kinderen die ouder waren ten tijde van de aanmelding. De resultaten wijzen op continuïteit van specifieke gedrags- en emotionele problemen bij naar een instelling verwezen kinderen.
In **Hoofdstuk 3** werden factoren onderzocht die psychopathologie voorspellen bij jongvolwassenen die als kind of adolescent werden verwezen naar een instelling voor geestelijke gezondheidszorg. Na een gemiddelde periode van 10.5 jaar werd follow-up informatie verzameld over 789 jongvolwassenen die tussen de 4 en 18 jaar waren bij aanmelding. Scores op de CBCL, YSR en TRF verkregen bij initiële meting werden gerelateerd aan vergelijkbare scores verkregen via de Young Adult Self-Report (YASR) en Young Adult Behavior Checklist (YABCL) bij follow-up.
Correlaties tussen de initiële en follow-up scores lagen tussen de .12 en .53. Psychopathologie bij jongvolwassenen was te voorspellen uit de overeenkomstige schaalscores die werden verkregen bij initiële meting. Scores op Sociale Problemen en Angstig/Depressief waren voorspellers van probleemgedrag in het algemeen. Probleemgedrag van verwezen kinderen en adolescenten was een sterke voorspeller van soortgelijk probleemgedrag in de jongvolwassenheid. De mate van stabiliteit was groter voor externaliserend dan voor internaliserend gedrag en voor informatie verkregen van dezelfde informant dan via verschillende informanten. De mate van stabiliteit was niet afhankelijk van geslacht. De resultaten wijzen er op dat informatie van betrokken volwassenen waardevol is om een zo'n volledig mogelijk beeld te krijgen van het functioneren van een jongvolwassene.

In **Hoofdstuk 4** werden verandering en de voorspellers van verandering van psychopathologie onderzocht bij jongeren die in hun kindertijd of tijdens de adolescentie werden verwezen naar een instelling voor geestelijke gezondheidszorg. In dit hoofdstuk werd gebruik gemaakt van dezelfde populatie en instrumenten als in hoofdstuk 2. Deelnemers scoorden bij follow-up significant boven de verwachte gemiddelde normscore, alhoewel er voor de meeste scores wel verbetering te zien was. De belangrijkste voorspeller van de aanwezigheid van psychopathologie bij follow-up was de overeenkomstige schaalscore bij initiële meting. Odds ratio's varieerden daarbij van 1.6 tot 21.7. Mannelijke deelnemers en kinderen die ouder waren bij initiële meting verbeterden meer dan vrouwelijke deelnemers en kinderen die jonger waren bij initiële meting. Er waren weinig kind-, gezin-, en aan behandeling gerelateerde factoren die, als rekening werd gehouden met eerdere psychopathologie, een voorspellende waarde hadden en hun bijdrage was gering. De resultaten wijzen op continuïteit van gedrags- en emotionele problemen bij verwezen kinderen en adolescenten. Deze problemen dienen gezien te worden als chronische aandoeningen. Meisjes die worden verwezen voor emotionele en gedragsproblemen vormen een groep die met name risico loopt op een ongunstig beloop.
In **Hoofdstuk 5** werden verandering en de voorspellers van verandering van psychopathologie onderzocht bij jongvolwassenen die in hun kindertijd of tijdens de adolescentie werden verwezen naar een instelling voor geestelijke gezondheidszorg. In dit hoofdstuk werd gebruik gemaakt van dezelfde populatie en instrumenten als in hoofdstuk 3. Vergeleken met een uit de algemene bevolking afkomstige normgroep functioneerden deze jongvolwassenen beduidend slechter bij follow-up, alhoewel er wel een algehele verbetering op de verschillende probleemscores te zien was. Bij follow-up was de mate van delinquent gedrag nog steeds hoog. Op brede band- en syndroomscores scoorden, gemiddeld over de verschillende informanten, respectievelijk 62% en 41% van de deelnemers nog steeds in het klinische gebied. De sterkste voorspeller van psychopathologie bij follow-up was over het algemeen de overeenkomstige score bij initiële meting (odds ratio's tussen .9 en 15.6). Er waren weinig kind-, gezin-, en aan behandeling gerelateerde factoren die, als rekening werd gehouden met eerdere psychopathologie, een voorspellende waarde hadden en hun bijdrage was gering. De factor geslacht speelde geen rol bij het beloop van psychopathologie naar de volwassenheid. Aandachtsproblemen in de kindertijd waren een voorspeller van gedragsproblemen in de volwassenheid. De resultaten wijzen op continuïteit van gedrags- en emotionele problemen bij verwezen kinderen en adolescenten. Deze problemen moeten gezien worden als chronische aandoeningen. Verder wijzen de resultaten er op dat behandelingsprogramma's voor agressief gedrag zich ook moeten richten op de behandeling van aandachtsproblemen. Met name jonge kinderen met delinquent gedrag vormen een groep die het risico loopt op een ongunstig beloop.
In **Hoofdstuk 6** werd de voorspelbaarheid van een ongunstig beloop onderzocht bij personen die in hun kindertijd of tijdens de adolescentie verwezen werden naar een instelling voor geestelijke gezondheidszorg. De ouders van 1826 kinderen in de leeftijd van 4 tot en met 18 jaar vulden bij initiële meting de CBCL in, terwijl zowel de ouders als de kinderen bij follow-up vragenlijsten invulden. Frequenties van maten van slecht functioneren varieerden van 2% (alcohol misbruik bij vrouwen) tot 44.1% (het willen van hulp bij mannen). De jongvolwassenen uit de onderzoeksgroep functioneerden beduidend slechter ten tijde van de follow-up dan een vergelijkbare, uit de algemene bevolking afkomstige groep. Dit gold voor alle uitkomstmaten met uitzondering van alcohol misbruik. Disfunctioneren werd voorspeld door emotionele en gedragsproblemen, waarbij de odds ratio's lagen tussen de

1.3 en 3.9. Kindgerelateerde factoren (bijvoorbeeld geslacht, leeftijd, het volgen van speciaal onderwijs en eerdere verwijzing naar een instelling voor geestelijke gezondheidszorg) hadden een aandeel in het voorspellen van disfunctioneren. De bijdrage van gezinsfactoren was gering. Hoge frequenties van toekomstig disfunctioneren werden gevonden. Gezien de stabiliteit van psychopathologie en de beperkte verbetering, zoals die gevonden werd in de hoofdstukken 2 tot en met 5, moet psychopathologie gezien worden als een chronische ziekte. Dit heeft consequenties voor alle betrokkenen. Kortdurende behandeling kan wellicht de crisis verhelpen tijdens welke kinderen zijn verwezen, maar vermindert mogelijk niet het risico van toekomstig disfunctioneren.

In **Hoofdstuk 7** werden de belangrijkste bevindingen en conclusies van het onderzoek samengevat en besproken. Sterke continuïteit van een breed scala aan psychopathologie werd gevonden voor verwezen kinderen, na een gemiddelde periode van 7.5 jaar. Met de deelnemers aan het onderzoek ging het bij follow-up aanzienlijk slechter dan met een qua leeftijd en geslacht vergelijkbare groep kinderen uit de algemene bevolking, alhoewel er voor de gemiddelde probleemscores globaal wel een verbetering werd gevonden - behalve op delinquent gedrag. Het vóórkomen van disfunctioneren was hoog en de jongvolwassenen groep scoorde aanmerkelijk hoger dan een niet verwezen groep op alle maten van disfunctioneren behalve alcoholmisbruik. Het bereiken van de volwassen leeftijd was van weinig invloed op de resultaten. Dit pleit sterk tegen de strikte scheiding bij de leeftijd van 18 jaar die in de klinische praktijk en in bekende classificatiesystemen wordt gehanteerd.

Er werden bij het voorspellen van toekomstige psychopathologie weinig geslachtsverschillen gevonden, wat een sterke overeenkomst suggereert tussen de ontwikkeling van emotionele en gedragsproblemen bij mannen en vrouwen. Gegevens met betrekking tot de leeftijd bij het initiële contact suggereren dat psychopathologie die zich op jonge leeftijd openbaart ernstiger is of dat psychopathologie die zich op latere leeftijd openbaart minder impact heeft op de ontwikkeling en daardoor toegankelijker is voor verbetering in de tijd. Er werden weinig kind-, gezin-, en aan behandeling gerelateerde factoren gevonden die een voorspellende waarde hadden als rekening werd gehouden met eerdere psychopathologie en de bijdrage was over het algemeen gering. Specifieke predictieve kracht werd gevonden, wat betekent dat emotionele en gedragsproblemen vooral werden voorspeld door eerder in de jeugd gevonden overeenkomstig probleemgedrag. In veel analyses werden andere schalen gevonden die een onafhankelijke bijdrage leverden aan de voorspelling van probleemschalen bij follow-up. Deze geven verschillende ontwikkelingspaden van psychopathologie weer. Slechts enkele waren consistent voor de verschillende leeftijdsgroepen. Een voorbeeld was de relatie tussen agressief en delinquent gedrag: kinderen met in eerste instantie delinquent gedrag kunnen agressief gedrag ontwikkelen en andersom.

Voor clinici kunnen deze ontwikkelingspaden verschillende aangrijpingspunten voor preventieve en behandelingsprogramma's betekenen. Zo lijkt bijvoorbeeld het ontwikkelen en verbeteren van interventies om het beloop en de prognose van agressief gedrag te veranderen een grote uitdaging vanwege de sterke continuïteit en de belasting voor de maatschappij. Verder lijkt het zinvol specifieke interventies te ontwikkelen voor kinderen die op jonge leeftijd agressief gedrag laten zien en die kans lopen op het ontwikkelen van delinquent gedrag, omdat zij mogelijk meer toegankelijk zijn voor behandeling dan kinderen die al jong delinquent gedrag laten zien.

Een ander belangrijk aangrijpingspunt zou problemen in het sociaal functioneren moeten zijn, want voor kinderen waarvan de ouders meldden dat er sprake was van problemen met

sociale contacten werd een verhoogd risico op het ontwikkelen van emotionele en gedragsproblemen gevonden.
De sterke continuïteit van psychopathologie die in dit onderzoek werd gevonden geeft aan dat kortdurende behandeling wellicht de aanwezige crisis kan verhelpen, maar dat zij misschien de mogelijk levenslange kwetsbaarheid die werd ontdekt verwaarloost. Daarom zullen er behandelings- en preventieprogramma's ontwikkeld moeten worden die zich richten op de lange termijn.
Daarnaast wijzen de resultaten er op dat kinderen die zijn verwezen naar een instelling voor geestelijke gezondheidszorg in hun jeugd risico's lopen op verschillende terreinen. Het is derhalve onjuist om behandeling en preventie uitsluitend te richten op de psychopathologie. Programma's moeten zich tevens richten op het voorkomen van toekomstige complicaties.
Intra-informant en inter-informant gegevens bevestigen het belang van het gebruik van meerdere informanten met betrekking tot verschillende aspecten van functioneren. In de kinder- en jeugdpsychiatrie is de ouder de belangrijkste informant, terwijl in de volwassenenpsychiatrie de betrokkene zelf de belangrijkste informant is. Het gebruik van meerdere informanten zou een vanzelfsprekendheid moeten zijn zowel in de volwassenen- als in de kinder- en jeugdpsychiatrie.
De vergelijkbare resultaten bij verwezen en niet-verwezen groepen wijzen in de richting van een zelfde ontwikkeling van probleemgedrag in verschillende populaties en benadrukken het belang van onderkenning en verwijzing van kinderen met emotionele en gedragsproblemen.
Tenslotte kan geconcludeerd worden dat verschillende vormen van psychopathologie, zoals bijvoorbeeld teruggetrokken gedrag, angstig/depressief gedrag, delinquent en agressief gedrag, gezien moeten worden als chronisch. Dit heeft consequenties voor alle betrokkenen: de patiënten zelf, de ouders, hulpverleners, onderzoekers en beleidsmakers.

Dankwoord

Dankwoord

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Curriculum Vitae

Curriculum Vitae

Jeroen Heijmens Visser werd geboren op 24 augustus 1965 te Heesch, Noord-Brabant. In 1983 behaalde hij het VWO-diploma (Atheneum B) aan het Titus Brandsma Lyceum te Oss. In hetzelfde jaar begon hij met de studie Geneeskunde aan de Rijks Universiteit te Utrecht, alwaar hij het artsexamen behaalde in 1992. Tijdens deze studie liep hij een stage sportgeneeskunde en een extra-curriculaire stage bij de Afdeling Kinder- en Jeugdpsychiatrie van het Academisch Ziekenhuis te Utrecht, waar hij tevens meewerkte aan onderzoek: een follow-up van schoolfobie patiënten (H. v. Andel, kinderpsychiater in opleiding) en de ontwikkeling van de Nederlandse versie van de Kiddy Formal Thought Disorder Rating Scale (R.J. v.d. Gaag, chef de clinique van de afdeling kinderpsychiatrie). Van september 1992 tot februari 1994 was hij als dienstplichtig arts en voor enkele maanden als kort-verband-vrijwilliger (KVV-er) in dienst bij de Afdeling Individuele Hulpverlening van de Landmacht. Aansluitend was hij als assistent geneeskundige niet in opleiding (AGNIO) kinder- en jeugdpsychiatrie werkzaam bij RIAGG Noordhage in Den Haag (supervisor R. Agema, zenuwarts).
In mei 1994 kwam hij als assistent geneeskundige in opleiding tot klinisch onderzoeker (AGIKO) kinder- en jeugdpsychiatrie in dienst bij het Academisch Ziekenhuis te Rotterdam. Het onderzoeksdeel vond plaats op de Afdeling Kinder- en Jeugdpsychiatrie van het Sophia Kinderziekenhuis (hoofd: Prof. dr. F.C. Verhulst): in een (deels) prospectief opgezet follow-up onderzoek bij de polikliniekpopulatie van de afdeling Kinder- en Jeugdpsychiatrie van Sophia Kinderziekenhuis te Rotterdam werden de patiënten, die in de periode van juni 1982 tot februari 1995 werden aangemeld benaderd. De resultaten zijn in dit proefschrift beschreven.
De basisopleiding psychiatrie volgde hij bij de Afdeling Psychiatrie van het Dijkzigt (hoofd: Prof. dr. M.W. Hengeveld). Momenteel is hij werkzaam als assistent geneeskundige in opleiding (AGIO) psychiatrie bij RIAGG Rijnmond Zuid (opleider: A.A. de Groot, psychiater). De registratie als psychiater vindt plaats in november 2002. Per 1 januari 2003 zal hij beginnen aan de opleiding tot kinder- en jeugdpsychiater bij de Afdeling Kinder- en Jeugdpsychiatrie van het Erasmus Medisch Centrum - Sophia (hoofd: Prof. dr. F.C. Verhulst).
Na een actieve carrière als hockeyer, met als hoogtepunten onder meer selectie voor het Zuid-Nederlands elftal in het seizoen '82-'83 en hoofdklasse zaalhockey, volgt hij momenteel de opleiding tot trainer/coach A en is hij samen met Frans Looyen aangesteld als trainer/coach van het eerste dameselftal van hockeyclub Rapid te Gorinchem.