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The Zurich long-term outcome study of child and adolescent psychiatric disorders in males

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ABSTRACT

Background. Within the framework of developmental psychopathology the outcome of male former child and adolescent psychiatric patients at age 36 or 38 was studied in order to add to the limited knowledge in this field.

Methods. A total of 269 former child psychiatric patients of male sex and a control group of more than 2700 men, who were all born in 1952, were compared with regard to mortality, delinquency and adult psychiatric disorders. The study was based on case-file data from assessments conducted with the child and adolescent psychiatric patients and on adults, derived from either federal registers (mortality, delinquency) or army health records and records of the psychiatric facilities of the canton. The study is based on lifetime prevalence rates.

Results. The two samples did not differ with regard to mortality rates. Delinquency tended to be more prevalent and psychiatric disorders were significantly more prevalent among the former child psychiatric patients. Close to 10% of the latter group showed major delinquency, one-quarter was psychiatrically disturbed and 30% displayed one of these two indicators or maladjustment at least once during the follow-up period. A correspondence in pattern of varying between child and adult psychiatric spectrum disorders was observed. Whereas the type of child and adolescent psychiatric disorders did not predict adult maladjustment, there was some indication that deprived environments, broken homes and parental psychiatric disorders during childhood increased the likelihood of poor adult outcome.

Conclusions. This study clearly underlines the long-term negative effects of child and adolescent mental abnormalities in males.

INTRODUCTION

The rather recently established field of developmental psychopathology has made good use of epidemiological approaches, especially where both cross-sectional and, in particular, longitudinal strategies were used to identify trends or patterns in both development and psychopathology, for example, age trends in prevalence or remission of specific disorders or in the effects of psychiatric risk factors (Rutter, 1988). A well-known study of this kind involves a 1955 birth cohort on the Hawaiian island of Kauai. This longitudinal study was conducted from birth to the age of 32 years, and the results of the study revealed that the relative impact of risk and protective factors changes from one life phase to the next (Werner & Smith, 1982; Werner, 1989). Other more recent epidemiological studies (in the Netherlands (Ferdinand & Verhulst, 1995) and the USA (Achenbach *et al*. 1995)) with a longitudinal approach investigated the stability of behavioural and emotional problems from adolescence into young adulthood by means of a checklist.

Besides epidemiological surveys, other types of longitudinal studies have provided insight into the long-term outcome of child psychiatric

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disorders. A vast number of studies have kept track of distinct groups of patients who had received specific, clearly defined clinical diagnoses. Among a large number of studies, the assessment of childhood and adolescent depression by a British group of investigators (Harrington *et al.* 1990, 1991, 1994) is notable both because of the extended follow-up periods and the new insights into the course of a child disorder that has received more scientific attention only in the recent past. Other long-term outcome studies have dealt with hyperkinetic disorders (Klein & Mannuzza, 1991), obsessive–compulsive disorders (Thomsen, 1994), pervasive developmental disorder (Gillberg, 1991) and schizophrenia (Eggers, 1978; Howells & Guirguis, 1984; Gillberg *et al.* 1993).

In addition to follow-up studies of homogenous groups of patients classified as having a single disorder, there is a long-standing tradition of studying course and outcome in heterogeneous cohorts of former patients who had consulted and/or been treated in special institutions. Such studies are usually 'catch-up' investigations, in which existing data from the past is incorporated into a prospective design by connecting old file-data with follow-up examinations. The classical investigation by Robins (1966) provides a good example of such a study. In this study, a consecutive series of more than 500 former clients who had attended a child guidance clinic in St Louis in the 1920s was followed-up into the 1950s using both direct examination (i.e. psychiatric interview) and official registers (e.g. social agencies, police records and mental health records). A more recent example is the study by Zeitlin (1986) of adult Maudsley Hospital patients who had attended the same institution as children.

There is a long-standing tradition in Scandinavia to make use of official registers for research purposes. In this tradition, various authors (Otto & Otto, 1978; Nylander, 1979; Östman, 1991) studied large cohorts of children who had attended child guidance clinics in Sweden. These studies included data from medical records, judicial, police, or criminal records and social welfare records. Similarly, two more recent Danish studies (Larsen *et al.* 1990; Thomsen, 1990) reported on the course of former child psychiatric clientele over periods of up to 30 years. These studies, too, provide important insight into the rates of subsequent adult psychiatric admissions, criminal offences, traffic violations, mortality and the association between child and adult psychiatric diagnoses.

Similar issues were also investigated in the Zurich longitudinal study with the aim of expanding our limited knowledge on the long-term outcome of children with psychiatric disorders. More specifically, the aim was to study the long-term outcome in terms of mortality, delinquency, adult psychiatric disorders, correspondences of child and adolescent disorders and prediction of adult outcome of male former child psychiatric patients.

METHOD

Samples

The Zurich Longitudinal Outcome Study (ZLOS) of a cohort of males born in 1952 is a combined follow-up/follow-back (catch-up) study. All 1952-born male former child and adolescent patients of the Child and Adolescent Psychiatric Service (CAPS) of the Canton of Zurich ($N = 364$) were retrospectively traced with regard to their file data. The main data base originates from the entire cohort of > 6000 males subjects who were born in 1952 and who in 1971 were conscripted in the Canton of Zurich, Switzerland into the Swiss army. The conscripts responded to questionnaires that were designed by one of us (J.A.) and dealt with personal and demographic data, substance use, and personality dimensions. Whereas half of the subjects responded anonymously to research questionnaires, the other half gave their names and, thus, could be followed up repeatedly. It has been shown in previous analyses that the two subsamples did not differ remarkably as regards sociodemographic data, personality dimensions, and substance use (Angst & Clayton, 1986). The present sample represents the overlap between the cohort of the conscripts who were followed up and the former child psychiatric patients. However, among the former child psychiatric patients a total of $N = 95$ subjects had to be excluded: (*a*) because they resided in areas outside of the Canton of Zurich ($N = 49$); or (*b*) because they were not recruited for army service due to mental retardation ($N = 48$), or severe physical handicap ($N = 3$). There were five cases in which more than one of these exclusion criteria applied.

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The core group that was investigated for long-term development consisted of 269 former child psychiatric patients who had been treated between 1955 and 1970. Age at the time of assessment ranged from 3 to 18 years (mean age = 9·6; S.D. = 3·2) with 80% of the cases being seen between 1958 and 1964, i.e. from between the ages of 6 and 12 years. The sample probably represents almost the entire cohort of all 1952-born male child psychiatric patients in the area, because in addition to the service, there were only two child psychiatrists who were starting to work in private practice in 1966. All follow-up data were collected until the age of 36 and 38 years, respective of the type of data collected. Accordingly, follow-up periods ranged from 18 to 35 years. In addition, data of control participants ($N = 2788$) of the longitudinal study who did not attend the CAPS were used for comparative purposes.

Procedure

Two different sources of data were used in this study: (1) psychiatric case-file data from assessments conducted during childhood and adolescence; and (2) adult data including mortality, delinquency, and psychiatric disorders, which were collected up to age 38 for mortality and age 36 for delinquency and psychiatric disorders as part of the Zurich Longitudinal Outcome Study.

The case-file data from the 1952-born cohort of former child and adolescent psychiatric patients were retrospectively translated into numerical data by using a standardized item sheet that included questions pertaining to sociodemographic and personal data, child's history, psychiatric symptoms and treatment. This retrospective documentation was done by five postgraduate psychology and medical clinical staff members who were thoroughly instructed and, of course, blind to the adulthood data of the patients. Reliability of data was checked in the following way. The senior author co-rated five files of each of the five postgraduates who were responsible for the data collection of the entire series of former child psychiatric patients. Discrepancies in ratings were discussed until a consensus was arrived at. This procedure also served as a training measure, although all assessors had at least 3 years of clinical experience.

Because of the limited sample size, only spectrum disorders with proven validity were used in the present study. The latter were attributed to each case by the senior author and were based on the distribution of psychiatric symptoms. The following diagnostic categories were considered: (*a*) internalizing disorders (e.g. anxiety or affective disorders); (*b*) externalizing disorders (hyperkinetic or conduct disorders); (*c*) mixed internalizing and externalizing disorders; (*d*) developmental disorders (speech delay); (*e*) miscellaneous disorders (e.g. enuresis, tics, somatization disorders); and (*f*) subclinical cases not meeting the threshold for a clinical diagnosis that served as a control group. The senior author was blind to the adulthood data when he attributed spectrum disorders to each case.

In addition, three abnormal psychosocial situations in childhood were coded according to the multiaxial classification of child psychiatric disorders (World Health Organization, 1988): deprived environment in terms of a lack of warmth in parent-child relationship or institutional upbringing; a broken home, as indicated by the divorce of the parents; and parental psychiatric disorders. The average kappa values for pairs of raters were 0·60 for psychiatric symptoms and 0·78 for psychosocial situations.

Delinquency records and adult psychiatric data used in this study refer to lifetime prevalence from the age of 15 or conscription at 19, respectively, until age 36. The mortality and delinquency data came from the Swiss Federal Register. Delinquency was classified into major and minor offences. The category of major delinquency included arson, receiving, extortion, fraud, theft, robbery, embezzlement, sexual offences, professional drug dealing, use of firearms, wrongful deprivation of personal liberty, forgery/counterfeiting, manslaughter, aggravated assault and bombing. Minor delinquent acts included traffic violations, violation of military law, drug possession and minor dealing, and minor general offences. Delinquency data were available for the entire cohort of former child psychiatric patients ($N = 269$) until the age of 36 years and for the control group ($N = 2788$) until the age of 34 years.

The adult psychiatric data came from two sources – (*a*) all of the in-patient and out-patient

records of the psychiatric facilities in the Canton of Zurich and (*b*) the Swiss Army health records from conscription to the age of 36. All records were re-diagnosed, and the consensus diagnoses were made by two experienced clinicians and researchers according to the Research Diagnostic Criteria (RDC) (Angst & Clayton, 1986). Again, because of the limited sample size, the following second-order diagnoses were formed on the basis of RDC diagnoses: (*a*) internalizing disorders, including affective and anxiety disorders; (*b*) externalizing disorders, including sociopathy, alcoholism and drug abuse – in addition, the diagnosis of sexual delinquency based on the criminal records was included; and, (*c*) somatization disorders. Adult psychiatric diagnoses were made blindly to childhood diagnoses. Using the two sources, a total of 214 subjects of former child psychiatric patients could be re-identified. Systematic comparisons of child psychiatric data revealed that this subsample was representative for the entire sample of 269 subjects. The sample size of the control group was slightly reduced to 2724 subjects.

Besides mortality, three criteria were ultimately defined in order to evaluate the long-term outcome of the subjects: (*a*) registered major delinquency; (*b*) psychiatric disorders, and; (*c*) maladjustment, which is composed of major delinquency and/or psychiatric disorders.

Statistical methods

Group comparisons were either performed by *t* tests or χ^2 tests. The risk of the criteria outcome, i.e. mortality and the first registered delinquent act was examined via survival analyses and the log-rank statistic (SPSS, 1993). Unfortunately, the data on age at onset of adult psychiatric disorders were not consistently documented in the records so that no survival analysis could be performed for psychiatric disorders. Furthermore, logistic regression analyses and odds ratios were computed.

RESULTS

Demographic data

There were no data on social class distribution. However, paternal occupation ratings (classified as high, medium, or low) showed no significant differences among the two samples. In contrast, the proportion of separated and divorced parents was significantly higher among the former child psychiatric patients than the controls (20·3% *v.* 8·0%, $P < 0{\cdot}0001$). Furthermore, the proportion of former child psychiatric patients who attended secondary schools was significantly lower than in the controls (30·4% *v.* 52·4%, $P < 0{\cdot}0001$).

Mortality

The mortality rate at age 38 was 7/269 or 2·6% in the former child psychiatric patients and 66/2724 or 2·7% in the controls. There were no statistically significant differences between the two samples in the survival analysis. Three of the former child psychiatric patients (0·01%) and 17 of the controls (0·006%) died by suicide. This difference was also of no statistical significance.

Delinquency

The prevalence rate for any delinquent act was 57/269 or 21·2% in the former child psychiatric patients, whereas it was 546/2724 or 20·0% in the controls. Whereas these lifetime prevalence rates for the total of minor and major delinquency were strikingly similar, there was a trend ($P = 0{\cdot}09$) in the survival analysis for major delinquency to be more common among former child psychiatric patients, as shown in Fig. 1.

Psychiatric disorders

A comparison of primary RDC-diagnoses and second-order diagnoses revealed several statistically significant differences between the former child psychiatric patients and the controls. As Table 1 shows, in adulthood the former patients had a higher frequency with regard to the diagnoses of sociopathy, drug dependency, sexual delinquency and somatization disorders. Using a Bonferroni adjustment of the *P* value, the differences between former child psychiatric patients and controls for drug dependency and somatization disorders are not significant anymore. As a consequence, the rates for externalizing disorders and general psychopathology, as indicated by any psychiatric disorder, were significantly elevated for those who had been diagnosed and treated for psychiatric disorders in childhood. Interestingly, there were no significant differences between the groups for

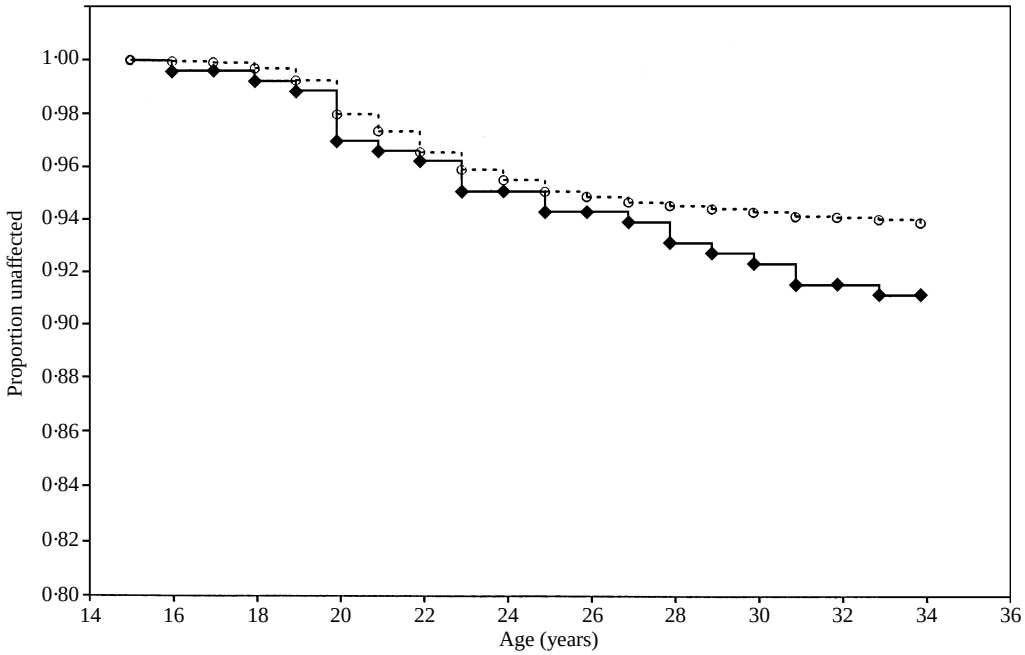

FIG. 1. Survival analysis of major delinquency for former child and adolescent psychiatric patients (◆——◆) and controls (○– – –○).

Table 1. *RDC-diagnoses and secondary diagnoses in adults*

	Former child psychiatric patients ($N = 214$)		Controls ($N = 2724$)			
	N	%	*N*	%	χ^2	*P*
Schizophrenia	1	0·5	12	0·4	0	NS
Reactive depression	1	0·5	27	1·0	0·58	NS
Secondary depression	0	0	20	0·7	1·58	NS
Bipolar disorder	0	0	13	0·5	1·03	NS
Unipolar disorder	8	3·7	78	2·9	0·53	NS
Phobias	2	0·9	59	2·2	1·48	NS
Neuroses	7	3·3	63	2·3	0·78	NS
Sociopathy	15	7·0	32	1·2	42·90	< 0·00001
Alcoholism	6	2·8	48	1·8	1·19	NS
Drug dependency	9	4·2	51	1·9	5·40	0·02
Somatization disorders	22	10·3	163	6·0	6·20	0·01
Sexual delinquency	7	3·3	21	0·8	13·14	0·0003
Internalizing disorders	16	7·5	183	6·7	0·18	NS
Externalizing disorders	26	12·1	128	4·7	22·17	< 0·00001
Mixed int./ext. disorders	1	0·5	45	1·7	1·80	NS
Any psychiatric disorder	52	24·3	376	13·9	17·56	0·00003

the rates of schizophrenia, the various affective disorders, phobias, or neuroses, and as a consequence, no significant differences were found for the second-order class of internalizing disorders.

Comparison of outcome criteria

When the three outcome criteria were compared, it became obvious that the rates of major delinquency, psychiatric disorders and mal-

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adjustment were all significantly higher among male former child psychiatric patients as compared to the controls (see Table 2). Close to 10% of the former group showed major delinquency, one quarter of the subjects were psychiatrically disturbed, and close to 30% displayed one of these two indicators of maladjustment at least once during the follow-up period.

Table 2. *Comparison of outcome criteria in adulthood*

	Former child psychiatric patients ($N = 214$)		Controls ($N = 2724$)			
	N	%	*N*	%	χ^2	*P*
Major delinquency	26	9·7	160	5·7	6·62	0·01
Psychiatric disorder	52	24·3	376	13·8	17·56	0·00003
Maladjustment	63	29·4	483	17·7	17·98	0·00002

Correspondence between child and adult psychiatric disorders

Table 3 shows the findings on the correspondence between second-order diagnoses as obtained both in childhood and in adulthood. Two cases were not included in Table 3: one patient had an internalizing disorder in childhood that developed into a mixed disorder in adulthood and one patient had one of the miscellaneous disorders in childhood and became schizophrenic as an adult. The odds ratios included in Table 3 indicate that only the internalizing disorders in childhood had a significant association with internalizing disorders in adulthood.

Table 3. *Correspondence between second-order child and adult psychiatric disorders*

	Diagnoses in adulthood ($N = 50$)*								
	Internalizing disorder ($N = 16$)			Externalizing disorder ($N = 26$)			Somatization disorders ($N = 22$)		
Diagnoses in childhood ($N = 214$)	*N*	OR	95% CI	*N*	OR	95% CI	*N*	OR	95% CI
Internalizing disorders ($N = 45$)	9	5·79	2·02–16·56	3	0·45	0·13–1·58	3	0·56	0·16–2·00
Externalizing disorders ($N = 38$)	2	0·64	0·14–2·95	4	0·82	0·27–2·54	3	0·71	0·20–2·53
Mixed internalizing and externalizing disorders ($N = 32$)	2	0·80	0·17–3·70	7	2·40	0·92–6·30	4	1·30	0·41–4·13
Developmental disorders ($N = 30$)	1	0·39	0·05–3·05	3	0·78	0·22–2·77	3	0·96	0·27–3·48
Miscellaneous disorders ($N = 46$)	1	0·23	0·03–1·76	5	0·85	0·30–2·40	6	1·43	0·52–3·88
Subclinical cases (controls) ($N = 23$)	1	0·53	0·07–4·24	4	1·62	0·50–5·19	3	1·36	0·37–5·00

OR = odds ratios (95% confidence intervals).
* The diagnoses are not mutually exclusive.

Table 4. *Prediction of adult outcome criteria by abnormal psychosocial circumstances in childhood*

Abnormal psychosocial circumstances in childhood	Major delinquency ($N = 26$)		Psychiatric disorder ($N = 52$)		Maladjustment ($N = 63$)	
	N	%	*N*	%	*N*	%
Deprived environment						
Absent	18	7·8	42	22·3	50	26·6
Present	8	21·8**	10	38·5†	13	50·0**
Broken home						
Absent	16	8·2	36	22·2	43	26·5
Present	9	15·5†	14	31·1	18	40·0†
Missing data	1		2		2	
Parental psychiatric disorder						
Absent	17	9·1	30	20·5	37	25·3
Present	9	10·8	22	32·4†	26	38·2*

† $P < 0·10$; * $P < 0·05$; ** $P < 0·01$.

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Table 5. *The relation between abnormal psychosocial circumstances in childhood and general maladjustment in adulthood* (N = 209)

	Maladjustment			
	Absent		Present	
	N	%	*N*	%
Abnormal psychosocial circumstances				
Absent	85	76·6	26	23·4
Present	62	63·3	36	36·7

$\chi^2 = 4{\cdot}42$, df = 1, $P = 0{\cdot}035$.

Prediction of adult outcome criteria

There were no significant associations of the various categories of child psychiatric disorders with all three types of adult outcome criteria. In contrast, the three indicators of abnormal psychosocial circumstances in childhood showed some significant associations with the outcome criteria, as shown in Table 4. Deprived environments in childhood were significantly associated with major delinquency and maladjustment and it also tended to be associated with psychiatric disorder in adulthood. The relationship between broken home in childhood and adult outcome was less strong, as indicated by two significant tendencies. Parental psychiatric disorder had a significant association with maladjustment, whereas the relationship with psychiatric disorder in the adult only tended to be significant. When the three indicators of abnormal psychosocial circumstances in childhood were combined in an either/or fashion, there was a significant correlation with maladjustment in adulthood, as shown in Table 5. Boys exposed to these abnormal psychosocial circumstances and who were treated for a range of psychiatric disorders had a higher likelihood of becoming maladjusted adult men. Additional logistic regression analyses using the three variable of abnormal psychosocial circumstances to predict the three outcome parameters revealed that deprived environment significantly predicted delinquency (OR = 3·52, $P = 0{\cdot}008$) and maladjustment (OR = 2·51, $P = 0{\cdot}03$), whereas parental psychiatric disorder significantly predicted psychiatric disorder (OR = 1·96, $P = 0{\cdot}05$). Additional analyses revealed that these significant associations were not confounded by the following variables: divorced or separated parents, institutional upbringing during childhood, and major delinquency during adolescence. None of these variables contributed significantly to the logistic regression analyses. However, in each logistic regression the classification of cases was poor.

DISCUSSION

This long-term outcome study of male child psychiatric service attendees has some unique features. It is based on a relatively large cohort that represents not a single clinical entity but, rather, a wide spectrum of various mental health problems in childhood. Further unique features include the extended follow-up period and the inclusion of a large control group from the same area. The measures at follow-up include complete records on mortality and delinquency and a fairly complete data set on psychiatric disorders.

However, some limitations have to be acknowledged, too. First, due to the sampling procedures based on conscription lists for the army, no female former child psychiatric patients are included. Secondly, psychiatric data in adulthood are based on a fairly complete data set of all diagnoses made by psychiatric institutions of the Canton of Zurich. There is no information on the psychiatric life trajectory of former child psychiatric patients who moved to other parts of the country and/or were diagnosed in either private practice or outside the Canton of Zurich as being mentally ill. Thus, psychiatric follow-up data represents a conservative estimation because of the lack of a federal register of the State for psychiatric disorders. This does not apply to the mortality and delinquency data. Being based on a federal register, these data sets are fairly exhaustive in the light of the fact that in general, there is a very low rate of migration in the Swiss population. A further limitation stems from the quality of the original child psychiatric case files. In general, description of clinical data was more restricted than is currently the case. In an era of almost non-existent scientific debate on issues of classification and strong reliance on local schools of thought, there was very little congruence between traditional diagnoses in the files and our contemporary understanding of classification of child psychiatric disorders. In the light of these more

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general problems of work with retrospective data collection, it was decided to use only a relatively broad scheme of second-order diagnoses instead of a fine-grained system of diagnostic categories. Finally, there was a small number of subjects ($N = 5$) among the total cohort of 269 subjects in whom the coexistence of an externalizing disorder and the delinquency data in adolescence might have resulted in some confusion between the dependent and independent variables.

Despite these limitations, our findings are noteworthy considering that there are very few comparative research findings on the long-term outcome of child psychiatric patients. Although our findings show that there was no difference in mortality rate in the two samples and that there was only a tendency for major delinquency to be more frequent among the former child psychiatric patients, the analysis of psychiatric data in adulthood shows that these male former child psychiatric patients fared less well in adulthood than the controls. Corresponding to the tendency for a higher rate of major delinquency, a higher rate of psychopathology in adulthood was mainly found for externalizing disorders such as sociopathy, drug dependency and sexual delinquency. Whereas one out of four of the former child psychiatric patients up to the age of 36 years developed a major adult psychiatric disorder, there were also 3 in 10 who became either delinquent or mentally ill. These rates were clearly higher than in the controls.

The finding of overall psychiatric disorder can be put into perspective by a comparison with a few other recent long-term outcome studies that have a similar approach. In Uppsala (Sweden), Östman (1991) observed lifetime prevalence rates of 21% for delinquency and 32% for psychiatric disorders in former child psychiatric clinic attendees at the age of 33 to 37 years. In a 30-year follow-up study of Danish child psychiatric clientele, Larsen *et al*. (1990) reported that 30% of the former child patients had committed criminal offences and that 36% had later been admitted to an adult psychiatric service. In the two studies by Östman (1991) and Larsen (1990), both sexes were included so that the higher rates of psychiatric disorders in adulthood as compared to the present study are clearly explained by the higher psychiatric morbidity in women. The study by Thomsen (1990) in Denmark reported that male, former child psychiatric patients, who had been in psychiatric care between 1970 and 1972, had a nine-fold higher rate of admission to a psychiatric hospital as an adult in-patient than would be expected in the general population. Nylander (1979), in his 20-year follow-up study of former Stockholm child guidance clinic cases who were discharged from 1953 to 1955, found that 23% of the boys had entries of one or more offences in the criminal registers and 41% had sought psychiatric care in adulthood. Like the present study, all studies concur by documenting that the long-term outcome of child psychiatric patients, especially in males, is unfavourable.

The findings of the present study on continuities and discontinuities in spectrum psychopathology between childhood and adult life showed both types of development. Our findings of a significant continuity of internalizing disorders is in accordance with the current knowledge on the long-term outcome of depressed and anxious children, as summarized in a recent review by Rutter (1995). In contrast, we found no continuity for child and adult externalizing disorders, which is partly in contrast with the well-established link between conduct disorders in childhood and adult antisocial personality disorders (Robins, 1966; Rutter, 1995). However, our findings are based on relatively small numbers of specific types of second-order diagnoses.

In general, the type of diagnosis in childhood was not a predictor of adult outcome. This finding is consistent with previous studies (Cantwell & Baker, 1989; Lundy *et al*. 1993) and lends further support of the more recent ideas that not only conduct disorders but also internalizing disorders and specifically mixed disorders in childhood imply that a similar proportion of children will continue to be maladjusted adults. Furthermore, our findings on three further subsamples of children with developmental, miscellaneous and subclinical disorders do suggest that abnormality *per se* and male sex may be the relevant prognostic factors. However, certain abnormal psychosocial circumstances in childhood were also shown to have some influence on the long-term outcome of our patients. The likelihood of having a poor outcome in adult life was significantly increased if either deprived environments or a broken

home or a parental psychiatric disorder was present. Whereas the effect of these abnormal psychosocial circumstances on the origin of child psychiatric disorders is well documented, the present finding adds to current knowledge by demonstrating their effects in maintaining the persistence of maladjustment across the span of life. However, this conclusion is based on the assumption that no bias of recording abnormal psychosocial circumstances in the case files was present. The instances noted in case files may represent either the most severely abnormal circumstances or the work of the most diligent assessor who took greatest care to record these characteristics.

Further insights into the links between abnormal child and adult development will certainly come from prospective studies of large cohorts of child psychiatric patients that should include an analysis of the long-term benefits and costs of different types of intervention, which was not possible in the present study.

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REFERENCES

Achenbach, T. M., Howell, C. T., McConaughy, S. H. & Stanger, C. (1995). Six-year predictors of problems in a national sample. III. Transitions to young adult syndromes. *Journal of the American Academy of Child and Adolescent Psychiatry* **34**, 658–669.

Angst, J. & Clayton, P. (1986). Premorbid personality of depressive, bipolar, and schizophrenic patients with special reference to suicidal issues. *Comprehensive Psychiatry* **27**, 511–532.

Cantwell, D. P. & Baker, L. (1989). Stability and natural history of DSM-III childhood diagnoses. *Journal of the American Academy of Child and Adolescent Psychiatry* **28**, 691–700.

Eggers, C. (1978). Course and prognosis of childhood schizophrenia. *Journal of Autism and Childhood Schizophrenia* **8**, 21–36.

Ferdinand, R. F. & Verhulst, F. C. (1995). Psychopathology from adolescence into young adulthood: an 8-year follow-up study. *American Journal of Psychiatry* **152**, 1586–1594.

Gillberg, C. (1991). Outcome in autism and autistic-like conditions. *Journal of the American Academy of Child and Adolescent Psychiatry* **30**, 375–382.

Gillberg, I. C., Hellgren, L. & Gillberg, C. (1993). Psychotic disorders diagnosed in adolescence. Outcome at age 30 years. *Journal of Child Psychology and Psychiatry* **34**, 1173–1185.

Harrington, R., Fudge, H., Rutter, M., Pickles, A. & Hill, J. (1990). Adult outcomes of childhood and adolescent depression. *Archives of General Psychiatry* **47**, 465–473.

Harrington, R., Fudge, H., Rutter, M., Pickles, A. & Hill, J. (1991). Adult outcomes of childhood and adolescent depression. II. Links with antisocial disorders. *Journal of the American Academy of Child and Adolescent Psychiatry* **30**, 434–439.

Harrington, R., Bredenkamp, D., Groothues, C., Rutter, M., Fudge, H. & Pickles, A. (1994). Adult outcomes of childhood and adolescent depression. III. Links with suicidal behaviours. *Journal of Child Psychology and Psychiatry* **35**, 1309–1319.

Howells, J. G. & Guirguis, W. R. (1984). Childhood schizophrenia 20 years later. *Archives of General Psychiatry* **41**, 123–128.

Klein, R. G. & Mannuzza, S. (1991). Long-term outcome of hyperactive children: review. *Journal of the American Academy of Child and Adolescent Psychiatry* **30**, 383–387.

Larsen, F. W., Dahl, V. & Hallum, E. (1990). A 30-year follow-up study of a child psychiatric clientele. I. Demographic description. *Acta Psychiatrica Scandinavica* **81**, 39–45.

Lundy, M. S., Pfohl, B. M. & Kuperman, S. (1993). Adult criminality among formerly hospitalized child psychiatric patients. *Journal of the American Academy of Child and Adolescent Psychiatry* **32**, 568–576.

Nylander, I. (1979). A 20-year prospective follow-up study of 2164 cases at the child guidance clinics in Stockholm. *Acta Paediatrica Scandinavica* (suppl. 276), 1–45.

Östman, O. (1991). Child and adolescent psychiatric patients in adulthood. *Acta Psychiatrica Scandinavica* **84**, 40–45.

Otto, G. & Otto, U. (1978). Prognosis in child psychiatry. A follow-up study of a youth clientele. *Acta Psychiatrica Scandinavica* (suppl. 273), 5–61.

Robins, L. (1966). *Deviant Children Grown Up*. Williams & Wilkins: Baltimore.

Rutter, M. (1988). Epidemiological approaches to developmental psychopathology. *Archives of General Psychiatry* **45**, 486–495.

Rutter, M. (1995). Relationships between mental disorders in childhood and adulthood. *Acta Psychiatrica Scandinavica* **91**, 73–85.

SPSS (1993). *SPSS – Statistical Package for the Social Sciences. (Version 6.0.1 ed.)*. SPSS: Chicago.

Thomsen, P. H. (1990). The prognosis in early adulthood of child psychiatric patients: a case register study in Denmark. *Acta Psychiatrica Scandinavica* **81**, 89–93.

Thomsen, P. H. (1994). Obsessive–compulsive disorder in children and adolescents. A 6–22 year follow-up study. Clinical descriptions of the course and continuity of obsessive–compulsive symptomatology. *European Child and Adolescent Psychiatry* **3**, 82–96.

Werner, E. E. (1989). High-risk children in young adulthood – a longitudinal study from birth to 32 years. *American Journal of Orthopsychiatry* **59**, 72–81.

Werner, E. E. & Smith, R. S. (1982). *Vulnerable but Invincible. A Longitudinal Study of Resilient Children and Youth*. McGraw-Hill Book Company: New York.

World Health Organization (1988). *Draft Multi-axial Classification of Child Psychiatric Disorders. Axis 5: Associated Abnormal Psychosocial Situations. MNH/PRO/86.1, Revision 1*. World Health Organization: Geneva.

Zeitlin, H. (1986). *The Natural History of Psychiatric Disorders in Children*. Oxford University Press: New York.