

Adolescents' self-reported problems as predictors of psychopathology in adulthood: 10-year follow-up study[†]

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Background Knowledge of the course of psychopathology from adolescence into adulthood is needed to answer questions concerning origins and prognosis of psychopathology across a wide age range.

Aims To investigate the 10-year course and predictive value of self-reported problems in adolescence in relation to psychopathology in adulthood.

Method Subjects from the general population, aged 11–19 years, were assessed with the Youth Self-Report (YSR) at initial assessment, and with the Young Adult Self-Report (YASR), the Composite International Diagnostic Interview (CIDI) and three sections of the Diagnostic Interview Schedule (DIS) 10 years later.

Results Of the subjects with deviant YSR total problem scores, 23% (males) and 22% (females) had deviant YASR total problem scores at follow-up. Subjects with initial deviant YSR total problem, internalising and externalising scores had higher prevalences of DSM–IV diagnoses at follow-up.

Conclusions Adolescent problems tended to persist into adulthood to a moderate degree. High rates of problems during adolescence are risk factors for psychiatric disorders in adulthood.

Declaration of interest Financially supported by grant number 002827230 from the Health Research and Development Council, The Netherlands (Zorgonderzoek, Nederland).

Knowledge of the course of psychopathology from adolescence into adulthood is indispensable for answering questions regarding the origins of adult psychopathology as well as questions concerning the prognosis of psychopathology across a wide age range. Among longitudinal studies of relations between adolescent and later psychopathology in general population samples, three pertained to a broad range of psychopathology: the Dunedin study, New Zealand (Feehan *et al*, 1993); the national sample study, USA (Achenbach *et al*, 1995b); and the Zuid-Holland study, The Netherlands (Ferdinand & Verhulst, 1995). It was found that the stability of problems from adolescence into young adulthood ranged from moderate to high. However, these studies did not extend beyond young adulthood, and did not allow determination of the continuity and change of psychopathology from adolescence into adulthood.

The aims of the present study were to determine the 10-year course and predictive value of self-reported problems in adolescents from the general population. Participants were initially aged 11–19 years and were 21–30 years old at follow-up.

METHOD

Sample and procedure

The original sample consisted of children aged 4–16 years, drawn in 1983 from the Dutch province of Zuid-Holland. Using municipal registers that list all residents, a random sample of 100 children of each gender and each year cohort with Dutch nationality was drawn ($n=2600$). Of the parents of the 2447 target children who were reached, 2076 (84.8%) completed a Child Behaviour Checklist (CBCL; Achenbach, 1991a) on their child. After the first assessment (1983, Time 1), the sample was approached again in 1985 (Time 2), 1987 (Time 3), 1989 (Time 4), 1991 (Time

5) and 1997 (Time 6). For details of the initial data collection see Verhulst *et al* (1985a,b).

This study presents data from Time 3 (1987) and Time 6 (1997). Subjects who belonged to the age cohorts 7–14 years at Time 1 were asked to complete the Youth Self-Report (YSR; Achenbach, 1991b; Verhulst *et al*, 1997) at Time 3, ages 11–19 years, and the Young Adult Self-Report (YASR; Achenbach, 1997) at Time 6, ages 21–29 years.

At Time 3, interviewers visited the families of the participants aged 11–16 years and gave them a YSR, instructions, a post-paid return envelope and a letter explaining the aims of the study. Subjects aged 17 years or older were contacted by mail. A total of 939 YSRs were obtained, representing 73.3% of all those aged 11–17 years at Time 3 ($n=1281$) (see Verhulst *et al*, 1989 for details).

At Time 6 an attempt was made to contact all subjects in the original Time 1 sample of 2076, except for 8 who had died, 12 who had severe mental handicaps, 59 who had emigrated and 14 who had requested removal from the sample. Of the subjects who were reached, 36 declined to be interviewed, but completed the YASR by mail, while 1582 subjects cooperated with an interview which included the administration of the YASR followed by the Composite International Diagnostic Interview (CIDI; World Health Organization, 1992) and three sections of the Diagnostic Interview Schedule (DIS; Robins *et al*, 1997). Of the 1582 CIDI–DIS interviews that were administered 1578 provided complete information, and of the 1618 YASRs, 1615 were usable. This represented 79.0% and 80.9% of the Time 1 sample, respectively (response rate corrected for deceased subjects, subjects with mental handicaps and subjects who had emigrated).

Attrition

At Time 1, CBCLs were completed by 1281 parents of participants aged 7–14 years. The 802 individuals (365 males and 437 females) for whom we obtained YSRs or YASRs at both Time 3 and Time 6 formed 62.6% of the original Time 1 sample for whom parents supplied CBCLs. Of these 802 subjects, 13 (4 males and 9 females) did not cooperate with a complete interview and therefore no CIDI–DIS information was obtained. To assess selective attrition,

[†]See editorial, pp. 189–190, this issue.

we compared drop-outs ($n=479$) and remainers ($n=802$) with respect to age, gender, 1983 CBCL total problem scores, and their parents' socio-economic status at Time 1. Socio-economic status (SES) was assessed using a six-point scale of parental occupation (Van Westerlaak *et al*, 1975), with 1 being the lowest SES. Drop-outs and remainers differed slightly but significantly in age (mean age at Time 1 was 10.8 years for drop-outs *v.* 10.3 years for remainers; $t=3.97$, $d.f.=1279$, $P<0.001$), and more females than males remained (66.9% *v.* 58.1%; $n=1281$, $\chi^2=10.59$, $d.f.=1$, $P<0.001$). Drop-outs and remainers did not differ significantly in Time 1 CBCL mean total problem scores (21.9 for drop-outs and 20.5 for remainers; $t=1.39$, $d.f.=873$, $p=0.16$). The mean SES for drop-outs was slightly, although significantly, lower than that for remainers (3.4 for drop-outs and 3.7 for remainers; $t=-2.52$, $d.f.=1276$, $P<0.05$).

Instruments

Youth Self-Report

The Youth Self-Report (Achenbach, 1991*b*; Verhulst *et al*, 1997) is a self-report questionnaire for subjects aged 11–18 years, and was modelled on the CBCL, a parent questionnaire for the assessment of psychopathology in children and adolescents (Achenbach, 1991*a*). The YSR has the same format as the CBCL, except that YSR items are worded in the first person. The response format for the 103 problem items is 0, not true; 1, somewhat or sometimes true; and 2, very true or often true. The YSR can be scored on a total problem score and on eight syndrome scales: withdrawn, somatic complaints, anxious/depressed (together constituting the Internalising Scale); delinquent behaviour, aggressive behaviour (together constituting the Externalising Scale); social problems, thought problems and attention problems. The good reliability and validity of the YSR were supported for the Dutch version (De Groot *et al*, 1996; Verhulst *et al*, 1997).

Young Adult Self-Report

The Young Adult Self-Report (Achenbach, 1997) is a questionnaire for subjects aged 18–30 years. It contains 110 problem items that can be scored on eight syndromes: withdrawn, anxious/depressed (together constituting the Internalising Scale); intrusive behaviour, delinquent behaviour,

aggressive behaviour (together constituting the Externalising Scale); somatic complaints, thought problems and attention problems. Good reliability and validity for the American YASR have been reported by Achenbach (1997) and were supported for the Dutch version (Wiznitzer *et al*, 1992; Ferdinand *et al*, 1995).

Composite International Diagnostic Interview and the Diagnostic Interview Schedule

The computerised version of the Composite International Diagnostic Interview (World Health Organization, 1992) and three sections of the Diagnostic Interview Schedule (Robins *et al*, 1997) were used to obtain DSM-IV diagnoses (American Psychiatric Association, 1994) in the 12 months prior to the interview. No information on the reliability and validity of the Dutch version of the CIDI is available, but good reliability and validity have been reported for the American CIDI (Andrews & Peters, 1998). Because the CIDI lacks disruptive disorders, three sections of the DIS were added to the CIDI. Each interview was conducted by an interviewer, trained by the Dutch World Health Organization training centre.

For the present study, we used the following groups of disorders.

- (a) any disorder;
- (b) anxiety disorders, consisting of generalised anxiety disorder, obsessive-compulsive disorder, panic disorder, agoraphobia, social phobia or specific phobia;
- (c) mood disorders, consisting of major depressive episode, bipolar disorder or dysthymia;
- (d) substance misuse or dependence, either of alcohol or drugs;
- (e) disruptive disorders, consisting of oppositional defiant disorder, antisocial personality disorder, attention-deficit hyperactivity disorder, attention deficit only, or hyperactivity only.

RESULTS

Ten-year stability

Correlation coefficients between syndrome scores at initial assessment (1987) on the YSR and at 10-year follow-up on the YASR were computed separately for males and females, and for two age groups (ages 11–14 years and 15–19 years at initial assessment), with the α level at $P<0.05$. No adjustment for multiple testing was made (Rothman, 1990). Cohen's criteria (Cohen, 1988) were used to evaluate the magnitude of correlations: small ($r=0.10$ – 0.29),

Table 1 Ten-year correlations (r) between Youth Self-Report scores at Time 3 (1987) and Young Adult Self-Report scores at Time 6 (1997) by gender and age

Syndrome	Males		Females		r total sample ($n=802$)
	11–14 years ($n=188$)	15–19 years ($n=177$)	11–14 years ($n=202$)	15–19 years ($n=235$)	
Withdrawn	0.15	0.44 ^{1,2}	0.32	0.41 ¹	0.34
Somatic complaints	0.21	0.32	0.36	0.27	0.31
Anxious/depressed	0.32	0.42	0.31	0.39	0.39
Thought problems	0.13*	0.22 ¹	0.09*	0.34 ^{1,2}	0.20
Attention problems	0.19	0.39 ²	0.24	0.28	0.28
Aggressive behaviour	0.30	0.42	0.36	0.33	0.35
Delinquent behaviour	0.15	0.23	0.21	0.37	0.24
Internalising	0.28	0.46 ^{1,2}	0.34	0.40 ¹	0.40
Externalising	0.26	0.44	0.44 ³	0.48	0.40
Total problem score	0.33	0.53 ^{1,2}	0.38	0.43 ¹	0.42

1. Significantly higher r values for older than for younger age group, regardless of gender.
 2. Significantly higher r values for older than for younger age group, within gender.
 3. Significantly higher r values for females than for males, within younger age group.
 $\alpha=0.05$; *, not significant ($P>0.05$).

medium ($r=0.30-0.49$) or large ($r \geq 0.50$). As can be seen in Table 1, the correlations between YSR and YASR scores were small to medium, with the exception of the correlation for the total problem score for older males ($r=0.53$), which was large according to Cohen's criteria. To test the significance of differences between independent correlation coefficients, we used Fisher's z transformation of r .

The correlations for the older age group were generally larger than those for the younger age group. The differences between age groups were significant for the withdrawn, thought problems, internalising and total problem scores. When age was not taken into account, the correlations for males and females did not differ

significantly, but within the younger age group the correlation for externalising scores was higher for females than for males. To assess differences in correlations for externalising *v.* internalising scores, we used Steiger's method for comparing dependent correlations (Steiger, 1980). The correlations of the externalising *v.* internalising scores did not differ significantly for males or females, nor for older or younger subjects.

Prediction of syndromes at follow-up

To determine the degree to which initial assessment on the YSR scores was predictive of specific problems at follow-up, linear regression analyses were performed

for each YASR scale separately. Three sets of analyses were performed: one containing the eight YSR syndromes as candidate predictors, one containing the internalising and externalising scores as candidate predictors, and one containing the total problem score as candidate predictor. Each analysis included age (range 11-19 years) and SES (range 1-6) at initial assessment as candidate predictors. The analyses were performed separately for males ($n=365$) and females ($n=437$), as summarised in Table 2. Overall, the proportions of explained variance were low (i.e. between 2% and 13%) to medium (i.e. between 13% and 26%) according to Cohen's criteria. The following YASR syndromes were best predicted, in both males and

Table 2 Time 3 predictors for Young Adult Self-Report syndrome scores at Time 6

Syndrome at follow-up	Males (n=365)			Females (n=437)		
	Predictor from initial assessment	β	Adj. R^2	Predictor from initial assessment	β	Adj. R^2
Withdrawn	Withdrawn	0.35	0.11	Withdrawn	0.33	0.11
	Thought problems	0.28				
Somatic complaints	Somatic complaints	0.15	0.10	Somatic complaints	0.26	0.07
	Aggressive behaviour	0.15				
Anxious/depressed	Withdrawn	0.13				
	Anxious/depressed	0.37	0.13	Anxious/depressed	0.25	0.17
				Withdrawn	0.18	
				Thought problems	0.15	
Thought problems	Anxious/depressed	0.18	0.04	Social problems	-0.14	
Attention problems	Thought problems	0.18	0.16	Thought problems	0.23	0.05
	Anxious/depressed	0.16		Attention problems	0.21	0.08
	Age	-0.14		Thought problems	0.13	
Intrusive behaviour	Aggressive behaviour	0.24	0.12	Aggressive behaviour	0.40	0.15
	Somatic complaints	0.15		Age	-0.13	
	Age	-0.14				
Aggressive behaviour	Aggressive behaviour	0.31	0.15	Aggressive behaviour	0.28	0.12
	Withdrawn	0.15		Withdrawn	0.13	
			SES	-0.10		
Delinquent behaviour	Delinquent behaviour	0.19	0.04	Delinquent behaviour	0.18	0.13
	Age	-0.11		Thought problems	0.18	
			Aggressive behaviour	0.14		
			Social problems	-0.17		
Internalising	Internalising	0.37	0.14	Internalising	0.36	0.13
Externalising	Externalising	0.27	0.15	Externalising	0.44	0.19
	Internalising	0.14				
	Age	-0.12				
Total problem score	Total problem score	0.44	0.19	Total problem score	0.40	0.16

Three sets of linear regression analyses were performed: analyses for narrow-band syndromes as predictors of later narrow-band syndromes; internalising and externalising scores as predictors of later internalising and externalising scores; and total problem score as predictor of later total problem score; all sets included SES and age. SES, parental socio-economic status (1987) ranging from 1 to 6 (1, lowest), age range 11-19 years in 1987.

females, by their YSR counterparts: withdrawn, somatic complaints, anxious/depressed, aggressive behaviour and delinquent behaviour. For females it was found that high scores on the YSR social problems scale protected against high scores on the YASR delinquent behaviour and anxious/depressed syndromes. Age was a significant predictor of the YASR attention problems, delinquent behaviour and externalising scales only in males, and of the intrusive behaviour syndrome in both males and females, with younger ages having higher scores. Socio-economic status was not a significant predictor among males. In females, lower SES predicted high scores on the YASR aggressive behaviour syndrome.

Continuity and change at a categorical level

To assess the development of individuals categorised on the basis of their problem scores, the 90th percentile of the cumulative frequency distributions of the YSR total problem score at initial assessment and the YASR total problem score at follow-up was used as the cut-off point above which subjects were regarded as deviant. The 50th percentile of the cumulative frequency distribution of the YSR and YASR total problem scores was chosen as the arbitrary level below which individuals were considered to function well. Cut-offs were determined for males and females separately.

Figures 1 and 2 show the development of individuals categorised by applying the 90th percentile and the 50th percentile to the total problem score, for males and females respectively. Across the whole sample, 19 subjects (2.4%) scored above the 90th percentile on the total problem score at both assessments. For males who scored above the 90th percentile at Time 3, the probability of scoring above the 90th percentile at Time 6 was significantly greater than for males who scored below the 50th percentile at Time 3 ($\chi^2=18.8$, d.f.=1, $P<0.001$). The same was true for females who scored above the 90th percentile at Time 3 ($\chi^2=20.4$, d.f.=1, $P<0.001$).

Prediction of DSM-IV diagnoses

Figures 3 and 4 give the 1-year prevalences of any DSM-IV disorder and of four groups of DSM-IV disorders at follow-up for subjects with total problem scores above or below the 90th percentile, separately for

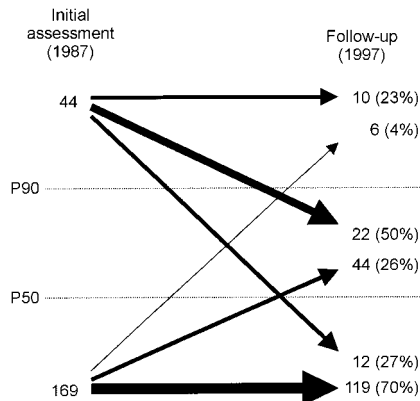


Fig. 1 Developmental pathways of the 44 male adolescents with initial Youth Self-Report (YSR) total problem scores above the 90th percentile (P90) (upper left) and of the 169 male adolescents with initial YSR total problem scores below the 50th percentile (P50) (lower left). The figure should be read from left to right, from the initial assessment to the follow-up assessment. Dotted lines indicate the percentile borders. Entries indicate numbers of adolescents; percentages are in parentheses.

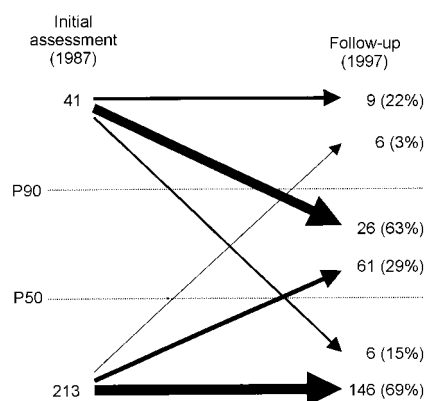


Fig. 2 Developmental pathways of the 41 female adolescents with initial Youth Self-Report (YSR) total problem scores above the 90th percentile (P90) (upper left) and of the 213 female adolescents with initial YSR total problem scores below the 50th percentile (P50) (lower left). The figure should be read from left to right, from the initial assessment to the follow-up assessment. Dotted lines indicate the percentile borders. Entries indicate numbers of adolescents; percentages are in parentheses.

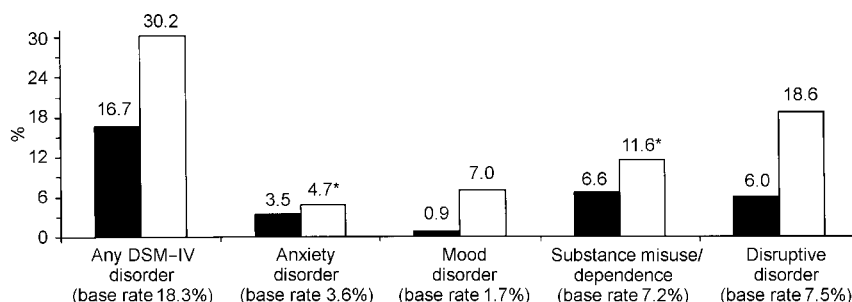


Fig. 3 Adult DSM-IV disorders for males with adolescent scores below (■) or above (□) the 90th percentile (P90) on the Youth Self-Report total problem score scale: *non-significant ($P>0.05$) difference in prevalences for adolescent scores $<P90$ and $>P90$.

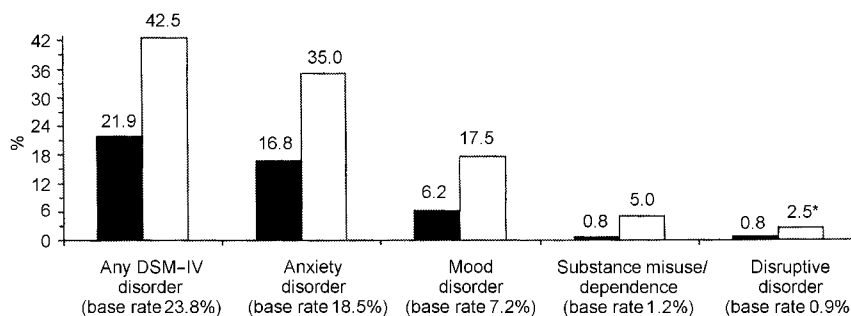


Fig. 4 Adult DSM-IV disorders for females with adolescent scores below (■) or above (□) the 90th percentile (P90) on the Youth Self-Report total problem score scale: *non-significant ($P>0.05$) difference in prevalences for adolescent scores $<P90$ and $>P90$.

males and females. The sample base rate for each disorder is indicated. A consistent finding, although not always significant, was that subjects with total problem scores above the 90th percentile in adolescence had higher rates of psychiatric disorders 10 years later compared with subjects with scores below the 90th percentile at Time 3.

To determine which YSR syndromes assessed in adolescence predict later DSM-IV diagnoses, three separate sets of multivariate logistic regression analyses were performed with each group of DSM-IV disorders in adulthood as an outcome. Each analysis included age (11–14 years, 0, 15–19 years, 1) and SES (1, low, 1–3; 0, high, 4–6) at Time 3 as candidate predictors. Analyses were performed for males ($n=361$) and females ($n=428$) separately, because of the significant differences in prevalence between them. Table 3 shows the results of the set of analyses with the YSR narrow-band syndromes as candidate predictors.

When looking at the internalising and externalising scales as candidate predictors (not in table) we found that, for males, disruptive disorders and any DSM-IV disorder were predicted by the externalising scale (odds ratio 4.3, 95% confidence interval 1.7–10.7 and OR=2.4, 95% CI 1.1–5.0, respectively). For females, both substance misuse/dependence and disruptive disorders were predicted by the externalising scale (OR=7.5, 95% CI 1.2–46.2 and OR=34.7, 95% CI 3.5–343.1, respectively). The total problem score predicted disruptive disorders in adult males (OR=4.4, 95% CI 1.8–11.1). In females, anxiety disorders (OR=3.0, 95% CI 1.4–6.4), mood disorders (OR=3.6, 95% CI 1.3–9.6), substance misuse/dependence (OR=8.3, 95% CI 1.3–51.4) and any

DSM-IV disorder (OR=3.2, 95% CI 1.5–6.6) were predicted by YSR total problem scores in the deviant range. Socio-economic status was a significant predictor as well, with women of low SES having more mood disorders in adulthood (OR=2.6, 95% CI 1.04–6.6).

DISCUSSION

The results from this study provide evidence for the continuity of psychopathology from adolescence into adulthood. Correlations across the 10-year follow-up showed considerable stability of problems. In addition, we found that a substantial proportion of the participants with high levels of problem scores in adolescence still had high levels of problems in adulthood. Furthermore, our results provide evidence that adolescents with high levels of emotional and behavioural problems are more likely to meet criteria for DSM-IV diagnoses in adulthood. These results extend findings from prior general population studies on the continuity and change of psychopathology from adolescence into young adulthood (Feehan *et al*, 1993; Achenbach *et al*, 1995b) and results from an earlier stage of the current study (Ferdinand & Verhulst, 1995).

Prediction of syndromes

A number of syndromes in adulthood were best predicted by their adolescent counterparts (i.e. withdrawn, somatic complaints, anxious/depressed, aggressive behaviour and delinquent behaviour), indicating the long-term continuity of these problems. The other YASR syndromes either had no direct adolescent counterpart (intrusive

behaviour) or were not predicted by their counterparts, which might reflect a developmental shift from one problem area towards another during the transition from adolescence to adulthood.

Age differences

Older males were less likely to obtain high scores on the YASR attention problems, delinquent behaviour and externalising scales, and both older males and females were less likely to obtain high scores on the intrusive behaviour syndrome at follow-up. This finding is in agreement with prior studies reporting that the level of antisocial activities drops in adult life (Robins *et al*, 1991; Cohen *et al*, 1993).

Social problems

In females, high scores on the YSR social problems syndrome were protective for obtaining high scores on the delinquent behaviour syndrome at follow-up. This finding extends results from a 6-year follow-up of children aged 4–12 years by Achenbach *et al* (1995a), who found that social problems negatively predicted delinquent behaviour, in girls. It may be that girls who do not get along with their peers, who are teased or who are disliked by peers are less likely to engage in deviant peer relationships, which have been shown to play an independent role in both the initiation (Keenan *et al*, 1995) and the continuity (Fergusson & Horwood, 1996) of delinquency in adolescence. In addition, high scores on the YSR social problems syndrome in girls were also protective for obtaining high scores on the anxious/depressed syndrome at follow-up.

Table 3 Multivariate odds ratios for Time 3 predictors and Time 6 DSM-IV diagnoses

DSM-IV diagnosis at follow-up	Males (n=361)				Females (n=428)			
	Predictor from initial assessment	Odds ratio	95% CI	Goodness of fit	Predictor from initial assessment	Odds ratio	95% CI	Goodness of fit
Any DSM diagnosis	Delinquent behaviour	2.8	1.4–5.4	337.0	Somatic complaints	2.8	1.5–5.4	407.0
Anxiety disorders	–	–	–	–	Somatic complaints	3.4	1.8–6.6	406.9
Mood disorders	–	–	–	–	Thought problems ¹	2.9	1.1–7.8	386.2
Substance misuse/dependence	–	–	–	–	Aggressive behaviour	8.0	1.3–49.6	407.0
Disruptive disorders	Delinquent behaviour	5.7	2.4–13.4	337.0	Thought problems	14.2	1.2–162.7	104.2
					Aggressive behaviour	16.8	1.5–191.4	

All data are given as significant ($P < 0.05$) multivariate odds ratios (95% confidence intervals).

1. Socio-economic status was an additional predictor: females of lower socio-economic status had more mood disorders in adulthood (OR=2.6, 95% CI 1.04–6.6).

Attention problems

Most studies on the outcomes of children with attention-deficit hyperactivity disorder (ADHD) conclude that these children have a poor outcome (Taylor, 1999). These studies often involve clinically referred children who frequently have many problems besides ADHD for which the authors did not adjust. Furthermore, most studies that determined the outcome of childhood ADHD did not extend their follow-up beyond adolescence.

In our study, the YSR scale attention problems, including items such as 'can't concentrate', 'can't sit still', 'impulsive' and 'clumsy', was found to be of small predictive value for later attention problems in females, but not in males, and of no predictive value for later aggressive behaviour, delinquent behaviour or intrusive behaviour after adjusting for the associations with the other YSR scales. This negative finding is in accord with the findings by Fergusson *et al* (1997) who studied a birth cohort of New Zealand children. They found that attention problems at age 8 years were not related to juvenile offending or substance misuse at age 18 years after adjustment for confounding factors such as early conduct problems. However, attention problems were related to later poor academic success even after adjustment for confounding factors.

Prediction of DSM-IV diagnoses

Both males and females who showed deviant behaviour in adolescence had higher rates of DSM-IV disorders at 10-year follow-up than subjects not showing deviant behaviour in adolescence.

Specific phobias

Specific phobias were common among females (11.4%) and formed a large part of the anxiety disorders and any disorder categories in females. Specific phobias need not be associated with impairment of overall functioning, as long as the phobic object or situation does not occur frequently or can be avoided easily. It may therefore be argued that specific phobias should be excluded from our analyses. However, specific phobias have been recognised as risk factors for the development of disorders such as major depression and alcoholism (National Comorbidity survey: Kessler *et al*, 1996, 1997). The authors also concluded that the number of fears may

mark a general predisposition to psychopathology (Curtis *et al*, 1998). These findings support the inclusion of specific phobias in the DSM-IV categories of disorders in the present study.

Gender differences

Our findings indicate gender differences in the developmental pathways from adolescent YSR scales to adult DSM-IV disorders. The YSR total problem score as a general indicator of malfunctioning in adolescence was associated with more diverse problems among females (anxiety disorders, mood disorders and substance misuse/dependence) than among males (disruptive disorders). It thus seems that when high levels of general psychopathology are present in adolescence, girls are more likely to display a broad range of psychopathology in adulthood than boys. The gender differences in the continuities from adolescence to adulthood argue against basing assumptions concerning the aetiology or treatment for both genders on findings from one.

Substance misuse/dependence

In adult females, DSM-IV substance misuse/dependence, which consisted mainly of alcohol misuse or dependence, was predicted by scores in the deviant range on the YSR aggressive behaviour syndrome. This syndrome consists of items reflecting overt aggression, such as arguing, being mean to others, destroying own or others' things, fighting and attacking other people. This finding concords with findings from a diversity of studies in which a longitudinal link was found between childhood antisocial behaviour and aggression and later alcoholism (for review, see Zucker *et al*, 1995). Surprisingly, in our study initial behavioural and emotional problems in boys did not predict substance misuse or dependence in adulthood, whereas earlier studies using different assessment procedures and criteria for defining misuse did find a longitudinal link. Our findings imply that in males alcohol misuse and dependence tend to emerge *de novo* in adulthood without earlier signs of psychopathology in adolescence, whereas in females alcohol misuse and dependence are preceded by aggressive behaviours in adolescence. It may be that the use of the same DSM-IV criteria for alcohol misuse or dependence for both genders identified males whose alcohol consumption is relatively normative and to a lesser degree a sign of general

malfunctioning than the same level of alcohol use in females. This would argue against using the same diagnostic criteria for both genders.

Disruptive disorders

Disruptive disorders in men were strongly predicted by scores in the deviant range on the YSR delinquent behaviour syndrome. The finding that externalising behaviours in childhood predicted adult disruptive disorder is consistent with findings from several studies (for review see Maughan & Rutter, 1998).

ACKNOWLEDGEMENTS

The authors are grateful for the help of Thomas M. Achenbach, Wim Van den Brink, Hans M. Koot and Joost W. Schudel, who made valuable comments.

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CLINICAL IMPLICATIONS

■ High rates of problems in adolescence are not transient and should therefore not be ignored.

■ Individuals with behavioural and emotional problems in adolescence run a greater risk for meeting criteria for DSM-IV diagnoses in adulthood. Hence, these adolescents deserve attention from mental health professionals in terms of intervention and prevention.

■ Not attention problems as such, but their associated problems in adolescence, increase the risk for later maladjustment.

LIMITATIONS

■ The study used information given by the adolescents themselves. Sole reliance on self-reports may have influenced the results.

■ Because we did not include standardised information on treatment and help-seeking during the years of follow-up, we do not know the effect of possible interventions on the course of problem behaviours from adolescence into adulthood.

■ Historical aspects were not taken into consideration. The period in which the subjects grew up may have influenced the rates of psychopathology.

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(First received 30 June 2000, final revision 12 October 2000, accepted 12 October 2000)

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