PSYCHOPATHOLOGY IN ADOLESCENTS AND YOUNG ADULTS

Prediction, course and prevalence

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PSYCHOPATHOLOGIE BIJ ADOLESCENTEN EN JONG-VOLWASSENEN

Predictie, beloop en prevalentie

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CHAPTER 1

INTRODUCTION

INTRODUCTION

This manuscript contains results of an epidemiological study of psychopathology in adolescents and young adults. The first aim of the study was to determine the development of psychopathology from adolescence into young adulthood. The second aim was to validate recently developed procedures to assess psychopathology in young adults. The third aim was to assess the prevalence of psychopathology in young adults.

The development of psychopathology from adolescence into young adulthood

Longitudinal studies of the developmental course of psychopathology from childhood and adolescence into adulthood are needed to determine (1) the prognosis of psychopathology in children and adolescents, (2) the need for treatment, (3) etiological mechanisms, and (4) the possible aims for prevention programs.

To determine the course of psychopathology from adolescence into adulthood, assessment procedures should yield information that is comparable across the follow-up period. If different assessment procedures are used across time, it is unclear whether differences in the level and type of psychopathology across time reflect developmental changes or merely differences between assessment procedures. Among studies of relations between child and adult psychopathology, only two used comparable assessment procedures at initial and follow-up assessment (Achenbach et al., 1995; Kandel and Davies, 1986).

An important aim of the present study was to determine the course of psychopathology at the transition from adolescence to young adulthood, applying comparable assessment procedures across time.

Population

The original sample of children aged 4 to 16, was drawn from the Dutch province of Zuid-Holland in 1983. This area encompassess over 3,000,000 people living in environments ranging from rural to highly urbanized. Using municipal birth registers that list all residents, a random sample was drawn of 100 children

of each sex and age with the Dutch nationality (n=2,600). Two small municipalities out of a total of 86 declined to participate. One municipality first contacted the parents of selected children to request permission in advance, five of whom declined to participate. Of the 2,447 parents of children who were reached, 2,076 (84.4%) cooperated by completing the Child Behavior Checklist (CBCL; Achenbach, 1991b) on their child (for details, see Verhulst et al., 1985a,b).

The original 1983 (Time 1) sample was followed up at 2-year intervals (Time 2 = 1985; Time 3 = 1987; Time 4 = 1989; Time 5 = 1991). The present study concerned initially 11- to 16-year-olds.

Instruments

The Child Behavior Checklist (CBCL; Achenbach, 1966, 1991b; Achenbach and Edelbrock, 1981, 1983) is a parent questionnaire for 4- to 18-year-olds. The first part consists of 20 competence items. The second part contains 120 items on behavioral or emotional problems during the past 6 months. The response format for the problem section is: 0=not true, 1=somewhat or sometimes true, and 2=very true or often true. A Total Problem score is derived by summing the responses of each problem item. The CBCL is a reliable and valid instrument (Achenbach, 1991b; Verhulst et al., 1985a,b). Achenbach (1991a, 1991b) constructed syndrome scales for the CBCL, that were replicated by De Groot et al. (1994) for the Dutch population.

The Youth Self-Report (YSR; Achenbach, 1991d) was modeled on the Child Behavior Checklist. The YSR has the same format as the CBCL, except that YSR items are worded in the first person. The first part of the YSR consists of 17 competence items. The second part contains 103 problem items, covering emotional and behavioral problems during the previous six months, and 16 socially desirable items. The scoring format of the YSR is similar to that of the CBCL. A Total Problem score is derived by summing the scores for each problem item. Syndrome scales for the YSR were constructed by Achenbach (1991a, 1991d).

The Young Adult Self-Report (YASR; Achenbach, 1990) is a questionnaire for young adults aged 18 to 30. It was modeled on the CBCL, and has the same format, except that items are worded in the first person.

Furthermore, 29 items pertaining to child problems were replaced by problems pertaining to adults.

The first part of the YASR comprises 14 competence items. The second part contains 110 problem items and 15 socially desirable items. A Total Problem score is derived by summing the scores of each problem item. The validity of the YASR was supported by Wiznitzer et al. (1992), who found a positive association between YASR Total problem scores and referral to mental health services in Dutch young adults.

Table 1.1 indicates the assessment procedures that were used during the 8-year follow-up period.

To assess the outcome of adolescent psychopathology in young adulthood, information on signs of maladjustment that are external to the initial measurements, in addition to the assessment of behavioral and emotional problems, can be useful. Time 5 assessment included the following signs of disturbance, indicating whether, in the preceding 2 years, the subject (a) had received mental health services; (b) had been expelled from school or from a job; (c) had been in trouble with the police, excluding minor traffic offences; (d) had attempted suicide. Furthermore, (e) alcohol use during the past 6 months was assessed.

Psychometric properties of the YASR

Wiznitzer et al. (1992) investigated the criterion related validity of the YASR, with referral to mental health services as a criterion for psychopathology. Because other studies testing the psychometric properties of the YASR were not available, the present study investigated the following validity indices of the YASR:

- construct validity
- concurrent validity
- criterion related validity
- predictive validity.

Furthermore, the following reliability measures were assessed:

- internal consistency
- test-retest reliability.

Table 1.1. Dutch Longitudinal Study of Child/Adolescent Psychopathology.

	Time 1	Time 2	Time 3	Time 4	Time 5 Stage 1	Time 5 Stage 2
Year	1983	1985	1987	1989	1991	1991/1992
Age[1]	11-16	13-16	15-18	17-22	19-24	19-24/25
Instruments	CBCL	CBCL	CBCL	CBCL[2]		
	TRF		TRF	TRF[2]		
			YSR	YSR[2]		
				YASR[3]	YASR	YASR
			Outcome measures	Outcome measures	Outcome measures	SCAN GSDS-II SIDP-R GAF scale referral need for help

Note.

[1] Time 1 assessment included ages 4 to 16 years. To avoid confusion, this diagram only contains data for subjects who were 11 to 16 years of age at Time 1, and who were therefore included in the present study's target sample. [2] For age 17. [3] For ages 18-22. Key references: Ferdinand and Verhulst (1994, 1995a,b); Ferdinand et al. (1995a,b,c); Verhulst (1985); Verhulst et al. (1985a,b, 1989, 1990, 1993, 1994); Verhulst and Van der Ende (1991, 1992a, 1992b, 1993, 1995); Verhulst and Akkerhuis (1986); Verhulst and Van Wattum (1993).

The prevalence of psychiatric disorder in young adults

Because the present study's sample was randomly drawn from the general population, follow-up assessments could be used to determine the prevalence of psychopathology in young adults. Prevalence studies of psychopathology serve the following purposes (Verhulst, 1985):

(1) determination of the relation between psychopathology and demographic variables such as gender, age, socio-economic status, and ethnicity;

(2) quantification of the need for mental health services;

(3) evaluation of the functioning and availability of mental health services;

(4) prevention of psychiatric disorder;

(5) to obtain normative data for behavioral and emotional problems;

(6) to generate hypotheses for further research.

The present study assessed the prevalence of psychiatric disorder in the Time 5 sample, that consisted of young adults aged 19 to 24 years. We applied the following assessment procedures listed in Table 1.1:

- the YASR;
- the SCAN (Schedules for Clinical Assessment in Neuropsychiatry; World Health Organization, 1991), a semi-structured interview yielding DSM-III-R disorders;
- the GAF scale (Global Assessment of Functioning Scale; American Psychiatric Association, 1987), a single rating scale to assess overall functional impairment;
- the second version of the Groningen Social Disability Schedule (GSDS-II; Wiersma et al., 1990);
- sections of the Structured Interview for DSM-III-R Personality-Revised (SIDP-R; Pfohl et al., 1989).

Furthermore, the individual's subjective need for professional help, and referral to mental health services were assessed.

Structure of this thesis

In Chapter 2 we tested the predictive validity of the YASR. In an epidemiological sample of young adults, we determined the ability of YASR Total Problem and syndrome scores to predict signs of maladjustment across a 2-year time-span. We compared the predictive power of the YASR with that of the GHQ-28 (Goldberg and Hillier, 1979) and of the SCL-90 (Derogatis et al., 1973), two

self-report questionnaires that are widely used to assess psychopathology in adults.

Chapter 3. The criterion related validity, construct validity, and reliability of the YASR were tested in the methods section of Chapter 3. However, Chapter 3 mainly concerns the course of psychopathology from adolescence into young adulthood. Subjects initially aged 15 to 18 years were assessed with the YSR at Time 3, and reassessed with the YSR or the YASR 2 and 4 years later, at Time 4 and Time 5 respectively.

Chapter 4 also provides information on the course of psychopathology. Subjects initially aged 13 to 16 years were assessed with the CBCL at Time 1, and were reassessed 8 years later, at Time 5, with the YASR, at ages 21 to 24. Follow-up assessment also included other signs of maladjustment.

Chapter 5 provides information on stability and change of psychopathology in young adults. Subjects initially aged 19 to 22 years were assessed with the YASR at Time 4 and Time 5.

Chapter 6 concerns the prevalence of psychiatric disorder in young adults aged 19 to 24 years. Different approaches were followed to assess psychopathology. Categorical DSM-III-R disorders were assessed with the SCAN, while quantitative measures were obtained with the YASR and with the GAF scale. Prevalence rates of psychiatric morbidity were used to estimate the proportion of subjects who suffered from significant psychiatric illness, without being referred to mental health services. Beside prevalence rates, Chapter 6 also provides information on the concurrent validity of the YASR and the SCAN.

Chapter 7 provides prevalence rates of YASR item and syndrome scores, and information on comorbidity, in a general population sample of young adults aged 19 to 24 years.

Chapter 8 contains a brief overall discussion of chapters 2 to 7.

CHAPTER 2

THE PREDICTION OF POOR OUTCOME IN YOUNG ADULTS: COMPARISON OF THE YOUNG ADULT SELF-REPORT, THE GENERAL HEALTH QUESTIONNAIRE, AND THE SYMPTOM CHECKLIST

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THE PREDICTION OF POOR OUTCOME IN YOUNG ADULTS: COMPARISON OF THE YOUNG ADULT SELF-REPORT, THE GENERAL HEALTH QUESTIONNAIRE, AND THE SYMPTOM CHECKLIST

Abstract

Objective: To assess the ability of the Young Adult Self-Report (YASR), the Symptom Checklist (SCL-90) and the General Health Questionnaire (GHQ-28) to predict maladjustment in young adults. Methods: 528 18- to 22-year-olds from the general population were initially assessed with the YASR, the GHQ-28 and the SCL-90. Two years later, signs of maladjustment were assessed. Results: Referral to mental health services and need for professional help were predicted by Total Problem scores of the YASR, the GHQ-28, and the SCL-90, and by the Internalizing scale of the YASR. Furthermore, the Internalizing scale predicted suicide attempts or suicidal ideation, whereas the Externalizing scale predicted police contacts. The YASR Delinquent Behavior syndrome was the only significant predictor of alcohol abuse. Conclusions: The findings supported the validity of the YASR as an instrument for the assessment of psychopathology in young adults.

Introduction

The study of the development of behavioral and emotional problems from childhood into adulthood reveals important information for those professionally dealing with troubled children. In schools and in primary care settings, information on the developmental course of problem behaviors can be helpful in deciding whether a child should be referred for more specialized mental health care or not. In specialized mental health care, knowledge of the course of behavioral and emotional problems is crucial for determining the need for intervention.

Longitudinal studies that have assessed psychopathology from childhood into adulthood have used assessment procedures that were different for children versus adults. It is therefore unclear whether differences in the level and type of psychopathology reflect developmental processes or merely the differences between assessment procedures. To investigate the course of psychopathology from childhood into adulthood, we need assessment instruments that provide continuity from childhood to adulthood.

To facilitate longitudinal research and comparisons between child and adult problems, Achenbach (1990) constructed the Young Adult Self-Report (YASR), a self-report questionnaire for ages 18 to 30, measuring a broad range of psychopathology. The YASR has roughly the same format as the Youth Self-Report (Achenbach, 1991d) for ages 11 to 18, from which it was derived. The YSR and the Child Behavior Checklist (CBCL; Achenbach, 1991b), the parent questionnaire on which the YSR was based, are widely used instruments for reliably and validly assessing a broad range of child and adolescent psychopathology (Achenbach, 1991a, 1991b, 1991d).

Data on the reliability and the validity of the YASR were provided by Achenbach et al. (1995). For the Dutch population, the study of Wiznitzer et al. (1992) investigated the validity of the YASR by comparing the scores of 294 referred and 594 non-referred 18 to 25-year-olds. Using the 90th percentile of the cumulative frequency distribution of the Total Problem score in the non-referred population as a cutoff point, they found a positive predictive value of 0.75 and a negative predictive value of 0.85. In terms of discriminative power, that is the ability of the instrument to correctly classify subjects as referred versus non-referred, the YASR performed as well as the Symptom Checklist (SCL-90), and better than the General Health Questionnaire (GHQ-28), two widely used instruments for the assessment of psychopathology in adults (Goldberg, 1972; Goldberg and Hillier, 1979; Derogatis et al., 1973; Derogatis and Cleary, 1977). This supported the validity of the YASR in a young adult population.

Another index of the validity of a measure of psychopathology is its ability to predict maladjustment across time. The present study was designed:

(1) to test the power of the YASR to predict the following poor outcome variables: referral to mental health services, need for professional help, police contacts, alcohol abuse, suicide attempts, suicidal ideation, and deliberate self-harm

(2) to compare the predictive power of the YASR with that of the GHQ-28 and the SCL-90.

Methods

Sample

The general population sample used was part of an ongoing longitudinal study. The original sample of 2,600 children aged 4 to 16, was drawn in 1983 from the Dutch province of Zuid-Holland, a province with both highly urbanized and rural areas. Using municipal birth registers that list all residents, a random sample was drawn of 100 children of each sex and age with the Dutch nationality (n=2,600). Two small municipalities out of a total of 86 declined to participate. Of the 2,447 parents of children aged 4 to 16 in our sample who were reached, 2,076 (84.8%) completed a CBCL on their child. For a more detailed description of the original target population, see Verhulst et al. (1985a, 1985b).

The present study was part of a follow-up of the original sample. Young adults, aged 12 to 16 years in 1983 and 18 to 22 years in 1989, were sent a letter explaining the aims of the study. They were then visited by an interviewer, who asked them to complete a YASR, a GHQ-28 and a SCL-90. Subjects who were not home at the first visit were phoned to make an appointment. Subjects who did not keep the appointment received a letter in which they were requested to return a postpaid reply indicating another time when a visit would be convenient.

Subjects aged 20 to 24 years in 1991 were requested to complete a YASR. The same procedure as in 1989 was followed, except that all subjects were phoned to make an appointment, instead of being visited directly, after receiving the introduction letter.

The present study covers the 2-year interval between the 6- and 8-year follow-up within an ongoing longitudinal study. To avoid confusion we designated the 6-year follow-up in 1989 as Time 4, and the 8-year follow-up in 1991 as Time 5.

At the first assessment in 1983, 765 parents completed the CBCL. In 1989, 36 subjects were not contacted because their parents had refused to cooperate at some point during the first 6 years of follow-up. The 528 young-adults (240 males and 288 females) on whom we obtained data on Time 4 as well as on Time 5 formed 69.0% of the original 1983 sample on whom we obtained parent information at Time 1.

To investigate selective attrition, we compared dropouts (n=237) and

remainers (n=528) with respect to their 1983 CBCL Total Problem scores and socio-economic status (SES). The CBCL Total Problem score was computed in the same way as the YASR Total Problem score (Achenbach, 1991b). SES of the parents at initial assessment was assessed via a six-step scale of parental occupation (Van Westerlaak et al., 1975). A score of '1' indicates the lowest SES, whereas a score of '6' indicates the highest SES. Dropouts and remainers did not differ significantly in the initial CBCL Total Problem score (t-test; n.s.). However, the mean SES for dropouts (SES=3.4) was significantly (p=0.01) lower than that for remainers (SES=3.6).

The finding that dropouts did not belong to a group of especially problematic individuals supported the representativeness of the sample in our study. The lower SES for dropouts versus remainers indicated that remainers might have been subjected to slightly more favorable environmental circumstances.

Instruments

The Young Adult Self Report (YASR) is a self-report questionnaire for young adults. The YASR has roughly the same format as the CBCL (Achenbach, 1991b), except that items are worded in the first person. Furthermore, some items, pertaining to specific child problems, were replaced by problems pertaining to adults. The YASR consists of 2 parts. The first part comprises 14 competence items. The second part contains 110 problem items, covering a broad range of emotional and behavioral problems having occurred during the past six months, and 15 socially desirable items. The response format is 0=not true, 1=somewhat or sometimes true, and 2=very true or often true. A Total Problem score is derived by summing the scores for all problem items.

To obtain scales that are comparable to YSR scales for adolescents, we applied the empirically derived syndromes for the YSR (Achenbach, 1991d) to YASR scores. Achenbach (1991a) constructed eight 'cross-informant' syndromes, by performing factor analyses on large groups of referred children and adolescents. These syndromes are similar for the CBCL, the YSR, and the TRF (Teacher's Report Form; Achenbach, 1991c), the teacher-version of the CBCL. The syndromes consist of items that can be scored from the CBCL, YSR and TRF,

and are designated as: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior and Aggressive Behavior. Two higher order 'broad band' groups of syndromes were constructed. The Internalizing scale, consists of the Withdrawn, Somatic Complaints, and Anxious/Depressed syndromes. The Externalizing scale consists of the Aggressive Behavior and Delinquent Behavior syndromes. Ferdinand et al. (1995a) supported the applicability of the YSR syndromes to YASR scores obtained from 645 referred young adults. They performed a confirmatory factor analysis that yielded a high goodness-of-fit index between the YASR data and the YSR syndromes. Furthermore, the average internal consistency of the syndromes, indicated by Cronbach's alphas, was 0.84. Alphas were above 0.70 for all syndromes, which can be regarded sufficient according to Nunnally (1978), except for Delinquent Behavior (α=0.68) and for Thought Problems (α=0.67) in males, and for Delinquent Behavior in females (α=0.54).

The General Health Questionnaire (GHQ-28) is a self-report questionnaire designed for use in detecting psychiatric disorders (Goldberg, 1972; Goldberg and Hillier, 1979). The GHQ-28, covering the past 4 weeks, comprises 28 items that constitute four 7-item factors; Severe Depression, Anxiety and Insomnia, Somatic Symptoms and Social Dysfunction. The response format to each item ranges from 0 to 3; 0=better than usual, 1=same as usual, 2=worse than usual, and 3=much worse than usual. After recoding 0 and 1 as 0, and 2 and 3 as 1, a total score can be computed by summing the 28 responses.

The Symptom Checklist (SCL-90) is a 90-item self-report questionnaire for the assessment of psychopathology in psychiatric populations, covering the past week (Derogatis et al., 1973). The items can be answered 0=not at all, 1=a little bit, 2=moderately, 3=quite a bit, and 4=extremely. A total score is derived by computing the separate item scores. Derogatis and Cleary (1977) reported the following SCL-90 syndromes: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism.

Interview. At Time 5, all subjects were interviewed. The interview covered the 2-year interval between Time 4 and Time 5. During the interview, we assessed the following indices of maladjustment: (1) referral to mental health

services for behavioral or emotional problems; (2) the subject's report of need for professional help for behavioral or emotional problems, without actually having received help; (3) police or judicial contacts, excluding minor traffic offences; (4) alcohol abuse; (5) suicide attempts or suicidal ideation; (6) deliberate self-harm. To assess the extent of alcohol consumption, the amount and the frequency of use during the past six months were determined. The amount was expressed by the mean number of consumptions per occasion that alchohol was consumed. The frequency of use was indicated by the number of days per week alcohol was consumed. We computed cumulative frequency distributions for the frequency and for the amount of use. Alcohol abuse was judged to be present if an individual scored above the 90th percentile for the frequency of use and for the amount of use.

Results

We identified subjects with deviant YASR, GHQ-28 or SCL-90 Total Problem scores and syndrome scores. Deviance was defined as a score above the 90th percentile (P90) of the cumulative frequency distribution for each scale. Scores above the P90 were recoded as '1'; lower scores were recoded as '0'. Cutoffs were determined for each sex separately.

To assess the association between measures of psychopathology at Time 4 and outcome at Time 5, we performed logistic regression analyses. Logistic regressions produce odds ratios for specific outcomes in relation to each predictor. Odds ratios are computed by dividing two probabilities; (1) the probability that an outcome will occur if a certain condition is present, and (2) the probability that the same outcome will occur if the condition is not present. Values greater than 1 indicate a positive association between a predictor and outcome, and values less than 1 indicate a negative association. We performed forward stepwise (method: likelihood ratio) logistic regression analyses, using a significance level of $p < 0.05$ as a significance level for the entire model and as criterion for inclusion of predictor variables in the model. In this way, variables not contributing independently of the other variables to the prediction of an outcome variable, were removed. In all analyses sex (male=0, female=1) and age at Time 4 were included as candidate predictor variables.

YASR, GHQ-28, and SCL-90 Total Problem scores. The first analysis included the YASR Total Problem score as predictor variable. Table 2.1 shows that the probability of referral for mental health service for subjects who scored above the P90 of the YASR Total Problem score was 6.1 (95% confidence interval 2.5-14.6) times higher than for subjects scoring below the P90. Odds ratios of 10.2 and 4.6 were found for deliberate self-harm and need for help, respectively.

Table 2.1. Odds ratios for outcome variables for YASR, GHQ-28 and SCL-90 Total Problem scores.

	YASR	GHQ-28	SCL-90
Referral	6.1 (2.5-14.6)	3.2 (1.1-9.4)	3.9 (1.3-11.8)
Need for help	4.6 (2.4-8.6)	6.5 (3.3-12.9)	8.0 (4.0-15.7)
Police contacts	-	-	-
Alcohol abuse	-	-	-
Suicide (attempts/ideation)	-	-	5.0 (1.4-17.0)
Deliberate self-harm	10.2 (2.5-35.2)	-	9.8 (1.9-49.7)

Note. Numbers in parentheses indicate 95% confidence intervals.

We also performed analyses with total scores on the GHQ-28 and the SCL-90 as predictor variables. The overlap of the 95% confidence intervals of the odds ratios indicated that the ability of the Total Problem scores of the YASR, the GHQ-28, and the SCL-90 to predict referral and need for help was similar. Suicide attempts ($n=2$) and suicidal ideation ($n=16$) were predicted by the total score of the SCL-90 ($OR=5.0$), but not by the other instruments. Deliberate self-harm was predicted by the YASR and SCL-90 Total Problem scores, but not by the GHQ-28 total score. Police contacts and alcohol abuse were not predicted by any of the Total Problem scores.

YASR Internalizing versus Externalizing scales. Internalizing problems and Externalizing problems were simultaneously entered into the logistic

regression analysis, as summarized in Table 2.2.

YASR, GHQ-28, and SCL-90 syndromes. To obtain more detailed information on the association between YASR, GHQ-28, and SCL-90 syndrome scores and outcome variables, three sets of logistic regressions were performed for each outcome variable separately. All YASR syndromes were included in the first analysis, all GHQ-28 syndromes in the second analysis, and all SCL-90 syndromes in the third analysis, as summarized in Tables 2.3.1 and 2.3.2.

Table 2.2. Odds ratios for outcome variables for YASR Internalizing and Externalizing Problems.

	Internalizing Problems	Externalizing Problems
Referral	9.9 (4.2-23.2)	-
Need for help	8.0 (4.2-15.2)	-
Police contacts	-	6.5 (2.1-19.7)
Alcohol abuse	-	-
Suicide (attempts/ideation)	3.1 (1.0-9.7)	-
Deliberate self-harm	11.0 (2.7-44.7)	-

Note. Numbers in parentheses indicate 95% confidence intervals.

Sex and age effects. Sex and age were included in all analyses. Age was coded by the age of the subjects at Time 4 (18 to 22 years). Because scores on the three questionnaires might interact differently with sex and age, we will give sex and age effects as found in the three analyses, including the YASR syndromes, the GHQ-28 syndromes, and the SCL-90 syndromes. Odds ratios for sex and age will be given in parentheses for the three analyses respectively.

The three analyses yielded sex and age effects for the same outcome variables. Females more often reported referral (OR=3.0, OR=4.3, OR=4.2) and need for help (OR=2.5, OR=3.1, OR=2.9), whereas males more often reported police contacts (OR=0.09, OR=0.10, OR=0.10) and alcohol abuse (OR=0.14, OR=0.11, OR=0.11). Police contacts were associated with lower age (OR=0.60, OR=0.53, OR=0.48).

Table 2. 3.1. Odds ratios of YASR and GHQ syndrome scores for poor outcome variables.

	Referral	Need for help	Police contacts	Alcohol abuse	Suicide (attempt or ideation)	Self-harm
	(n=26)	(n=100)	(n=18)	(n=12)	(n=18)	(n=8)
YASR syndromes						
Withdrawn	4.6 (1.4-14.9)	3.4 (1.8-5.0)	-	-	-	-
Somatic Complaints	-	2.4 (1.5-7.8)	-	-	-	-
Anxious/Depressed	6.5 (2.1-20.0)	3.2 (1.4-7.4)	-	-	-	13.9 (3.2-58.4)
Social Problems	-	2.9 (1.1-7.7)	-	-	-	-
Thought Problems	-	-	-	-	-	-
Attention Problems	-	2.5 (1.1-5.6)	-	-	-	-
Delinquent Behavior	-	-	4.8 (1.6-14.3)	6.5 (2.3-17.8)	-	-
Aggressive Behavior	-	-	-	-	-	-
GHQ syndromes						
Somatic Symptoms	-	2.5 (1.1-5.4)	-	-	-	-
Anxiety/Insomnia	-	-	-	-	-	-
Severe Depression	-	2.7 (1.2-6.0)	-	-	-	-
Social Dysfunction	4.9 (1.5-15.9)	3.4 (1.3-9.1)	-	-	5.9 (1.5-22.9)	8.6 (1.5-48.6)

Note. Numbers in parentheses indicate 95% confidence intervals.

Table 2.3.2. Odds ratios of SCL syndrome scores for poor outcome variables.

	Referral	Need for help	Police contacts	Alcohol abuse	Suicide (attempt or ideation)	Self-harm
	(*n*=26)	(*n*=100)	(*n*=18)	(*n*=12)	(*n*=18)	(*n*=8)
SCL syndromes						
Somatization	-	2.5 (1.1-5.6)	-	-	-	-
Obsessive-Compulsive	3.9 (1.3-11.8)	-	-	-	-	-
Interpersonal Sensitivity	-	-	-	-	-	-
Depression	-	7.6 (3.4-16.4)	-	-	-	-
Anxiety	-	-	-	-	5.7 (1.6-19.8)	-
Hostility	-	-	27.0(4.8-149.8)-		-	12.8 (2.5-65.6)
Phobic Anxiety	4.1 (1.3-12.4)	-	-	-	-	-
Paranoid Ideation	-	-	-	-	-	-
Psychoticism	-	-	-	-	-	-

Note. Numbers in parentheses indicate 95% confidence intervals.

Discussion

The present study supported the validity of the YASR by demonstrating that the YASR Total Problem score was a significant predictor of the following signs of dysfunction across a 2-year interval: referral for mental health services, need for professional help, and deliberate self-harm. With respect to referral and need for help, the predictive value of the YASR Total Problem score did not differ significantly from that of two widely used instruments for the assessment of psychopathology in adults, the GHQ-28 and the SCL-90. Furthermore, Total Problem scores of the YASR and the SCL-90 predicted deliberate self-harm, whereas the GHQ-28 total score did not.

Analyses of Total Problem scores showed that the SCL-90 predicted suicide attempts or suicidal ideation whereas the YASR and the GHQ-28 did not. However, the power of the YASR Internalizing scale to predict suicide attempts or ideation was in the same range as that of the SCL-90 Total Problem score. Apparently, inclusion in the analysis of YASR items that were unrelated to the outcome variable may have partialled out the effect of items that were related to the outcome variable. This may also have been responsible for the finding that the YASR Externalizing scale significantly predicted police contacts, whereas the Total Problem score of the YASR did not.

Total Problem scores of all instruments were significant predictors of referral for mental health services. Analyses of syndromes indicated significant predictive values for the YASR Withdrawn and Anxious/Depressed syndromes, the GHQ-28 Social Dysfunction syndrome, and the SCL-90 Obsessive-Compulsive and Phobic Anxiety syndromes. These syndromes represent problems that cause internal distress to the respondents themselves. The YASR Delinquent Behavior and Aggressive Behavior syndromes, as well as the SCL-90 Hostility syndrome did not contribute to the prediction of referral. These syndromes reflect conflicts with other people and their expectations of the individual. However, the YASR Delinquent Behavior syndrome and the SCL-90 Hostility syndrome contributed significantly to the prediction of police contacts. Police contacts represent problems that are indicative of maladaptive behaviors. Our results indicated that it is important to use instruments that cover internalizing as well as externalizing problems to assess an individual's general functioning.

Police contacts were not predicted by any of the scales of the GHQ-28. The failure of the GHQ-28 to predict police contacts is consistent with the original purpose of the instrument, which was to assess of minor psychiatric morbidity in the community and in primary care settings (Goldberg and Hillier, 1979). It comprises 4 syndromes that are relevant in such settings: Somatic Symptoms, Anxiety/Insomnia, Severe Depression, and Social Dysfunction, but does not include aggressive or delinquent behaviors.

The YASR Internalizing scale was a significant predictor of referral across the 2-year interval, whereas the Externalizing scale was not. This finding is important from a developmental perspective. In a general population of 4- to 12-year-olds, Koot and Verhulst (1992) found that Internalizing Problems (OR=3.3) and Externalizing Problems (OR=2.7) were independent predictors of referral across a 4-year time interval. The finding that Externalizing problems formed an important reason for referral in children but not in young adults, indicates that parents or teachers of children who display aggressive or delinquent behaviors, are likely to decide to seek help. However, in young adults, who may decide for themselves whether to seek help or not, aggressive or delinquent behaviors tend to lead to police contacts, instead of referral for mental health services.

The YASR Somatic Complaints, Social Problems, and Attention Problems syndromes, the GHQ-28 Somatic Symptoms and Severe Depression syndromes, and the SCL-90 Somatization and Depression syndromes, were significant predictors of the subject's report of need for professional help, but not referral. Apparently, the problems comprising these syndromes did not lead to actual referral for mental health services. Further research will be needed to determine whether this is caused by the severity of problems, by lack of severity or distress, by primary care workers attitudes towards these types of problems, or by other factors.

Alcohol abuse was predicted only by the YASR Delinquent Behavior syndrome, even though this syndrome did not contain any items on alcohol abuse. Our findings were similar to those of Robins and McEvoy (1986), that were based on a retrospective study design. They assessed alcohol abuse in individuals aged 18 or above, from the general population, and found a relationship with conduct problems that were present prior to age 18. Youngsters with conduct problems

may be more likely than others to be exposed to alcohol and drugs, due to their social environment. From our findings it remained unclear whether alcohol abuse at Time 5 was already correlated with Delinquent Behavior at Time 4. Future prospective investigations, assessing both conduct problems and alcohol use at consecutive times of assessment will be needed to clarify causal relations.

Suicide attempts and suicidal ideation were predicted best by the SCL-90 Anxiety syndrome and the GHQ-28 syndrome Social Dysfunction. This supported the findings of Fawcett (1992), who found that panic attacks and anxiety in a sample of depressed patients correlated significantly with suicide within a one-year period. Furthermore, anxiety was a better predictor of suicide than dysphoric mood. The consistency between findings in our general population sample and Fawcett's clinical sample, highlights the importance of anxiety as a predictor of suicide.

In summary, YASR Total Problem and syndrome scores were significant predictors of referral, need for help, police contacts, alcohol abuse, suicide attempts or ideation, and deliberate self-harm. For the prediction of indicators of general dysfunctioning, both externalizing and internalizing problems were important. Our findings supported the validity of the YASR as an instrument for the assessment of psychopathology in young adults. Because the YASR is closely related to the Child Behavior Checklist and the Youth Self-Report, instruments designed to assess psychopathology in children and adolescents, it is a valuable instrument for follow-up studies covering a wide age range, including childhood and adulthood.

CHAPTER 3

CONTINUITY AND CHANGE OF SELF-REPORTED PROBLEM BEHAVIORS FROM ADOLESCENCE INTO YOUNG ADULTHOOD

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CONTINUITY AND CHANGE OF SELF-REPORTED PROBLEM BEHAVIORS FROM ADOLESCENCE INTO YOUNG ADULTHOOD

Abstract

Objective: To investigate the 4-year course of behavioral and emotional problems from adolescence into young adulthood in a general population sample. Methods: The population consisted of 364 individuals, originally aged 15 to 18 years. Subjects filled out the Youth Self-Report (YSR) at the first time of assessment. At follow-up, 2 and 4 years later, subjects aged 19 or above completed the Young Adult Self-Report (YASR), which was derived from the YSR. Results: Almost 40% of the adolescents who were classified as deviant initially, were still deviant 4 years later. There was no significant difference in the continuity of internalizing problems versus externalizing problems in this sample. Conclusions: All types of problems tended to persist to a similar degree. This held also for problems that are often regarded as typical childhood problems, such as attention problems and hyperactivity. Because adolescent problems are likely to continue, we need more knowledge on the efficacy of interventions.

Introduction

Information on the developmental course of psychopathology from childhood and adolescence into adulthood is relevant for both child and adult psychiatrists. Child psychiatrists are often asked about the prognosis of psychopathology in children and adolescents. Adult psychiatrists are often concerned about the childhood origins of adult disorders.

Among studies of relations between child and adult psychopathology, only four used well validated and standardized assessment instruments at both initial assessment and follow-up. Only one pertained to a broad range of psychopathology (Achenbach et al., 1995). Furthermore, two pertained to attention problems and hyperactivity (Gittelman et al., 1985; Barkley et al., 1990), and one pertained to depression (Kandel and Davies, 1986).

Gittelman et al. (1985) followed up 101 boys who fulfilled criteria for DSM-II hyperkinetic reaction of childhood, and 100 controls, originally aged 6 to 12 years. At ages 16 to 23, DSM-III ADDH criteria were met by 31% of the former hyperkinetic children, and 3% of the controls. Similarly, Barkley et al. (1990) reported an 8-year follow-up of 123 boys who met standardized

questionnaire criteria for hyperactivity, and 66 controls. At ages 12 to 20, 72% of the hyperactives versus 3% of the controls met DSM-III-R criteria for ADHD. However, the generalizability of these findings was limited, because the course of depressive disorders among nonreferred children may be different from that in clinical samples, which may be affected by referral biases (Berkson, 1946) and by treatment. The presence of multiple problems and of other factors associated with referral, such as negative environmental influences, may affect the course in a negative way, whereas treatment, it is hoped, has a beneficial effect.

Furthermore, since both studies used assessment procedures that were different for children versus adults, it is unclear whether differences in the level and type of psychopathology across time reflected developmental changes or merely the differences between assessment procedures. Moreover, inasmuch as both studies used different diagnostic criteria at different times of assessment, it is unknown whether the results would apply to children diagnosed according to current diagnostic criteria.

Kandel and Davies (1986) assessed the 9-year stability of depressive symptoms in a cohort of 1,004 high school students, originally aged 15 to 16 years. They reported moderately high stability coefficients for a 6-item depression scale in males ($r=0.35$) and females ($r=0.44$). However, they followed up $<15\%$ of the original sample, which hampered the generalizability of their results.

To standardize assessment from childhood to adulthood, Achenbach (1990) constructed the Young Adult Self-Report (YASR), a self-report questionnaire to assess psychopathology for ages 18 to 30. The YASR has roughly the same format as the Youth Self-Report (YSR; Achenbach, 1991d), a self-report questionnaire for ages 11 to 18. The YSR is a reliable and valid instrument for the assessment of a broad range of child and adolescent psychopathology (Achenbach, 1991d; Verhulst et al., 1989). The validity of the YASR was supported by Achenbach et al. (1995), Wiznitzer et al. (1992), and Ferdinand and Verhulst (1994).

Achenbach et al. (1995) assessed the 3-year stability of behavioral and emotional problems in adolescents from the general population, originally aged 15 to 18, who were initially assessed with the YSR and reassessed with the YASR at follow-up. They found stability coefficients from 0.36 to 0.54 between YSR and

YASR syndromes Withdrawn, Somatic Complaints, Anxious/Depressed, Thought Problems, Delinquent Behavior, and Aggressive Behavior.

The present study investigated the 4-year course of a broad range of behavioral and emotional problems from adolescence into young adulthood. A general population sample of 15- to 18-year-olds was initially assessed with the YSR. Two years later, the YSR was used for 17-year-olds, and the YASR for ages 18 or above. At 4-year follow-up, all subjects were reassessed with the YASR.

Methods

Instruments

The Youth Self-Report (YSR) was modeled on the Child Behavior Checklist, a parent questionnaire for the assessment of psychopathology in children and adolescents (CBCL; Achenbach, 1991b). The YSR has the same format as the CBCL, except that YSR items are worded in the first person. The first part of the YSR consists of 17 competence items. The second part contains 103 items, covering emotional and behavioral problems during the previous six months, and 16 socially desirable items. The problem items are scored "0" if the behavior is "not true", "1" if the behavior is "somewhat or sometimes true", and "2" if the behavior is "very true or often true". A Total Problem score is derived by summing the scores for each problem item.

Achenbach (1991a) constructed eight "cross-informant syndromes" that were similar for both sexes: 'Withdrawn', 'Somatic Complaints', 'Anxious/Depressed' (together constituting the 'Internalizing' scale), 'Delinquent Behavior', 'Aggressive Behavior' (together constituting the 'Externalizing' scale), 'Social Problems', 'Thought Problems' and 'Attention Problems'. A syndrome called 'Self-destructive/Identity Problems' was found only in self-ratings by boys. The cross-informant syndromes were empirically derived from parent reports (CBCL), self-reports (YSR), and teacher reports (TRF; Teacher's Report Form; Achenbach, 1991c), in large clinical samples. The cross-informant syndromes are similar for each of the three informants. In this study we will refer to these syndromes as YSR scales.

The Young Adult Self-Report (YASR) is a questionnaire for 18- to 30-

year-olds. The first part of the 1990 YASR comprises 14 competence items. The second part contains 110 problem items. Nine YSR problem items that are specific to younger subjects were replaced by problems pertaining to adults, and seven problem items were added to the original YSR. Similar to the YSR, the problem items can be scored "0", "1", and "2". In 58 subjects who were randomly drawn from the Time 4 general population sample, we found an 18-day test-retest reliability of r=0.89 for the Total Problem score.

The applicability of YSR scales to YASR scores. To study the course of specific problem areas from adolescence into adulthood, it is advantageous to use the same scales at each assessment. We therefore tested the applicability of the YSR scales for 11- to 18-year-olds to the scores obtained with the YASR for 19- to 25-year-olds. Since three items of the original YSR Delinquent Behavior scale ('I run away from home', 'I steal at home', and 'I use alcohol or drugs') and one item of the original YSR Aggressive Behavior scale ('I disobey at school') were not included in the YASR, scores for these scales were computed on the basis of the remaining items.

Because the YSR scales were derived by Achenbach (1991a) through factor analysis of YSR scores obtained from clinically referred subjects, we tested the applicability of the YSR scales to YASR scores derived from a clinical sample. The sample consisted of patients (n=645) from fifteen mental health services in the Dutch provinces of Groningen, Drenthe, and Gelderland. Patients aged 18 to 25 years were asked to complete a YASR. YASRs were obtained from 386 outpatients and 259 inpatients. The response rate was 57%. For more details on the method of data collection, see Wiznitzer et al. (1992).

Factor structure. We tested the applicability of the YSR scales to YASR scores via confirmatory factor analysis, using the 81 YSR scale items that are similar for the YSR and the YASR. Firstly, we performed a principal components analysis, with an a priori 9-factor solution. The 9 principal components that were obtained accounted for 41.2% of the variance in the referred sample. Then, we performed a confirmatory factor analysis. This analysis indicated that the maximum amount of variance that was accounted for by the 9 YSR scales was 37.3%, which is 91% (37.3/41.2) of the variance that was accounted for by the 9 principal components. This indicated that the YSR factor structure could well be

applied to YASR scores.

Reliability. We computed Cronbach's alphas (Cronbach, 1951) for each scale. According to Nunnally (1978), alphas exceeding 0.70 can be considered adequate. We found alphas ≥70 for each scale, except for the Delinquent Behavior scale ($\alpha = 0.68$) and the Thought Problems scale ($\alpha = 0.67$) in males, and for the Delinquent Behavior scale in females ($\alpha = 0.54$). The low alphas for the Delinquent scale probably resulted from the omission of three of the YSR Delinquent scale items from the YASR. The low alpha for the Thought Problems scale reflected the low prevalence of its constituent items.

Comparison between referred and non-referred individuals. The present study was part of an ongoing longitudinal study, in which problem behaviors were assessed at five consecutive times: Time 1 (1983), Time 2 (1985), Time 3 (1987), Time 4 (1989), and Time 5 (1991). To test the validity of the YASR scales, we compared YASR scores in the clinical sample described above with those in a nonreferred sample of 594 19- to 23-year-olds who completed a YASR at Time 4 (see Wiznitzer et al., 1992, for a detailed description of the sample).

Analysis of variance (ANOVA) was performed for all scale scores, with referral status, age, and sex as independent variables. Bonferoni correction for 10 comparisons, yielding a significance level of $p < 0.005$, was used to control for chance findings. We used the following criteria suggested by Cohen (1988) for judging effect sizes: effects accounting for 1.0% to 5.9% of variance are considered small, 6.0% to 13.8% are medium, and >13.8% are large.

Referred subjects scored significantly higher on all scales. We found large effects for the Withdrawn (16%), Anxious/Depressed (26%), Social Problems (16%), Thought Problems (21%), and Internalizing (23%) scales, while effects were medium for the Somatic Complaints (12%), Attention Problems (12%), Delinquent Behavior (11%), and Externalizing (8%) scales, and small for the Aggressive Behavior scale (5%).

The above analyses indicated that the cross-informant YSR constructs can be used to assess psychopathology in young adults.

Population

The original sample consisted of children aged 4 to 16 drawn in 1983 from the Dutch province of Zuid-Holland. This province encompasses both highly urbanized and rural areas. Using municipal birth registers that list all residents, we drew a random sample of 100 children of each sex and age with the Dutch nationality (n=2,600). Two small municipalities out of a total of 86 declined to participate. Of the parents of the 2,447 target children aged 4-16 who were reached, 2,076 (84.8%) completed a CBCL on their child. The first assessment was designated Time 1 (see Verhulst et al., 1985a, 1985b, for details).

The present study stemmed from follow-ups of the original sample at 2-year intervals. Subjects who were aged 11 to 14 years at Time 1 were asked to complete self-reports in 1987 (Time 3), 1989 (Time 4), and 1991 (Time 5). Subjects whose parents declined to participate at Time 1 were not contacted.

At Time 3, all subjects were assessed via the YSR. Parents of 15- and 16-year-olds were visited by an interviewer, who gave the adolescent a YSR, instructions, a postpaid return envelope, and a letter explaining the aims of the study. Subjects aged 17 or 18 were contacted by mail. A total of 429 usable YSRs was obtained (see Verhulst et al., 1989, for details).

At Time 4, one of the aims of the study was to test the validity of the YASR for ages 18 or above. Therefore, subjects aged 18 to 20 were visited by an interviewer, who asked them to complete a YASR, which yielded 404 YASRs. Parents of 17-year-olds were visited by an interviewer, who left behind a similar request as in 1987. A total of 132 YSRs was collected in this way (for details see Verhulst and Van Wattum, 1993, and Ferdinand and Verhulst, 1994).

At Time 5, all subjects were visited by an interviewer who requested them to complete the YASR, yielding 525 YASRs (see Ferdinand and Verhulst, 1994, for details).

At Time 1, 623 parents of 11- to 14-year-olds completed CBCLs. The 364 individuals (155 males and 209 females) on whom we obtained YSRs or YASRs at Time 3, Time 4, and Time 5 formed 58.4% of the original (1983) sample on whom we obtained CBCLs from parents. To investigate the extent of selective drop-out, we compared dropouts (n=259) and remainers (n=364) with respect to their CBCL Total Problem scores and socio-economic status (SES) at Time 1. SES

was assessed via a six-step scale of parental occupation (Van Westerlaak et al., 1975). Dropouts and remainers did not differ significantly in CBCL Total Problem scores (t=1.33; p=n.s) and SES (χ^2=5.35; df=5; p=n.s.).

Results

Total Problem scores

Changes in mean scores. To assess effects of sex, age, and time of assessment, problem scores were compared by multivariate analysis of variance (MANOVA) with a 2 sex (156 males versus 210 females) x 2 age groups (15-16 years, n=213, versus 17-18 years, n=153, at Time 3) between-subjects, and 3 times of assessment within-subjects factorial design.

To compare scores across time, we computed Total Problem scores excluding items that were not present on both the YSR (4 items excluded) and the YASR (10 items excluded). We tested the effect of excluding these items on the rankings of subjects' Total Problem scores by computing Pearson correlations between Total Problem scores before and after excluding items that were not on both instruments. Correlations between the original and newly computed scores were approximately 1.00 (p<0.001) for both the YSR and the YASR.

At a p<0.05 significance level, the MANOVA revealed no effect for time of assessment. Across the three times of assessment we found a small sex effect (4.3%), indicating higher scores for females than males. A significant interaction between age and sex (1.1%) reflected higher scores for older than younger females (p<0.05), but no difference for males.

Stability coefficients. To assess the 4-year stability of individual Total Problem scores, independently of changes in group mean scores across time, we computed Pearson correlations between the YSR and the YASR Total Problem scores at Time 3 and Time 5.

According to Cohen's (1988) criteria for the magnitude of correlations, the average 4-year stability coefficient for the entire sample was medium (r=0.49; p<0.001). The stability coefficients for males (r=0.46) and females (r=0.52) did not differ significantly (Z=0.96, p=n.s.).

Categorical continuity and change. Cutoffs were applied at the 90th

percentile (P90) of the cumulative frequency distribution of the Time 3 YSR and the Time 5 YASR Total Problem scores, separately for each sex. Because the above reported MANOVA did not reveal differences in Total Problem scores across time, the cutoffs for Time 4 YSR scores were similar to the Time 3 cutoffs. Similarly, Time 5 cutoffs for the YASR were applied to Time 4 YASR scores.

An important aim of our study was to assess meaningful changes in problem behavior over time. Changes from above P90 to just below the clinical cutoff can hardly be regarded as meaningful. Therefore, the 50th percentile (P50) of the cumulative frequency distribution was chosen as the border below which individuals are considered to function well. For the assessment of the 50th percentile score, we followed the same procedure as described for the 90th percentile score. The use of the 50th and the 90th percentiles enabled us to identify individuals whose functioning improved or worsened considerably across time.

Using the YSR Total Problem score, we classified 39 subjects as deviant at Time 3. Figure 3.1 shows the developmental course of these 39 subjects across the 4-year follow-up. We also followed the 195 subjects who scored below P50 at Time 3 (Figure 3.2). Figure 3.3 shows the developmental course of problem behavior in individuals who scored above P90 at Time 5.

Figure 3.1. Developmental pathways of individuals who scored above the P90 at Time 3.

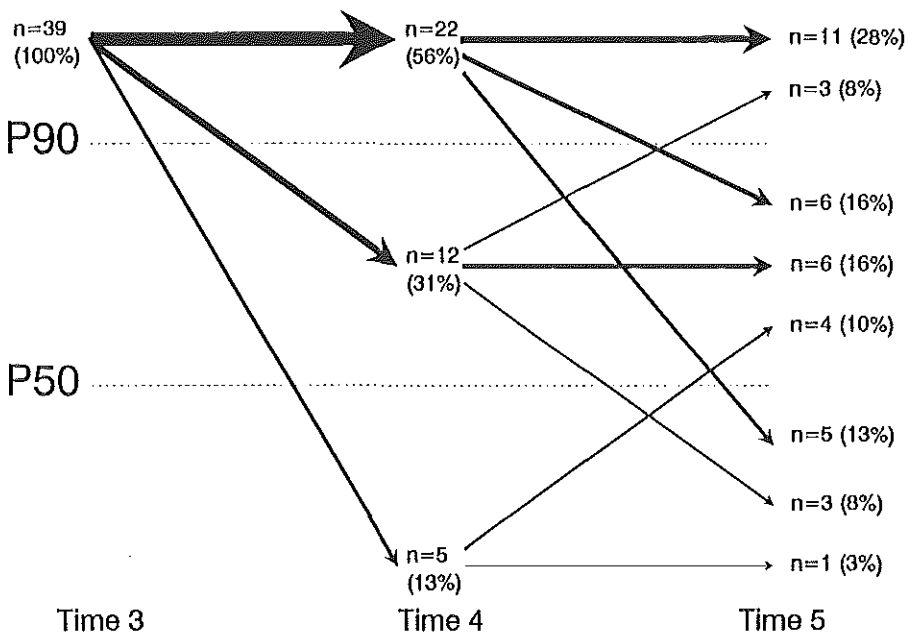


Figure 3.2. Developmental pathways of individuals who scored below the P50 at Time 3.

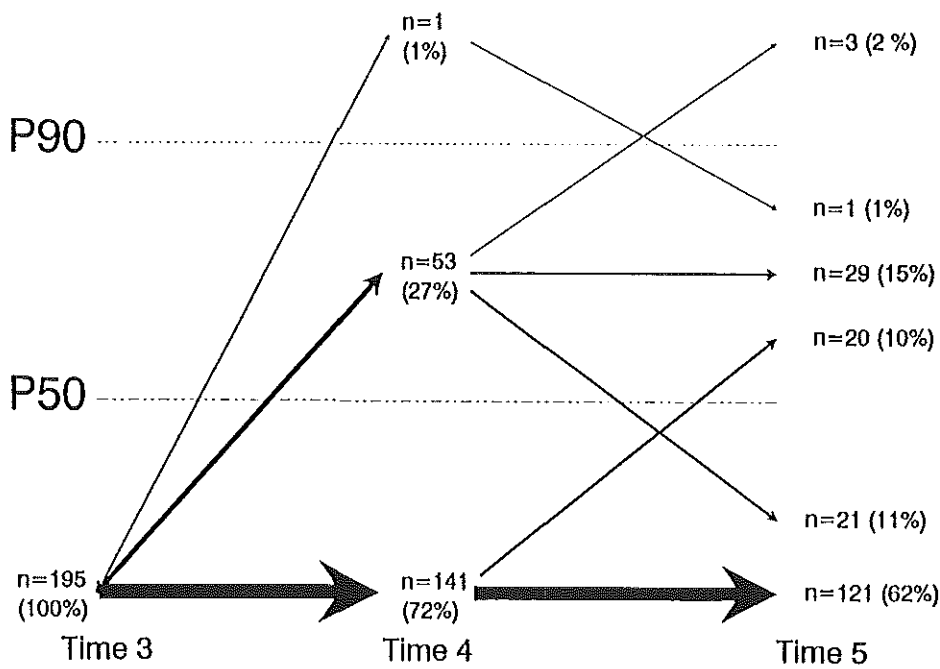
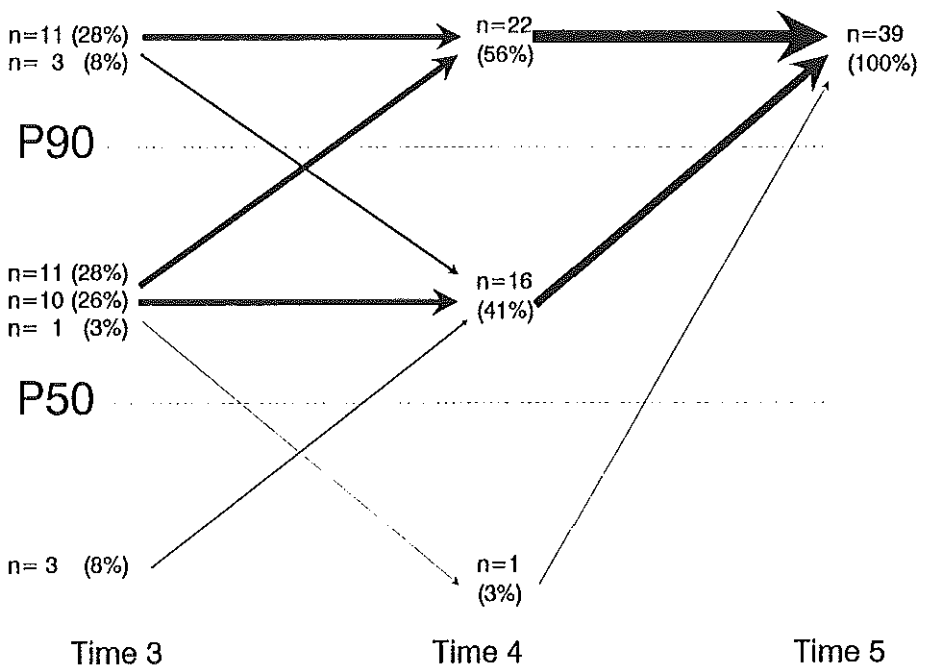


Figure 3.3. Developmental pathways of individuals who scored above the P90 at Time 5.



Syndrome scores

To assess effects of sex, age, and time of assessment, syndrome scores were compared by MANOVAs with a 2 sex (males versus females) x 2 age groups (15-16 years versus 17-18 years at Time 3) between-subjects, and 3 times of assessment within-subjects factorial design. The percentage of variance accounted for is shown in parentheses. By correcting for the number of analyses, according to Sakoda et al. (1954), we controlled for chance findings, using a $p<0.05$ protection level.

Time of assessment. Across both sexes, Time 4 scores were higher than Time 3 scores on Attention Problems (1.4%) and Thought Problems (2.8%).

Age effects. An age effect (1.2%) was found for the Withdrawn syndrome, with higher scores at older ages.

Sex effects. Across all three assessments, females scored higher on 5 syndromes. Medium sex effects were found for Anxious/Depressed (8.2%), Somatic Complaints (12.7%), and Internalizing (10.1%). Small sex effects were found for Withdrawn (4.3%) and Attention Problems (3.7%).

Interactions. After correction for chance findings, 4 two-way interactions between age and time of assessment were found. At Time 5, scores for Withdrawn (1.8%) showed a greater increase with age than at other times of assessment. Furthermore, scores for Somatic Complaints (1.6%) and Internalizing (0.7%) increased with age at Time 5. At Time 3, scores increased with age for Thought Problems (1.9%).

Three small two-way interactions indicated higher scores with increasing age for females but not for males on Somatic Complaints (1.3%), Anxious/Depressed (1.2%), and Internalizing (1.1%) across the three assessments.

Stability coefficients. To assess differences in 4-year stability between different types of problems, we computed Pearson correlations between Time 3 and Time 5 syndrome scores, as shown in Table 3.1.

Table 3.1. Four-year stability coefficients (r) for syndrome scores and Total Problem score.

YSR syndrome	Boys $n=177$	Girls $n=228$	Average $n=405$
Withdrawn	.33	.41	.37
Somatic Complaints	.33	.40	.37
Anxious/Depressed	.35	.49	.43
Social Problems	.39	.39	.39
Thought Problems	.29	.33	.31
Attention Problems	.42	.45	.44
Delinquent Behavior	.43	.39	.41
Aggressive Behavior	.48	.46	.47
Internalizing Problems	.44	.49	.47
Externalizing Problems	.57	.55	.56
Total Problem score	.46	.52	.49

Note.
All stability coefficients were significant at $p<0.001$. Average correlations were computed by Fisher's z transformation.

Following the method of Steiger (1980), designed to test differences between correlations within one sample, we found that the stability coefficients of the Internalizing and Externalizing scales did not differ significantly in males ($r=0.44$ versus $r=0.57$; $p=$n.s.) and females ($r=0.49$ versus $r=0.55$; $p=$n.s.).

With respect to syndrome scales, no significant sex differences between stability coefficients were found.

Table 3.2. The course of Internalizing and Externalizing problems at the categorical level.

	LLL	HHH	LH	HL
Internalizing	105(46/59)	12(3/9)	3(0/3)	8(4/4)
Externalizing	105(52/53)	13(4/9)	2(1/1)	7(4/3)

Note.
LLL= score below P50 at three times of assessment.
HHH= score above P90 at three times of assessment.
LH= score below P50 at Time 3, and above P90 at Time 5.
HL= score above P90 at Time 3, and below P50 at Time 5.

Numbers in parentheses indicate males and females respectively.

Categorical stability of Internalizing versus Externalizing

Table 3.2 gives information on the course of Internalizing and Externalizing problems at the categorical level. Cutoff scores were computed for Externalizing and Internalizing scales as described for the Total Problem score. It is shown that the developmental course of Externalizing and Internalizing Problems was almost identical.

To investigate the effect of comorbidity on the prognosis of deviant Internalizing and Externalizing problem scores, we performed logistic regression analyses (method: likelihood ratio). Logistic regressions yield odds ratios (*OR*) for specific outcomes in relation to predictor variables. Odds ratios greater than 1 indicate a positive association between the predictor and the outcome variable, while values smaller than 1 indicate a negative association. We performed forward stepwise logistic regression analyses, using a significance level of $p < 0.05$ for the full model and for inclusion of predictor variables in the model. In this way, variables not contributing independently to the prediction of an outcome variable were removed.

We performed 2 analyses, in which Time 5 Internalizing and Externalizing scores were entered as outcome variables respectively. In both analyses, Time 3 Internalizing and Externalizing scores, sex (male=0, female=1), and age at Time 3 were entered as candidate predictor variables. Scale scores above P90 were recoded as '1'; lower scores were recoded as '0'. Cutoffs were determined for each sex separately.

Deviant Time 5 Externalizing scores were predicted by Time 3 Externalizing scores (OR=12.1), and not by Internalizing scores, age and sex. Time 5 Internalizing scores above P90 were predicted independently by Time 3 Internalizing (OR=4.6) and Externalizing scores (OR=3.4), and not by age and sex.

Discussion

Total Problem scores

Mean Total Problem scores did not change significantly across the 4-year time-span, indicating that the mean level of problems did not change at the transition from adolescence to young adulthood. Furthermore, the average 4-year stability coefficient for Total Problem scores was 0.49, indicating that subjects retained their rank order relative to others to a considerable degree. Our findings correspond with those of Achenbach et al. (1995), who reported 3-year stability coefficients of 0.54 in males and 0.55 in females, between YSR and YASR Total Problem scores.

Beside the stability, we also determined the continuity of problems, that is the degree to which the same individual shows problems at different assessments. Applying a categorical approach, we tracked individuals who were classified deviant at Time 3 across four years. We found that subjects with high problem levels (>P90) in adolescence often remained above P90 (36%) or scored between P50 and P90 (42%) in young adulthood. Hence, both the stability and the continuity of self-reported behavioral and emotional problems at the transition from adolescence to young adulthood were considerable.

The percentage of individuals who moved from the deviant range to the low range (24%) was higher than the percentage of subjects who moved from the

low to the deviant range (2%). This difference may partly reflect regression to the mean. Regression effects are stronger in the more extreme ranges of the scoring distribution than closer to the mean. Scores above P90 would therefore show more regression to the mean than scores below P50.

A second possible contributor may be that some subjects who scored in the deviant range received professional help. In fact, subjects who scored above P90 at Time 3 were 13.8 times more likely to be referred for mental health services across the 4-year period than subjects who scored below P50 at Time 3. However, of the high scorers at Time 3, the Time 5 Total Problem scores of referred subjects (n=9) did not differ significantly from Time 5 Total Problem scores of the nonreferred subjects (Mann-Whitney U test: Z=0.40, p=n.s.). Although the statistical power of this test was low, due to the small number of referred subjects, this might indicate that the tendency of high scorers to change more than low scorers was not attributable to mental health services.

Only 3 (8%) of the 39 individuals who scored above P90 at Time 5 could be considered well adapted at Time 3, whereas 14 (36%) were already deviant at Time 3. Hence, more than a third of the young adults who were deviant had been identified as deviant in adolescence. This underscored the need for therapeutic interventions and against a wait and see policy with respect to adolescent psychopathology.

Comparisons with the stability of problem behaviors in younger subjects. Verhulst and Van Wattum (1993) obtained a 2-year stability of 0.63 for YSR Total Problem scores in a general population sample, aged 11 to 16 at the first assessment. This did not differ significantly from the 2-year stability coefficients in the present study for Total Problem scores between Time 3 and Time 4 (r=0.67, Z=1.39, p=n.s.) and between Time 4 and Time 5 (r=0.70, Z=0.63, p=n.s.).

We also compared our findings with those reported by Verhulst et al. (1989, 1990, 1991, 1992b), who reported on the 4- and 6-year course of CBCL scores in an epidemiological sample of subjects aged 4 to 12 years at the first assessment. They found an average 4-year stability coefficient of 0.66 (n=1,200) for the CBCL Total Problem score, which is significantly higher than the 4-year stability coefficient of 0.49 in the present study (Z=4.41, p<0.001). This indicated that subjects aged 4 to 12 were more likely to preserve their rank order

with respect to CBCL Total Problem scores across a 4-year time-span, than adolescents were with respect to YSR and YASR Total Problem scores.

Because stability coefficients do not give information on the course of problems in particular subgroups of scores, such as those having deviant scores, we compared our categorical findings to those of Verhulst and Van der Ende (1991), who applied the same categorical approach to the CBCL Total Problem score as we did to YSR and YASR scores. They found that 41% of the subjects who scored above P90 at the first assessment, versus 36% in the present study, still scored in the deviant range 4 years later. Furthermore, in their study, 15% who originally scored in the deviant range, versus 24% in the present study, scored below P50 after 4 years. The proportions of initially high-scorers who remained above P90, scored between P50 and P90, or scored below P50, did not differ significantly between the two studies ($\chi^2=5.63$; $df=2$; $p=$n.s.). This indicated that despite a significantly lower 4-year stability of Total Problem scores in adolescents versus younger ages, the course of problems in deviant individuals did not differ between adolescence and younger ages.

Several factors may be responsible for continuities in psychopathology. Continuity of problems may stem from enduring individual characteristics or from links between different unfavorable environments (Rutter, 1984). According to Sameroff and Seifer (1983), developmental risk (in children) is determined by the relation between individual characteristics and the ability of the environment to regulate the development of a child toward social norms. The following individual characteristics, conceptually based on different theoretical backgrounds, may affect the course of problems: styles of response to stress; habits, attitudes, and self-concepts; irreversible neural consequences of psychological adversities; and the structure of personality (see Rutter, 1984). Links between different unfavorable environments may arise from constancy of environmental forces, selection of environments due to individual characteristics, and effects stemming from opening up or closing down of opportunities.

Children and adolescents often live with their parents, resulting in a long-term constancy of environmental forces. Garmezy (1987) reported that low socio-economic status of the parents, and negative family attributes of cohesion (inconsistent rules, few family activities) and stability and organization (no jobs,

family moves, broken relationships) were related to low competencies, a greater likelihood to become disruptive under high levels of stress, and lower intelligence. Furthermore, according to Sameroff and Seifer (1983), worse parental conceptions of reality may increase the impact of stress on a child, while better parental perspectives of reality may provide the child with optimal growth experiences. This underscored the importance of the family as an influential factor on the consistency of psychopathology in children and adolescents.

Our findings indicated that the stability of problems from adolescence to young adulthood was probably smaller than the stability of problems during childhood. This may be related to the fact that development from adolescence into young adulthood is associated with significant changes in the the parent-child relationship. Young adults often take more responsibility for their own lives and often leave their families, which may weaken the effect of family factors on the stability of problems.

School may form another long-lasting environmental influence on psychopathology in children. Summing up her findings, Werner (1989) reported that beside attributes of the individual and family characteristcs, external support systems that reward individuals' competencies and determinations, and that provide a belief system by which to live, are also of influence on resiliency in children. School may form one of these support systems. The influence of school on childrens' development was supported by Clark (1983), who found that exposure to stimulating and supportive teachers increased school achievement. In The Netherlands, the educational system is characterized by a shift from a more individual approach by schools and teachers during elementary school, to a more impersonal and less individual approach during adolescence and young adulthood. This may also be responsible for the greater stability of psychopathology during childhood versus older ages.

For the extreme scoring range (>P90), we did not find significant differences in the continuity of problems between the present study's sample and the Verhulst and Van der Ende (1991) sample. This might indicate that school or family environmental factors are less important in the more extreme scoring ranges than those closer to the mean.

Future studies are needed to determine the contribution of environmental

factors versus personal characteristics to the continuity of problems from adolescence into young adulthood. Furthermore, because adolescent problems are likely to continue, we need more knowledge on the efficacy of interventions.

Sex effects. A small sex effect was found for Total Problem scores, with females scoring significantly higher than males. Hence, while females and males did not differ significantly in the stability or continuity of problems, the mean level of problems was somewhat greater in females than in males.

Internalizing versus Externalizing problems

Internalizing and Externalizing problems showed a similar 4-year course, both in terms of categorical and quantitative stability. Furthermore, the mean Externalizing scores did not differ significantly by age or time of assessment, while there was a very small tendency (0.7% of variance) for Internalizing scores to increase from ages 19-20 to 21-22 across both sexes. This effect was probably a cohort effect, since no effect was found for time of assessment.

Previous studies suggested that the outcome of childhood internalizing problems in adult life was generally better than that of externalizing problems (see Rutter and Garmezy, 1983). Conversely, our findings indicated that internalizing problems were as continuous as externalizing problems across time from adolescence into young adulthood. Persistence of externalizing problems may be associated with persistent discomfort to others in the individual's environment as a consequence the behavior of the subject. A high continuity of internalizing problems however, indicates that the individual persistently suffers from his or her own problems. Clinicians should be aware of the finding that internalizing problems were as persistent as externalizing problems. Internalizing problems should not be disregarded because they are not more likely to disappear across time than externalizing problems.

Deviant Time 5 Externalizing scores were predicted by Time 3 Externalizing ($OR=12.1$), but not by Internalizing scores. Apparently, to determine the risk for later externalizing problems in an individual adolescent, knowledge of present externalizing problems is needed, while knowledge of present internalizing problems is less relevant. Our findings also indicated that, to prevent externalizing problems in young adulthood, prevention programs should

focus on externalizing problems in adolescence, while there is no need to focus on internalizing problems.

Internalizing problems (OR=4.6) and Externalizing problems (OR=3.4) both predicted deviant Time 5 Internalizing scores. Hence, the prognosis of internalizing problems was influenced negatively by the simultaneous presence of externalizing problems. For subjects with initially deviant Internalizing scores, the odds for deviant Internalizing scores at Time 5 increased from 4.6 to 15.6 (3.4*4.6) in case of comorbid Time 3 Externalizing scores in the deviant range. Our findings indicated that to prevent later internalizing problems, on an individual level or on a general population level, interventions should not only focus on these internalizing problems, but also on possible comorbid externalizing problems.

Sex effects. While Externalizing scores did not differ significantly by sex, females scored higher than males on the Internalizing scale across all assessments (10.1% of variance), and females' Internalizing scores increased somewhat with age across all assessments (1.1% of variance). Hence, while both types of problems were equally persistent in males and females, females more often suffered from internalizing problems than males. This finding corresponds to the fact that young adult females more often seek professional help or indicate need for help without receiving it than males (see Ferdinand and Verhulst, 1994).

Syndrome scores

Anxious/Depressed. We found moderate stability coefficients for the Anxious/Depressed scale in males (r=0.35) and females (r=0.49). Verhulst and Van Wattum (1993) found 2-year stability coefficients of 0.56 and 0.70 for the Anxious/Depressed syndrome in adolescent boys and girls, originally aged 15 to 16 years, whereas Achenbach (1995) reported 3-year stability coefficients of 0.54 and 0.52 respectively. In comparison to their findings, the stability coefficients in the present study were lower. The shorter time-span of covered by these studies versus the present study may be responsible for this difference.

Kandel and Davies (1986) reported 9-year stability coefficients for a 6-item scale for depression of 0.35 in males and 0.44 in females, which is almost equal to the 4-year stability coefficients in the present study. Differences in the

item content of the syndrome scales might be responsible for this difference. The 6-item scale used by Kandel and Davies (1986) contained only one anxiety symptom, and 3 on depression, whereas the Anxious/Depressed scale of the YSR contains 6 items on anxiety and 6 on depression. If symptoms of anxiety are less stable than symptoms of depression, this could explain the lack of difference between the 4- and 9-year stability coefficients. To test the difference between the stability of the anxiety and depression items, we computed separate 4-year stability coefficients for the sum of the 6 anxiety items and the 6 depression items. Four-year stability coefficients for the 'anxiety items' were 0.40 and 0.49 in males and females respectively. For the 'depression items', we found stability coefficients of 0.22 in males and 0.47 in females. This indicated that the stability of the Anxious/Depressed scale was not negatively influenced by the presence of anxiety items.

The similar stability of the Anxious/Depressed scale in females and males did not indicate that young men and women suffered from these problems to an equal extent. Syndrome scores were higher in females than males, and females' scores increased with age. In other words, anxiety and depression were reported more often by females than males, and the prognosis of these problems was somewhat worse for females than for males. This suggested that problems of anxiety and depression might require a somewhat more vigorous treatment approach in females than in males.

Somatic Complaints. The findings indicated that somatic complaints without known medical origin formed a relatively stable condition in adolescents from the general population. The mean level of problems was higher in females than in males (*variance*=12.7%), a difference that increased somewhat across time. Although somatic complaints were rather stable, Ferdinand and Verhulst (1994) found that the Somatic Complaints scale of the YASR did not predict referral to mental health services in initially 18- to 22-year-olds across a 2-year time-span, while it did predict need for professional help without actually receiving help, independently of other YASR scales. Further studies, especially aimed at female young adults, are needed to determine why somatic complaints, that were rather stable, were related with need for professional help, but not with actual referral.

Withdrawn. The Withdrawn syndrome contains items on withdrawl from contacts and relationships with others. The Withdrawn syndrome was as stable as the other syndrome scales. The connection between this syndrome and DSM-IV (American Psychiatric Association, 1994) is not clear. Since it is comprised by the Internalizing scale, it is probably associated with the Anxious/Depressed and Somatic Complaints scales. This was supported by Ferdinand and Verhulst (1995c), who found correlations of 0.67 between the Withdrawn and Anxious/Depressed scales, and of 0.44 between the Withdrawn and Somatic Complaints scales, in 18- to 24-year-olds from the general population. This indicated that treatment of somatic complaints, anxiety, and depression should also focus on possible comorbid withdrawl from relationships with other people, since these problems were no more likely to disappear than other problems.

Social Problems. The stability coefficient of this scale was in the same range as for other scales, and not much lower than the 3-year stability coefficient reported by Achenbach et al. (1995). This indicated that social problems are no more likely to disappear than other problems. Social problems should therefore not be disregarded, which might be likely to happen in clinical practice, since as for the Withdrawn syndrome, DSM-IV (American Psychiatric Association, 1994) does not contain social problems as a specific disease category.

The Thought Problems scale contains items on strange behaviors, delusions and hallucinations, and obsessive-compulsive symptoms. Despite this variety of problems, the stability of the scale did not differ significantly from the stability of other scales. This supported the validity of the Thought Problems scale as a distinct syndrome.

The stability of the Thought Problems was in the same range as for other scales, while the mean level of problems was somewhat higher in older versus younger subjects. Because of this increase in the level of problems with growing age, problems scored by the Thought Problems scale should not be disregarded in clinical practice, despite the wide variety of problems contained by the syndrome.

Attention Problems and Hyperactivity. We found moderate stability for the Attention Problems scale. Furthermore, mean scores increased somewhat across time. The present study indicated stability of attention problems and hyperactivity, similar to reports of Barkley et al. (1990) and Gittelman et al. (1985), despite

differences in assessment procedures (psychometric versus categorical approach) and sampling procedures (general population sample versus clinical sample). This supported the view that these problems constitute a relatively stable condition, from childhood and adolescence into young adulthood.

In clinical practice, attention problems and hyperactivity form a well-recognized problem area for children and adolescents, but not for young adults. Our findings suggested that attention problems may form an underestimated area of psychopathology in young adults. This was supported by Ferdinand and Verhulst (1994), who studied a sample of young adults from the general population, and found that the Attention Problems scale of the YASR predicted need for help without actually receiving help across a 2-year time-span, independently of other YASR scales. Further studies are needed to assess the prevalence of attention problems in young adults, and to determine the effects of therapeutic interventions, that are often succesful in younger age groups (Klorman et al., 1989), in this specific age group.

Aggressive Behavior and Delinquent Behavior. For the Aggressive Behavior and Delinquent Behavior scales, we found considerable 4-year stability coefficients of 0.47 and 0.41 respectively, which was consistent with the findings by Achenbach et al. (1995), who reported 3-year stabilities in the same range as in the present study for both Aggressive Behavior (r=0.44) and Delinquent Behavior (r=0.42), and with other previous studies (see Rutter, 1983). However, while previous studies indicated that the mean level of antisocial activity fell in early adult life, we found that mean scale scores did not differ across the three assessments or the two age groups. The discrepancy between our results and previous findings may be explained by the fact that we used similar assessment procedures at initial and follow-up assessments, while previous studies that applied this approach are not available. Our findings underscored the importance of the use of assessment procedures that are comparable across time in longitudinal studies, since the use of incomparable procedures apparently may result in wide-spread misbeliefs with respect to the developmental course of problems.

We found that aggressive and delinquent behaviors in adolescence tended to persist into young adulthood to a considerable degree. Since persistency of problems across time does not indicate that problems cannot be altered by

therapeutic intervention, aggressive and delinquent behaviors in adolescence deserve the attention of psychiatrists.

The stablility of problems with aggression and delinquency did not differ by sex. This indicated that these problems should be taken seriously in females and in males.

We did not find a sex difference for mean scores on the Delinquent Behavior syndrome, while previous studies (see Regier et al., 1988) found higher prevalence rates for antisocial personality in males versus females. Selective attrition during the course of the longitudinal study may be responsible for this finding.

Conclusions

Our findings indicated that adolescents' self-reported problems tended to be stable across a 4-year time-span. Almost 40% of the adolescents who were classified as deviant initially, were still deviant 4 years later. The tendency of behavioral and emotional problems to persist from adolescence into young adulthood was similar to that found in younger adolescents. Although many individuals showed changes in their level of functioning, extreme changes were the exception rather than the rule. As opposed to previous studies, all types of problems assessed in this study, whether internalizing or externalizing, tended to persist from adolescence into young adulthood to a similar degree. This holds also for problems that are often regarded as typical childhood problems, such as attention problems and hyperactivity.

CHAPTER 4

PSYCHOPATHOLOGY FROM ADOLESCENCE INTO YOUNG ADULTHOOD: AN 8-YEAR FOLLOW-UP STUDY

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PSYCHOPATHOLOGY FROM ADOLESCENCE INTO YOUNG ADULTHOOD: AN 8-YEAR FOLLOW-UP STUDY

Abstract

Objective: To investigate stability and change of behavioral and emotional problems from adolescence into young adulthood. Methods: Subjects from the general population, aged 13 to 16 years, were assessed with the Child Behavior Checklist (CBCL) at initial assessment, and with the Young Adult Self-Report (YASR) 8 years later. The scoring format and factor structure of the YASR are similar to that of the CBCL. The constitution of CBCL and YASR syndromes was based on parents', teachers' and self-report information of large clinical samples. Furthermore, signs of maladjustment were assessed at follow-up. Results: 27.3% of the individuals with deviant CBCL Total Problem scores had deviant YASR Total Problem scores at follow-up. The probability of deviant YASR Total Problem scores at follow-up was raised 7.4-fold by deviant scores on the CBCL syndromes Somatic Complaints and Anxious/Depressed (simultaneously) at initial assessment. Referral to mental health services was predicted by deviance on the Anxious/Depressed syndrome, while suicide attempts were predicted by deviance on the Withdrawn syndrome of the CBCL. Conclusions: Adolescent problems tended to persist into young adulthood to a moderate degree. High rates of withdrawal from social contacts, anxiety or depression, somatic complaints without known medical origin, social problems, attention problems, delinquent behavior, and aggressive behavior during adolescence were risk factors for specific types of psychopathology and maladjustment at 8-year follow-up. The presence of psychopathology in adolescence should not be regarded as normative.

Introduction

Knowledge of the course of psychopathology from adolescence into adulthood is indispensable to determine the need for intervention and prevention.

Findings on the stability of psychopathology in clinical samples cannot be generalized, because clinical samples are confounded by referral biases (Caron and Rutter, 1991). Furthermore, the referral rate for individuals with multiple disorders is greater than for those with only one disorder (Berkson, 1946). The presence of more than one disorder is related to a greater continuity of psychopathology across time (Verhulst and Van der Ende, 1993). To obtain information on the course of psychopathology that is valid across different samples, we need to assess general population samples across time.

General population studies that prospectively assessed a broad range of psychopathology from adolescence into adulthood via comparable procedures at different assessments were performed by Achenbach et al. (1995) and Ferdinand et al. (1995a).

In a 4-year follow-up, Ferdinand et al. (1995a) used the Youth Self-Report (YSR; Achenbach, 1991d) to assess 405 15- to 18-year-olds from the general population, and the Young Adult Self-Report, (YASR; Achenbach, 1990), a version of the YSR adjusted for young adults, at follow-up. The YSR and the YASR are comparable instruments for the assessment of psychopathology in adolescents and young adults, respectively. Ferdinand et al. (1995a) reported a 4-year stability coefficient of 0.49 for YSR and YASR Total Problem scores. This finding was consistent with that by Achenbach et al. (1995), who reported a 3-year stability of 0.55 for YSR and YASR Total Problem scores in 732 subjects, initially aged 15 to 18, from a national sample.

Other prospective studies focussed on narrower areas of psychopathology. Fleming et al. (1993) studied the 4-year course of depression in 652 adolescents, initially aged 13 to 16 years, from the general population. They found that 25% of the subjects who initially fulfilled DSM-III criteria for major depressive syndrome, assessed with a parent questionnaire, received a DSM-III diagnosis of major depressive disorder, assessed with a self-report questionnaire, at follow-up. However, the authors did not report on the validity of the assessment procedures. Kandel and Davies (1986), who studied 1,004 high-school students, initially aged 15 or 16 years, reported 9-year stabilities of a six-item self-report depression scale of 0.35 in males and 0.44 in females. The generalizability of these findings was limited, because $<15\%$ of the original sample was followed up.

To assess the outcome of adolescent psychopathology in young adulthood, information on signs of maladjustment that are external to the initial measurements, such as referral to mental health services, police contacts, and suicide attempts, in addition to the assessment of behavioral and emotional problems, can be useful. Previous follow-up studies reported a greater number of periods of unemployment in initially depressed versus nondepressed males (Kandel and Davies, 1986), a greater tendency to drop out of high school in initially depressed females (Kandel and Davies, 1986), and a greater tendency to seek help

in initially depressed subjects (Fleming et al., 1993).

The present study was designed:

(1) to determine the 8-year course of psychopathology in an epidemiological sample of 459 adolescents. Subjects were initially assessed at ages 13 to 16 years with the Child Behavior Checklist (CBCL; Achenbach, 1991b), a parent questionnaire for ages 4 to 18, covering a broad range of behavioral and emotional problems. Subjects were reassessed eight years later with the YASR.

(2) to assess the predictive value of adolescent psychopathology with respect to later maladjustment, indicated by the following signs of maladjustment: referral to mental health services, police and judicial contacts, expulsion from school or job, suicide attempts, and alcohol abuse.

Methods

Population

The original sample of 2,600 children aged 4 to 16 years, was drawn from the Dutch province of Zuid-Holland in 1983. This sample was followed up at 2-year intervals. At Time 1, parents completed the CBCL. Subjects aged 13 to 16 years at Time 1, and who were 21 to 24 years 8 years later, completed the YASR in 1991 (Time 5). Outcome variables were assesssed via interviews. For details on data collection, see Verhulst et al. (Verhulst et al., 1985a, 1985b) and Ferdinand and Verhulst (1994).

Of the Time 1 target sample of 754 children aged 13 to 16 years, 612 parents completed the CBCL. At Time 5, YASRs were obtained from 213 males and 246 females, which was 76.8% of the Time 1 sample, and 62.0% of the original target population. Response rates were corrected for 14 untraceables.

To investigate the extent of selective dropout, we compared dropouts and remainers with respect to Time 1 CBCL Total Problem scores, Time 4 (1989) YSR or YASR Total Problem scores, and socio-economic status (SES) of the parents at Time 1. Time 4 YSR and YASR Total Problem scores were computed without counting 10 items that were not included in both instruments. Such YSR and YASR Total Problem scores are comparable measures of psychopathology (Ferdinand et al., 1995a). SES was assessed via a six-step scale of parental

occupation (Van Westerlaak et al., 1975), with 1=lowest and 6=highest level of SES.

After recoding Total Problem scores below P90 as '0' and above P90 as '1', we performed multiple logistic regressions with cooperation versus attrition at Time 5 as dependent variable. Likelihood ratio tests were used to test the significance of full regression models at a $p<0.05$ level. We entered Time 1 CBCL Total Problem scores and SES as candidate predictor variables in the first analysis (n=612, residual χ^2=5.649, df=2, p=n.s.). In a second analysis, we included Time 4 YSR/YASR Total Problem scores, that were available for 533 subjects, and SES as candidate predictors (n=533, residual χ^2=3.303, df=2, p=n.s.). These findings supported the representativeness of the present study's sample.

Instruments

The Child Behavior Checklist (Achenbach, 1991b) is a parent questionnaire for 4- to 18-year-olds. The first part consists of 20 competence items. The second part contains 120 items on behavioral or emotional problems during the past 6 months. The response format is: 0=not true, 1=somewhat or sometimes true, and 2=very true or often true. A Total Problem score is derived by summing the responses of each problem item. The CBCL is a reliable and valid instrument (Verhulst et al., 1985a, 1985b; De Groot et al., 1994).

Achenbach constructed eight 'cross-informant' syndromes (Achenbach, 1991a), that were based on parent reports (CBCL), teacher reports (TRF; Achenbach, 1991c), and self-reports (YSR) for large samples of children referred to clinical settings, including child guidance clinics, university child psychiatric clinics, community mental health centers, private practices, and inpatient services. Achenbach performed two sets of principal components analyses on CBCL problem items of each sex and different age groups. The first set of analyses concerned all CBCL problem items, that met certain minimal frequency criteria, while the second set concerned problem items common to the CBCL, YSR, and TRF. For TRF and YSR items, a similar procedure as for CBCL items was followed. For each instrument (CBCL, TRF and YSR) the syndromes obtained from the analyses of all the problem items and from the common items were

compared across sex/age groups to identify those syndromes that were similar for multiple groups. For each syndrome, a core syndrome for the CBCL, TRF, and YSR was derived from the items that were common in the versions of the syndrome for most sex/age groups. Then, cross-informant syndromes were derived from items common to the core syndromes for at least two of the three instruments.

The syndromes designated as 'Withdrawn', 'Somatic Complaints', and 'Anxious/Depressed' constitute the 'Internalizing' scale, that reflects problems related to internal distress. The syndromes designated as 'Delinquent Behavior' and 'Aggressive Behavior' constitute the 'Externalizing' scale, reflecting conflicts with other people and with their expectations of the individual. The 'broad band' syndromes Internalizing and Externalizing were derived as follows: (1) correlations between the raw scores on the syndrome scales were computed separately for each sex/age group on the CBCL, YSR, and TRF; (2) principal factor analyses of the correlations among scale scores separately for each sex/age group were performed; (3) the two largest factors in each solution were rotated to the varimax criterion; (4) averaged across all groups, the loadings of the syndrome scales yielded the following rank order of syndromes on the 'Internalizing' factors (mean loadings in parentheses): 1. Withdrawn (.78); 2. Somatic Complaints (.69); 3. Anxious/Depressed (.65). The rank order of syndromes on the Externalizing factors was: 1. Aggressive Behavior (.79); 2. Delinquent Behavior (.78). Scores on the broad band syndromes are the sum of their constituent syndromes, items not being counted twice. The constituent items of the CBCL syndromes are shown in Table 4.1

Table 4.1. Cross-Informant constructs.

Withdrawn
Would rather be alone
Refuses to talk
Secretive
Shy, timid
Stares (C)
Sulks (C)
Underactive
Unhappy, sad, depressed
Withdrawn

Somatic Complaints
Feels dizzy
Overtired
Aches, pains
Headaches
Nausea
Eye problems
Rashes, skin problems
Stomachaches
Vomiting

Anxious/Depressed
Lonely
Cries a lot
Fears impulses
Needs to be perfect
Feels unloved
Feels persecuted
Feels worthless
Nervous, tense
Fearful, anxious
Feels too guilty
Self-conscious
Suspicious
Unhappy, sad, depressed
Worries
Harms self (Y)
Suicidal thoughts (Y)

Attention Problems
Acts young
Can't concentrate
Can't sit still
Confused
Daydreams
Impulsive
Nervous, tense
Poor school/job performance
Clumsy
Stares blankly (C)
Twitches (C)

Social Problems
Acts too young
Too dependent
Doesn't get along with peers
Gets teased
Not liked by peers
Clumsy
Prefers younger people
Overweight (C)
Withdrawn (Y)

Thought Problems
Can't get mind off thoughts
Hears things
Repeats acts
Sees things
Strange behavior
Strange ideas
Stares blankly (C)
Stores up things (Y)

Table 4.1, continued.

Delinquent Behavior
Lacks guilt
Bad companions
Lies
Prefers older people
Runs away from home (C)
Sets fires
Steals at home (C)
Steals outside home
Swearing, obscenity
Alcohol/drugs (C)
Truancy (C)
Thinks about sex too much (C)
Vandalism (C)
Tardy (Y)

Aggressive Behavior
Argues
Brags
Mean to others
Demands attention
Destroys own things
Destroys others' things
Disobedient at school (C)
Jealous
Fights
Attacks people
Screams
Shows off
Stubborn, irritable
Sudden mood changes
Talks too much
Teases
Temper tantrums
Threatens
Loud
Disobedient at home (C)

Items comprised by Total Problem score but not by syndromes
Acts like opposite sex
Doesn't eat well
Fears
Accident-prone
Bites fingernails
Nervous movements
Nightmares
Eats too much
Other physical problems
Picks skin
Trouble falling asleep
Sleeps much
Speech problem
Too neat
Trouble sleeping
Wishes to be opposite sex
Bowel movements outside (C)
Cruel to animals (C)
Eats non food (C)
Harms self (C)
Fears school (C)
Stores up unneeded things (C)
Talks suicidal (C)
Sleepwalking (C)
Plays with sexparts in public (C)
SexpartsM (C)
Wets self (C)
Sex problems (C)
Smears bowel movements (C)
Thumb sucking (C)
Wets bed (C)
Whining (C)
Allergy (Y)
Asthma (Y)
Worries about job or school work (Y)

Table 4.1, continued.

Items comprised by Total Problem score but not by syndromes, continued
Concerned about how to look (Y)
Does things that may cause trouble with the law (Y)
Trouble making decisions (Y)
Does not pay debts (Y)
Overweight (Y)
Heart pounding (Y)
Numbness, tingling (Y)
Loses friends quickly (Y)
Worries about relations with opposite sex (Y)
Too concerned about health (Y)
Thinks about sex (Y)
Wakes up too early (Y)
Worries about future (Y)
Not comfortable with others (Y)

Note.
Items are in order of their appearance on the CBCL. Items are summaries of their content.
(C) = on CBCL but not on YASR; (Y) = on YASR but not on CBCL.

The Young Adult Self-Report is a questionnaire for young adults aged 18 to 30 years. It was modeled on the CBCL, and has the same format, except that items are worded in the first person. Furthermore, 29 items pertaining to child problems were replaced by problems pertaining to adults.

The first part of the YASR comprises 14 competence items. The second part contains 110 problem items and 15 socially desirable items. A Total Problem score is derived by summing the scores of each problem item. The YASR is a reliable and valid instrument (Achenbach et al., 1995; Ferdinand et al., 1995a; Ferdinand and Verhulst, 1994; Wiznitzer et al., 1992). The cross-informant syndromes, that were originally constructed for ages up to 18 years, are applicable to young adults. Ferdinand et al. (1995a) supported the applicability of the YSR syndromes to YASR scores obtained from 645 referred young adults. They performed a confirmatory factor analysis that yielded a high goodness-of-fit index between the YASR data and the YSR syndromes.

Signs of maladjustment. Time 5 assessment included the following signs of maladjustment, indicating whether the subject (a) had received mental health services; (b) had been expelled from school or from a job; (c) had been in trouble with the police, excluding minor traffic offences; (d) had attempted suicide, in the preceding 2 years. Furthermore, (e) alcohol use during the past 6 months was assessed. We computed cumulative frequency distributions for the frequency and for the amount of use. Alcohol abuse was judged to be present if an individual scored above the 90th percentile score (P90) for the frequency of use and the amount of use, that is more than 10 consumptions at least 4 days a week.

Statistics

P-values indicate the results of two-tailed tests, except for significance levels of correlations, where one-tailed tests were used. We used *t*-tests to test the significance level of correlations ($t=r$ x $sqrt((n\text{-}1)/(1\text{-}r^2))$; $df=n\text{-}2$; n=number of subjects). To test the significance of differences between independent correlations ($r1$ and $r2$), we computed Z-values ($Z=(Z1\text{-}Z2)/\sigma_{Z1\text{-}Z2}$; $\sigma_{Z1\text{-}Z2}=sqrt((1/(n1\text{-}3))+(1/(n2\text{-}3))$; n=number of subjects; $df=1$; Z1 and Z2 represent $r1$ and $r2$ after Fisher Z-transformation). To test the significance of differences between dependent correlations Steiger's method (1980) was used. Unless indicated otherwise, all computations concerned 213 males and 246 females.

Ethics

Each assessment phase of this study was approved by the Committee for Medical Ethics, Academic Hospital Rotterdam/Erasmus University Rotterdam. Informed consent was obtained from all subjects who completed a questionnaire (parents and youths), after the procedure had been fully explained.

Results

Total Problem scores

Stability coefficients. We computed Pearson correlations or stability coefficients between Time 1 CBCL and Time 5 YASR Total Problem scores (see Table 4.2). The stabilities for males ($r=0.21$, $n=213$, $p<0.01$) and females ($r=0.26$, $n=246$, $p<0.001$) did not differ significantly ($Z=0.56$, p=n.s.).

Table 4.2. Eight-year stability coefficients of total problem scores and Internalizing and Externalizing scores.

	Males n=213	Females n=246	Average n=459
Internalizing	.15[1]	.38	.27F[2]
Externalizing	.30	.17[3]	.24
Total problem score	.21[3]	.26	.24

Note.

[1,3] All correlations significant at $p<0.001$, except [1] (not significant) and [3] ($p<0.01$).

[2] F = correlation higher ($p<0.05$, $Z=2.46$) for females versus males.

Average correlations were computed by Fisher's z transformation. See methods section for further explanation of statistics.

Continuity and change at a categorical level. To assess the course of problems in individuals who were deviant at the first assessment, we applied a categorical approach. The P90 of the cumulative frequency distribution of the CBCL Total Problem score was used as a cutoff above which individuals were regarded deviant at Time 1, while the P90 of the Total Problem score of the YASR was used for this purpose at Time 5. Frequency distributions were computed for each sex separately. The Time 1 P90 of CBCL Total Problem scores was computed irrespective of cooperation or attrition at Time 5.

Changes from above P90 to just below P90 can hardly be regarded as meaningful. Therefore, the 50th percentile (P50) of the cumulative frequency distribution of the CBCL (Time 1) and the YASR (Time 5) was chosen as the border below which individuals were considered to function well. The use of P50 and P90 enabled us to identify individuals whose functioning improved or worsened considerably across time.

Applying the P90 to CBCL Total Problem scores, we found that out of 44 subjects who were classified as deviant at Time 1, 12 (27.3%) scored in the

deviant range at Time 5, while 17 (38.6%) had improved somewhat (scoring between P50 and P90), and 15 (34.1%) had scores below P50 at Time 5. Hence, across the whole sample, 2.6% ($n=12$) of the subjects scored above P90 at both assessments.

Furthermore, out of 228 subjects who scored below P50 at Time 1, 126 (55.3%) scored below P50 at Time 5, while 86 (37.7%) scored between P50 and P90, and 16 (7.0%) scored above P90 at Time 5.

In subjects who scored above P90 at Time 1, the probability of scoring above P90 at Time 5 was significantly greater than in subjects who scored below P50 at Time 1 (McNemar test; $\chi^2=4.67$, $df=1$, $p<0.03$).

Internalizing versus Externalizing scores

Stability coefficients for the Internalizing and Externalizing scales were 0.27 and 0.24 respectively. Following the method of Steiger (1980) to test differences between statistically dependent correlations, we found a significantly higher stability for Externalizing ($r=0.30$) versus Internalizing scores ($r=0.15$) in males ($Z=2.33$, $p<0.025$). Conversely, Internalizing scores ($r=0.38$) were significantly more stable than Externalizing scores ($r=0.17$) in females ($Z=3.85$, $p<0.001$).

The stability of the Internalizing scale was higher in females than males (0.38 versus 0.15, $Z=2.46$, $p<0.025$). No sex difference was found for the Externalizing scale ($Z=1.46$, $p=$n.s.).

Continuity and change at a categorical level. Of individuals who scored above P90 of the Internalizing scale at Time 1 ($n=54$), 16 (29.6%) scored above P90 at Time 5, while 25 (46.3%) scored between P50 and P90, and 13 (24.1%) scored below P50.

Of subjects who scored above P90 of the Externalizing scale at Time 1 ($n=44$), 12 (27.3%) scored above P90 at Time 5, whereas 22 (50.0%) scored between P50 and P90, and 10 (22.7%) scored below P50.

Syndrome scores

To determine whether individuals with deviant scores on Time 1 CBCL syndromes were at risk for specific problems at Time 5, we performed logistic

regression analyses. Logistic regressions yield odds ratios (*OR*) for specific outcomes in relation to predictor variables. Odds ratios greater than 1 indicate a positive association between the predictor and the outcome variable, while values smaller than 1 indicate a negative association. Likelihood ratio tests were used to test the significance of full regression models. We performed forward stepwise logistic regression analyses to identify the best set of predictors, using a significance criterion of $p<0.05$ for inclusion. In this way, variables not contributing independently of other variables to the prediction of an outcome variable were removed.

We computed cumulative frequency distributions of Time 1 CBCL and Time 5 YASR scale scores for each sex separately. Scores above P90 of the frequency distribution for each scale were considered deviant. Scores above P90 were recoded as 1, while lower scores were recoded as 0.

We performed regression analyses for each YASR syndrome separately. Each analysis included all recoded CBCL scale scores, age at Time 1 (13 to 14 versus 15 to 16 years), sex (0=male, 1=female), and SES as candidate predictor variables. SES was recoded into 3 categories: low = 1 or 2, middle = 3 or 4, and high = 5 or 6. The results are summarized in Table 4.3.

CBCL Time 1 scores and signs of maladjustment at Time 5

We performed a second set of logistic regression analyses, including the same set of candidate predictor variables as in previous analyses, and signs of maladjustment at Time 5 as outcome variables. Outcome variables were coded '0' if absent and '1' if present. A YASR Total Problem score above P90 was also regarded as a sign of maladjustment.

A general poor outcome variable was considered present when at least one sign of maladjustment was present ($n=96$). Very poor outcome was defined as the presence of at least two signs of maladjustment ($n=25$). The results are summarized in Table 4.4.

Table 4.3. Odds ratios for Time 5 YASR syndrome scores above P90 for Time 1 CBCL syndrome scores and gender.

Time 5 YASR syndrome	Time 1 predictor	Odds ratio[1]	Statistics[3](p/χ^2)
Withdrawn	Withdrawn	3.3(1.8-6.1)	$p<.001/\chi^2=12.730/df=1$
Somatic Complaints	Somatic Complaints	2.3(1.2-4.3)	$p<.01/\chi^2=10.975/df=2$
	Social Problems	2.1(1.0[2]-4.4)	
Anxious/Depressed	Somatic Complaints	2.7(1.4-5.2)	$p<.01/\chi^2=19.865/df=2$
	Anxious/Depressed	3.0(1.5-6.2)	
Social Problems	Delinquent Behavior	2.6(1.3-5.2)	$p<.01/\chi^2=6.819/df=1$
Thought Problems	Aggressive Behavior	3.0(1.5-5.8)	$p<.01/\chi^2=9.318/df=1$
Attention Problems	Anxious/Depressed	2.2(1.0[2]-4.5)	$p=.05/\chi^2=3.742/df=1$
Delinquent Behavior	Sex	.54(.31-.95)	$p<.05/\chi^2=5.574/df=1$
Aggressive Behavior	Aggressive Behavior	3.0(1.5-6.1)	$p<.01/\chi^2=8.112/df=1$

Note.

[1] Numbers in parentheses indicate 95% confidence intervals.

[2] Lower confidence limit was approximately 1.0 before rounding.

[3] p = level of significance of the regression model; χ^2 = model χ^2; df = degrees of freedom.

95% confidence limit = exp (β +/- ($Z_{\alpha/2}$ x $s(\beta)$)); exp(β)=odds ratio; s(β)=standard error of β;

$Z_{\alpha/2}$ = 100 x (1-α/2) percentile point of the standard normal distribution.

Table 4.4. Odds ratios for signs of maladjustment at Time 5, for Time 1 CBCL syndrome scores and gender.

Sign of maladjustment	Time 1 predictor	Odds ratio(*95% CI*[1])	Statistics[3]($p/\chi^2/df$)
Time 5 total problem score YASR >P90 (n=50)	Somatic Complaints Anxious/Depressed	2.1 (1.0[2]-4.2) 3.5 (1.7-7.3)	$p<.001/\chi^2=16.231/df=2$
Referral to mental health services (n=33)	Anxious/Depressed	4.0 (1.7-9.4)	$p<.01/\chi^2=8.944/df=1$
Police contacts (n=14)	Attention Problems Sex	6.6 (1.9-23.4) .14 (.03-.66)	$p<.01/\chi^2=12.914/df=2$
Alcohol abuse (n=22)	Sex	.13 (.04-.44)	$p<.0001/\chi^2=15.822/df=1$
Suicide (n=3)	Withdrawn	14.5(1.3-158.4)	$p<.05/\chi^2=4.828/df=1$
General poor outcome (n=96)	Anxious/Depressed	3.9 (1.5-9.9)	$p<.0005/\chi^2=16.409/df=1$
Very poor outcome (n=25)	Attention Problems	3.9 (2.0-7.4)	$p<0.01/\chi^2=6.755/df=1$

Notes.

[1] *95% CI* = 95% confidence interval (see Table 4.3 for computation).

[2] Lower confidence limit was approximately 1.0 before rounding.

[3] p = level of significance of the regression model; χ^2 = model χ^2; df= degrees of freedom.

Discussion

Total Problem scores

The present study assessed the 8-year stability of psychopathology in initially 13- to 16-year-olds from the general population. The 8-year stability of r=0.24 for Total Problem scores of the CBCL and the YASR was substantially lower than the 3-year stability of r=0.55 (Achenbach et al., 1995), and the 4-year stability of r=0.49 (Ferdinand et al., 1995a) of YSR (self-report version of the CBCL) and YASR Total Problem scores. According to Cohen (1988), stabilities under 0.30 are considered small, and between 0.30 and 0.50 medium. Hence, the 8-year stability of CBCL and YASR Total Problem scores (r=0.24), both for males (r=0.21) and females (r=0.26), could be considered small. At first sight, this seems to indicate that behavioral and emotional problems in adolescents do not strongly persist into young adulthood, which may be associated with significant changes in social, educational and occupational life, at the transition from adolescence into young adulthood.

However, several factors may have reduced the stabilities in the present study. First, 29 of the 120 CBCL problem items were not included in the YASR. Second, CBCL and YASR scores were obtained from different informants: parents at Time 1 versus subjects' self-reports at Time 5. Verhulst and Van der Ende (1992a) investigated the relation between scores on the CBCL and the YSR, the self-report version of the CBCL, that has a similar scoring format and contains approximately the same items as the YASR. In 883 11- to 19-year-olds from the general population, Verhulst and Van der Ende (1992a) found a correlation of 0.54 between Total Problem scores of the CBCL and the YSR, indicating a shared variance of only 29%, whereas McConaughy et al. (1992) found a correlation of 0.35 (*shared variance*=12%) in 1,706 11- to 19-year-olds. Hence, the finding of a stability of r=0.24 across an 8-year time-span, taking account of informant differences, can be regarded as a considerable persistence of problems across time.

At a categorical level, 27.3% of adolescents who scored in the deviant range of the Total Problem score of the CBCL at Time 1, scored themselves in the deviant range of the Total Problem score of the YASR at Time 5. Adolescents who initially scored in the deviant range were significantly more likely than those

who initially scored in the well-functioning range to become high-scorers at Time 5. Apparently, in contrast to assumptions based on the clinical experiences of some psychiatrists working with emotionally disturbed youths (Freud, 1958), serious problems during adolescence cannot automatically be attributed to 'normal adolescent turmoil'. Our longitudinal epidemiological findings support data from cross-sectional studies in nonclinical samples, that showed that adolescence should not be seen as a developmental period in which severe disturbances are 'normal', or in which the absence of serious and prolonged identity crises is a risk factor for later psychiatric disturbance (Freud, 1958). Many adolescents (80%) do not experience adolescent turmoil and relate well to their parents (Offer and Offer, 1975; Offer and Schonert-Reichl, 1992; Rutter et al., 1976).

While 27.3% of initially high-scorers were deviant at follow-up, there was also a considerable proportion (34.1%) of adolescents shifting from deviant to well functioning across the 8-year time-span. The present study was not designed to identify environmental or constitutional factors that may explain why some adolescents remained problematic, while others seemed to recover. However, the study design enabled us to indicate which types of problems were the best predictors of deviance at Time 5. Deviant CBCL Anxious/Depressed (OR=3.5) and Somatic Complaints (OR=2.1) scores predicted deviant Time 5 YASR Total Problem scores, independently of other CBCL syndromes, SES, age, and sex. In other words, subjects with deviant scores on these CBCL scales were 7.4 (3.5*2.1) times more likely than low-scorers to score in the deviant range 8 years later, indicating that deviant scores on the Anxious/Depressed and Somatic Complaints scales were important indications of the need for intervention. However, our findings were based on information from parents at initial assessment, versus subjects' self-reports at follow-up. This difference between informants may have influenced our results. Hence, future studies, using multiple informants (parents, peers, teachers, subjects themselves) at initial and follow-up assessments, are needed.

Of subjects who initially scored below P50, 55.3% scored below P50 at Time 5, while only 7.0% scored above P90 at follow-up. This indicated that adolescents who were scored in the well-functioning range by their parents were likely to score themselves in the well-functioning range in young adulthood.

Hence, while previous studies demonstrated that adolescents who exhibit little disequilibrium are normal, the present study showed that 'normal' (CBCL Total Problem score <P50) adolescents are likely to become 'normal' young adults.

It should be noted that the course of psychopathology may be influenced by cultural factors and by the availability and the quality of mental health services. Therefore, further research is needed to determine the degree to which these factors are responsible for convergencies or divergencies between the present study's and other studies' results.

Internalizing versus Externalizing problems

Both stability coefficients and analyses at a categorical level indicated that, across the entire sample, Internalizing and Externalizing problems were equally stable. However, we found significant sex differences in stabilities. In males, Externalizing scores were more stable than Internalizing scores, while in females, Internalizing scores were more stable than Externalizing scores. Furthermore, Internalizing scores in females were more stable than in males.

The greater stability of internalizing problems in females versus males may be associated with the interactional context of these problems. For the stability of depression, interactional aspects appear to be important. Joiner et al. (1992), who studied 524 college students, found that depressed male subjects with low self-esteem, who seeked reassurance, were rejected by their peers, while depressed females with low self-esteem were not rejected. Joiner et al. (1992) hypothesized that male depressed subjects were expected to 'suffer in silence' and to 'take it like a man', while reassurance seeking behavior by depressed females with low self-esteem does not violate stereotypic norms to the same degree. In other words, there is gain from depression-related illness behaviors in females but not in males, which may result in a difference in the stability of depression. Future studies are needed to investigate the influence of interactional aspects on the stability of other types of internalizing problems, and externalizing problems.

The gender difference in stabilities may also be associated with gender differences in the convergence of parent versus self-report information on internalizing and externalizing problems, and thereby should be interpreted with caution.

Syndrome scores

The following YASR scale scores were predicted best by their CBCL counterparts: Withdrawn, Somatic Complaints, Anxious/Depressed, and Aggressive Behavior. The association between CBCL and YASR syndromes, despite the 8-year interval, and despite informant differences, supported the validity of the CBCL and YASR syndromes. The other YASR syndromes were not predicted by their CBCL counterparts, which might reflect informant differences, or a developmental shift from one problem area towards another at the transition from adolescence to young adulthood.

Scores above P90 of the Withdrawn syndrome at Time 1 predicted scores above P90 of the Withdrawn syndrome at Time 5 independently of other syndromes (OR=3.3). The Withdrawn syndrome contains problems such as withdrawal from contacts with other people, sadness, shyness, and a preference of being alone. Since these problems represent a pervasive pattern of social withdrawal from adolescence into young adulthood, they should not be disregarded, despite the fact that these problems do not have a clear counterpart in DSM-IV nosology (American Psychiatric Association, 1994). It is possible that high scores on the Withdrawn syndrome in young adults are associated with clinical diagnoses such as Major Depressive Disorder, or with Personality Disorders such as Avoidant Personality. However, it is also possible that long term social withdrawal in individuals without major clinical diagnoses, acts as a risk factor for later psychopathology meeting criteria for clinical diagnoses. A lack of social support and a tendency to withdraw from social interactions may predispose individuals who meet external stressors later in their lives to develop major psychopathology.

Our findings underscored the importance of comorbidity in predicting later psychopathology. Deviant scores on Somatic Complaints at Time 5 were predicted independently by scores in the deviant range of Somatic Complaints (OR=2.3), and Social Problems (OR=2.1) at Time 1. This indicated that the odds for a score above P90 of the Somatic Complaints scale at Time 5 increased from 2.3 to 4.8 (2.3*2.1) if Social Problems and Somatic Complaints scores at Time 1 were above P90 simultaneously. In other words, somatic complaints were more likely to persist from adolescence into young adulthood in case of comorbid social

problems. High scores on Anxious/Depressed at Time 5 were predicted independently by Anxious/Depressed (OR=3.0) and Somatic Complaints (OR=2.7), which indicated that the stability of symptoms of anxiety and depression was higher in combination with somatic complaints. These findings indicated that therapeutic interventions for somatic complaints without known medical origin should also focus on possible comorbid social problems, while treatment of anxiety and depression should also be aimed at possible comorbid somatic complaints.

A high score on Social Problems at Time 5 was predicted independently of other syndromes by Delinquent Behavior (OR=2.6). This argues for therapeutic intervention and against a wait and see policy for antisocial behaviors in 13- to 16-year-olds. This was supported by Ferdinand et al. (1995a), who assessed 405 initially 15- to 18-year-olds from the general population across a 4-year time-span. They found that the mean level of self-reported delinquent behaviors, assessed via YSR and YASR Delinquent Behavior scales, did not change significantly across time, while a considerable stability coefficient was found (r=0.41).

The low parent-child agreement for Thought Problems during adolescence (Verhulst and Van der Ende, 1992a; McConaughy et al., 1992) may be responsible for the finding that Thought Problems at Time 1 and Time 5 were not related.

Deviant scores on Thought Problems (OR=3.0) and Aggressive Behavior (OR=3.0), were predicted by high scores on Aggressive Behavior at Time 1. Apparently, adolescents with aggressive behaviors were not only at risk for aggressive behaviors in young adulthood, but also for thought problems. The Thought Problems syndrome does not have a clear DSM-IV counterpart. It predominantly contains items on severe problems, such as psychotic and obsessive-compulsive symptoms ('Can't get mind of certain thoughts', 'Hears things', 'Repeats acts', 'Sees things', 'Stares', 'Strange behaviors', and 'Strange ideas'), that have a low prevalence in the general population (Ferdinand et al., 1995b; Verhulst et al., 1995). The findings indicated that treatment programs for aggressive behaviors should also focus on possible comorbid thought problems, arising during treatment.

Attention problems in young adulthood were predicted by deviant scores

on the Anxious/Depressed scale of the CBCL, and not by the Attention Problems scale. This might indicate that self-reported attention problems in young adults are associated with anxiety and depression, and do not form a clinical counterpart of the DSM diagnosis of Attention Deficit Disorder with Hyperactivity in adolescents. However, the average correlation between the Attention Problems and Anxious/Depressed scales in young adults from the general population was r=0.64 (*shared variance*=0.41%), which still leaves room for a distinct syndrome of attention problems in young adults (Ferdinand and Verhulst, 1995c).

Signs of maladjustment

The importance of the CBCL Anxious/Depressed scale as a predictor of psychopathology in young adulthood was supported by its predictive value for referral to mental health services (OR=4.0). Moreover, the Anxious/Depressed scale was the best predictor of general poor outcome, suggesting that anxiety and depression are important indications of the need for intervention. A factor hampering adequate intervention however is that troubled adolescents are more likely to seek help from friends or family members than from mental health professionals (Feldman et al., 1986), partly because they are unaware of professional helping agencies (Dubow et al., 1990). Therefore further research is needed to determine how troubled youth can be reached.

The Attention Problems syndrome was the best predictor of very poor outcome (OR=3.9), indicated by the presence of at least two adverse outcome variables, and of police contacts (OR=6.6). Our findings contrasted with the findings of Barkley et al. (1990) for younger ages. They followed 123 4- to 12-year-old hyperactive children across an 8-year period, and found that the presence of a DSM-III-R diagnosis of conduct disorder, and not of attention deficit disorder with hyperactivity, was significantly related to antisocial outcome, indicated by a variety of antisocial acts and substance use. It is possible that attention problems that are still present in adolescence have a worse prognosis with respect to young adult adaptive functioning than attention problems exhibited by younger children. However, differences in assessment procedures or sample composition may also be responsible for the divergence between the Barkley et al. study and the present study.

Alcohol abuse was not predicted by Delinquent Behavior scores at Time 1. Our prospective study contrasted with the one by Robins and McEvoy (1986), who based their results on retrospective information. They assessed alcohol abuse in individuals aged 18 or above, from a U.S general population sample, and found a relationship between later alcohol abuse and conduct problems that were present prior to age 18. The discrepancy between the present study's findings and those by Robins and McEvoy underscored the need for prospective studies to investigate the course of psychopathology and to assess the role of cultural influences.

Suicide attempts were predicted by Withdrawn scores in the deviant range, and not by deviant scores on the Anxious/Depressed scale, while previous investigators stressed the importance of major depression in adolescence as a risk factor for later suicide attempts (Rao et al., 1993; Myers et al., 1991). In a sample of 159 depressed children and adolescents, Rao et al. (1993) found that 4.4% had committed suicide in adulthood, at least 10 years later. Myers et al. (1991) found that suicidality was expressed by about 70% of adolescents with major depression during a 3-year longitudinal study. Our findings indicated that withdrawal from social relationships as a consequence of depression, rather than depression in itself, is an important risk factor for later suicide attempts. The application of the CBCL will enable clinicians to detect this risk factor in clinical practice.

Conclusions

We found considerable stability of behavioral and emotional problems across the developmental transition from adolescence into young adulthood. Deviant scores on the following CBCL scales for adolescents formed risk factors for psychopathology or maladjustment when they were young adults: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. The importance of comorbidity for the prognosis of several types of problems was underscored. The present study's findings can be used by clinicians to estimate priorities for the need for therapeutic intervention. Furthermore, the findings can be useful to determine the need for prevention.

A minority (34.1%) of subjects who could be regarded deviant at initial

assessment, could be regarded considerably improved 8 years later. Only 7.0% of those who initially scored in the well-functioning range scored in the deviant range at follow-up. Hence, the absence of psychopathology in adolescence, rather than the presence of behavioral or emotional problems or adolescent turmoil, should be regarded as normative.

Further research is needed to determine the influence of environmental and cultural factors on the course of psychopathology in adolescents.

CHAPTER 5

PSYCHOPATHOLOGY IN DUTCH YOUNG ADULTS: ENDURING OR CHANGEABLE?

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PSYCHOPATHOLOGY IN DUTCH YOUNG ADULTS: ENDURING OR CHANGEABLE?

Abstract

Objectives: To investigate stability and change in emotional and behavioral problems in young adults over a 2-year time-span. Methods: A sample of 528 18- to 22-year-olds from the general population was assessed with the Young Adult Self-Report (YASR) on 2 occasions. Results: Stability coefficients for the Total Problem score of the YASR were 0.63 for males and 0.75 for females. Fourty-nine percent of the subjects who were initially classified as deviant, were still deviant at follow-up. Of all YASR syndromes, the highest stability was for the Anxious/Depressed scale. Conclusions: The findings indicate that problems in young adulthood do not tend to disappear spontaneously, which argues against a wait-and-see policy and for research on the efficacy of interventions.

Introduction

This study investigated the 2-year course of psychopathology in young adults from the general population. Young adulthood is an important developmental period in which individuals are expected to take care of themselves more and more, making their own decisions, and applying the social and occupational skills they acquired in adolescence. In a retrospective design, Bland et al. (1988) found that most DSM-III (American Psychiatric Association, 1980) psychiatric disorders, assessed with the Diagnostic Interview Schedule (Robins et al., 1981a), had their first symptoms in young adulthood. Therefore, knowledge of the course of behavioral and emotional problems in young adults is needed, to determine the need for intervention and prevention.

To assess the course of psychopathology, general population studies are needed, because results of clinical studies cannot be generalized. Firstly, clinical samples can be confounded by referral biases. Secondly, individuals with more than one disorder are more likely to be referred to mental health services than individuals with only one disorder (Berkson, 1946). Thirdly, treatment may have a beneficial effect on the course of psychopathology in clinical samples. These factors may hamper the generalizability of clinical studies concerning the developmental course of psychopathology.

To our knowledge, one previous study assessed the course of psychopathology in young adults from the general population. Vollrath and Angst (1989) found that 44 (50%) of 88 21-year-olds who initially met DSM-III criteria for major depression, were still depressed 2 or 7 years later, while 6 of 37 subjects (16%) who initially fulfilled criteria for panic attacks, received a diagnosis of panic attacks at follow-up. However, these findings cannot be generalized because the sample followed up by Vollrath and Angst (1989) was not randomly drawn from the general population, but predominantly consisted of high scorers on the Symptom Checklist (Derogatis et al., 1973).

The present study assessed the 2-year stability and change of psychopathology in 528 young adults, initially aged 18 to 22 years, from the general population. On both occasions, subjects were assessed with the Young Adult Self-Report (YASR; Achenbach, 1990), that covers a broad range of behavioral and emotional problems.

Methods

Instruments

The Young Adult Self-Report (YASR) is a self-report questionnaire for ages 18 to 30. It was derived from Child Behavior Checklist, a parent questionnaire for 4- to 18-year-olds (Achenbach, 1991b), and has roughly the same format, except that items are worded in the first person. Furthermore, items pertaining to childhood problems were replaced by items pertaining to adults' functioning.

The first part of the YASR comprises 14 competence items. The second part contains 110 problem items, covering emotional and behavioral problems during the previous six months, and 15 socially desirable items. The scoring format is 0=not true, 1=somewhat or sometimes true, and 2=very true or often true. A Total Problem score is derived by summing the responses of each problem item. The good reliability and validity of the YASR was reported elsewhere (Achenbach et al., 1995; Ferdinand and Verhulst, 1994; Ferdinand et al., 1995a, 1995b; Wiznitzer et al., 1992).

For adolescents, aged 11 to 18 years, Achenbach (1991a) constructed eight "cross-informant" syndromes that are similar for the parent (CBCL), teacher

(TRF; Achenbach, 1991c), and self-report (Youth Self-Report; YSR; Achenbach, 1991d) versions of the CBCL. The eight cross-informant syndromes are: 'Withdrawn', 'Somatic Complaints', 'Anxious/Depressed' (together constituting the 'Internalizing' group of syndromes), 'Delinquent Behavior', 'Aggressive Behavior' (together constituting the 'Externalizing' group of syndromes), 'Social Problems', 'Thought Problems', and 'Attention Problems'. The cross-informant syndromes, that were initially designed for younger ages, are applicable to YASR scores of subjects aged 18 to 25 years (Ferdinand and Verhulst, 1994; Ferdinand et al., 1995a).

Population

The present study was part of an ongoing lonitudinal study. The original sample consisted of children aged 4 to 16 drawn in 1983 from the Dutch province of Zuid-Holland. This province encompasses both highly urbanized and rural areas. Using municipal birth registers that list all residents, we drew a random sample of 100 children of each sex and age with the Dutch nationality (n=2,600). Two small municipalities out of a total of 86 declined to participate. Of the parents of the 2,447 target children aged 4-16 who were reached, 2,076 (84.8%) completed a CBCL on their child (Verhulst et al. 1985a, 1985b). The first assessment was designated Time 1.

The present study stemmed from follow-ups of the original sample at 2-year intervals. Subjects who were aged 12 to 16 years at Time 1 were asked to complete YASRs in 1989 (Time 4), and 1991 (Time 5). Subjects whose parents declined to participate at Time 1 were not contacted.

At Time 4, subjects aged 18 to 22 received a letter explaining the study. They were then visited by an interviewer, who asked them to complete the YASR (Ferdinand and Verhulst, 1994). Twenty-three subjects were aged 23 when the interview was performed.

At Time 5, subjects aged 20 to 24 were reassessed with the YASR. After receiving the introduction letter, subjects were phoned to make an appointment (Ferdinand and Verhulst, 1994).

At the first assessment in 1983, 765 parents completed the CBCL. In 1989, 36 subjects were not contacted because their parents had refused to

cooperate at some point during the first 6 years of follow-up. The 528 young-adults (240 males and 288 females) who completed YASRs at Time 4 and Time 5 formed 69.0% of the subjects on whom we obtained parent information at Time 1.

To investigate selective attrition, we compared dropouts (n=237) and remainers (n=528) with respect to their 1983 CBCL Total Problem scores and their parents' socio-economic status (SES). The CBCL Total Problem score was computed in the same way as the YASR Total Problem score. SES of the parents at initial assessment was assessed via a six-step scale of parental occupation (Van Westerlaak et al., 1975), with '1'=lowest and '6'=highest SES. Dropouts and remainers did not differ significantly in the initial CBCL Total Problem score (t-test; n.s.). However, the mean SES for dropouts (SES=3.4) was slightly though significantly (p=0.01) lower than that for remainers (SES=3.6).

The finding that dropouts did not belong to a group of especially problematic individuals supported the representativeness of the present study's sample. The lower SES for dropouts versus remainers indicated that remainers may have been subjected to somewhat more favorable environmental circumstances.

Results

Total Problem scores

Changes in mean scores.

Mean Total Problem scores, averaged across Time 4 and Time 5, were 26.51 ($s.d.$=15.54) for males and 32.95 ($s.d.$=19.27) for females. To assess the effects of sex, age, and time of assessment, problem scores were compared by multivariate analysis of variance (MANOVA) with a 2 sex (240 males versus 288 females) x 3 age groups (18-19 years, n=209; 20-21 years, n=202; or 22-23 years, n=117, at Time 4) between-subjects, and 2 times of assessment within-subjects factorial design.

Using a $p<0.01$ significance level, we applied the following criteria suggested by Cohen (1988) for judging the effect sizes: effects accounting for 1.0% to 5.9% of variance are considered small, 6.0% to 13.8% are medium, and >13.8% are large.

The MANOVA revealed no effect for time of assessment. Across the 2 times of assessment, females scored significantly higher than males. This effect was small (4% of variance). No significant age effects or interactions were found.

Stability coefficients. Pearson correlations or stability coefficients for Total Problem scores for both sex groups and three age groups, as well as average stability coefficients, are presented in Table 5.1. We used Cohen's (1988) criteria to judge the magnitude of stability coefficients: stabilities between 0.10 and 0.30 are considered small, between 0.30 and 0.50 medium, and >0.50 large. All stability coefficients were large.

The stability of Total Problem scores was significantly higher for females ($r=0.75$) than males ($r=0.63$; $Z=2.62$; $p<0.01$). Analyses for separate age groups revealed significant sex differences in stabilities for 18- to 19-year-olds ($Z=2.68$; $p<0.01$) and 20- to 21-year olds ($Z=2.16$; $p<0.05$), but not for 22- or 23-year-olds.

No significant differences were found between the stabilities for different age groups.

Categorical continuity and change. To investigate individual changes in problem behavior across time, a categorical approach was applied. Across both times of assessment, we computed cumulative frequency distributions of the Total Problem score for each sex separately. Subjects scoring above the 90th percentile score (P90) of the frequency distribution were classified as deviant.

Because changes from above P90 to just below P90 can hardly be regarded as meaningful, we applied the 50th percentile (P50) of the cumulative frequency distribution as a cutpoint below which individuals were considered functioning well. The use of the 50th and the 90th percentiles enabled us to identify individuals whose functioning improved or worsened substantially across time.

Table 5.1. Stability coefficients (r) between Time 4 and Time 5 Total Problem and syndrome scores by sex and age at Time 4.

	Males				Females			
	Average	Age 18-19	Age 20-21	Age 22-23	Average	Age 18-19	Age 20-21	Age 22-23
	n=240	n=91	n=92	n=57	n=288	n=118	n=110	n=60
Withdrawn	.61	.61	.63	.57	.65	.59	.70	.62
Somatic complaints	.41	.38	.39	.51	.54[1]	.58	.49	.54
Anxious/Depressed	.67	.56	.72	.67	.70	.71	.71	.65
Social Problems	.39	.29	.56	.38[2]	.51	.54	.56	.32[2]*
Thought Problems	.30[1]	.35[1]	.24[2]*	.32[2]*	.53[1]	.65[1]	.37	.08[2]**
Attention Problems	.61	.63	.63	.54	.64	.60	.70	.55
Delinquent Behavior	.48	.57	.42	.42	.49	.53	.48	.40
Aggressive Behavior	.58	.57	.54	.73	.66	.62	.67	.71
Internalizing	.64	.59	.67	.67	.71	.73	.73	.64
Externalizing	.57	.60	.49	.67	.66	.62	.67	.67
Total Problem score	.63[1]	.63[1]	.60[1]	.69	.75[1]	.77[1]	.76[1]	.68

Note. All correlations significant at $p<0.001$ except * = significant at $p<0.01$ and ** = not significant. [1] Significant sex difference. [2] Not significant after Bonferoni correction.

Figure 5.1 shows the course of problems in 51 subjects (23 males, 28 females) who scored above P90 at Time 4. It is shown that 25 (49%) still scored above P90 at Time 5, while 21 (41%) scored between P50 and P90, and 5 (10%) scored below P50.

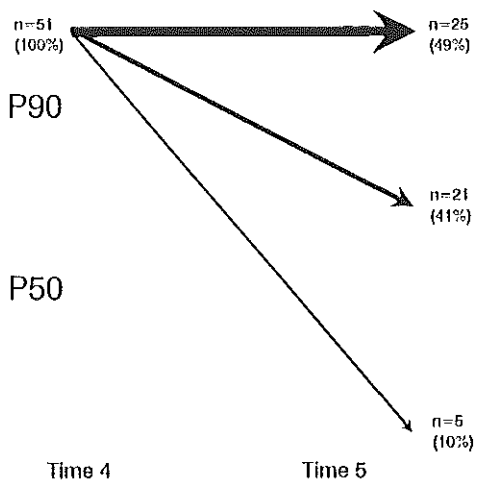
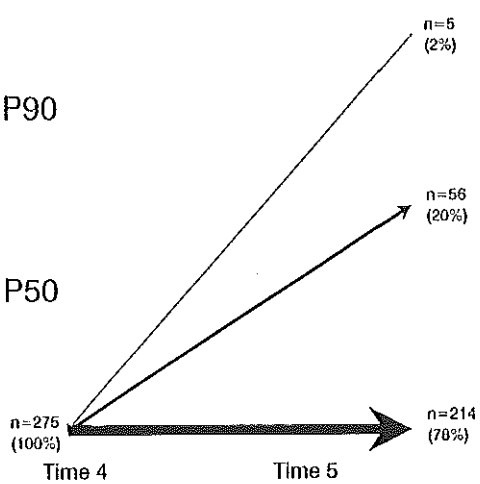


Figure 5.2 shows the pathways of the 275 subjects who scored below P50 at Time 4. At Time 5, 214 (78%) still scored below P50, whereas 56 (20%) scored between P50 and P90, and 5 (2%) scored above P90.



Syndrome scores

Changes in mean scores. To assess the effects of sex, age, and time of assessment, scale scores were compared by multivariate analysis of variance (MANOVA) with a 2 sex (240 males versus 288 females) x 3 age groups (18-19 years, 20-21 years, or 22-23 years at Time 4) between-subjects, and 2 times of assessment within-subjects factorial design. Applying a $p<0.01$ protection level (Sakoda et al., 1954), we controlled for chance findings by correcting for the number of comparisons. Effect sizes were judged according to Cohen's criteria (1988).

Females scored significantly higher than males on the Withdrawn (3%), Somatic Complaints (16%), Anxious/Depressed (5%), Attention Problems (3%), and Internalizing (8%) scales, while males scored significantly higher on the Delinquent Behavior (2%) scale. The effects for the Withdrawn and Delinquent Behavior scales were most likely to be chance findings.

There were no significant effects for age and time of assessment. No significant interactions were found.

Stability coefficients. Table 5.1 shows the stability coefficients for the YASR syndromes. Stabilities for separate ages, as well as the average stabilities for each entire sex group, are presented. All average stability coefficients could be regarded large, except stabilities for Somatic Complaints ($r=0.40$), Social Problems ($r=0.39$), and Thought Problems ($r=0.30$) in males, and Delinquent Behavior ($r=0.49$) in females, that were medium.

Following the method of Steiger (1980), to determine differences between statistically dependent correlations, we did not find significant differences between the stabilities for Internalizing versus Externalizing scores, except for 20- to 21-year-old males. However, according to Sakoda et al. (1954), this was regarded a chance finding.

Sex differences were determined for the entire sample, and for separate age groups. After correction for chance findings (Sakoda et al., 1954), using a $p<0.05$ protection level, we found a higher average stability coefficient for the Thought Problems scale for females than for males ($Z=3.19$, $p<0.001$). This difference reflected a difference for age group 18-19 ($Z=2.89$, $p<0.005$).

After correction for chance findings, we found one age effect. In females,

the stability of the Thought Problems scale was significantly higher for ages 18-19 versus 22-23 ($Z=4.29$, $p<0.001$).

Discussion

Total Problem scores

Mean Total Problem scores did not change significantly across the 2-year time-span. Furthermore, mean Total Problem scores were not affected by age. This indicated that, across the entire sample, the extent of self-reported problems in young adults did not change with the subjects' increasing age.

Two-year stabilities for YASR Total Problem scores were high in males ($r=0.63$) and females ($r=0.75$), indicating that individual problem scores were considerably stable across time. Furthermore, the stability of Total Problem scores did not differ significantly between the 3 age groups, which indicated that the stability of problems in younger subjects was similar to that in older subjects.

Stability coefficients provide information on the stability of problems for the entire scoring range, and not on the stability of extreme levels of psychopathology. We therefore tracked individuals across time at a categorical level. Of subjects who were initially classified as deviant, 49% were still deviant 2 years later, while only 10% scored in the well-functioning range at follow-up. This indicated that extreme levels of behavioral and emotional problems tended to persist to a considerable degree.

Of the 275 subjects who scored below P50 at Time 4, 78% still scored below P50 2 years later, whereas only 2% scored above P90 at Time 5. In other words, the majority of the subjects who scored in the well-functioning range at initial assessment, still functioned well 2 years later, whereas only a minority had moved to the deviant range.

Across both assessments, Total Problem scores were higher for females versus males. Furthermore, the stability of Total Problem scores was significantly higher for females ($r=0.75$) versus males ($r=0.63$). In other words, in comparison with males, females reported somewhat higher levels of problems and were also more likely to retain these problems across time.

Internalizing versus Externalizing scores

To determine whether the larger tendency of problems to persist in females than in males was associated with specific types of psychopathology, we compared the stabilities of the Internalizing and Externalizing scale scores. Internalizing problems reflect individuals' internal distress, while externalizing problems represent conflicts with other people and their expectations of the individual.

Mean Internalizing and Externalizing scores did not change significantly across the 2 assessments. Furthermore, no age effects were found. Hence, the level of Internalizing and Externalizing problems remained stable with increasing age. The stabilities of the Internalizing and Externalizing scales were high, and did not differ significantly after correction for chance findings. This indicated that both types of problems tended to persist to a similar degree.

While the stabilities of the Internalizing and Externalizing scales were similar for both sexes, females scored significantly higher than males on the Internalizing but not on the Externalizing scale. This allows for two explanations. Firstly, internalizing problems may occur more frequently in females than in males. This was supported by the finding that the rate for referral to mental health services between Time 4 and Time 5 was approximately 4 times higher in females than in males, while subjective need for help, without actually receiving mental health services, was reported approximately 3 times more often by females versus males (Ferdinand and Verhulst, 1994).

Secondly, females may show a greater propensity to report internalizing problems than males, while the actual degree of internalizing problems is similar for both sexes. However, the findings of Ferdinand et al. (1995b) in 131 young adults from the general population, suggested that self-reported internalizing problems are related to clinical judgments of functional impairment in daily life to a similar degree in both sexes. In their study, no significant sex difference was found in the correlations (average r across both sexes=0.64) between the Internalizing YASR scale and the Global Assessment of Functioning scale (GAF scale; American Psychiatric Association, 1987). Furthermore, no significant sex difference was found for mean GAF scores.

Syndrome scores

We did not find significant differences between mean Time 4 and Time 5 syndrome scores. Furthermore, no age effects were found. While mean group scores did not change across time, we found substantial stabilities for most YASR scales. This indicated that most types of problems tended to persist to a considerable degree.

The stability of the Thought Problems scale for 18- to 19-year-old females (r=0.65) was significantly higher than that for males. Further investigations are needed to determine whether this finding can be generalized, or was caused by a cohort effect.

After correction for chance findings, females scored higher than males on the following syndromes: Somatic Complaints, Anxious/Depressed, and Attention Problems. The only large difference between males and females was for Somatic Complaints (16%), which suggested that differences in the prevalence of psychopathology between males and females predominantly occurred in the area of physical complaints.

A developmental perspective

We compared our findings with those of Verhulst and Van Wattum (1993) who determined the 2-year stability of YSR Total Problem scores in adolescents, aged 11 to 16 years at the first assessment. The Total Problem scores of the YSR and the YASR are similar measures of psychopathology (Ferdinand et al., 1995a). Verhulst and Van Wattum (1993) found average stabilities of 0.54 among males (n=275) and 0.70 (n=305) among females. These stabilities did not differ significantly from the stabilities of Total Problem scores for males (0.63) and females (0.75) in the present study (males: Z=1.54; females: Z=1.28).

Conclusions

The stability of self-reported behavioral and emotional problems in young adults across a 2-year time-span was considerable. Almost half of the subjects who were classified as deviant initially, still scored in the deviant range at follow-up. These findings indicate that problems in young adulthood do not tend to disappear

spontaneously, which argues against a wait-and-see policy and for research on the efficacy of interventions.

CHAPTER 6

ASSESSMENT OF THE PREVALENCE OF PSYCHIATRIC DISORDER IN YOUNG ADULTS: DIFFERENT APPROACHES

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ASSESSMENT OF THE PREVALENCE OF PSYCHIATRIC DISORDER IN YOUNG ADULTS: DIFFERENT APPROACHES

Abstract

Objectives: To investigate the effectiveness of different assessment procedures for determining prevalence rates of psychiatric disorder in young adults. Method: In a two-stage multi-method procedure, the Young Adult Self-Report, the Schedules for Clinical Assessment in Neuropsychiatry (SCAN), the Structured Interview for Personality Disorders-Revised, and the Global Assessment of Functioning (GAF) Scale were used to assess prevalence rates in 706 19- to 24-year-olds from the general population. Furthermore, individuals' subjective perception of distress and referral to mental health services were assessed. Results: The prevalence of any SCAN/DSM-III-R disorder was 19.3% (95% confidence interval: 11.2%-27.4%). Most subjects who received a SCAN/DSM-III-R diagnosis were only mildly impaired, if at all. The highest prevalence rates of dysfunctioning (GAF score <61) without referral to mental health services were for dissociative disorder (2.3%), sleep disorder (2.1%), alcohol dependence (1.3%) and affective disorder (1.8%). Conclusions: Instruments that assess functional impairment in addition to DSM-III-R diagnoses are indispensable in prevalence studies.

Introduction

In this study, the prevalence of psychiatric disorders in Dutch young adults from the general population was determined. Young adulthood is an important developmental period in which individuals are expected to become responsible for their own lives, to make their own decisions, and to apply the social and occupational skills they acquired in adolescence.

The lack of a 'gold standard' to determine morbidity rates is a major problem in psychiatric epidemiology, hampering comparability across studies and across time. The following definitions of psychiatric morbidity are used:

(1) The occurrence of a predefined number of psychiatric symptoms that constitute a syndrome.

(2) Functional impairment, defined as a disability to function in daily occupational or social life, due to emotional or behavioral problems.

(3) The individual's subjective perception of distress from emotional or behavioral problems.

Previous prevalence studies of psychiatric disorder in young adults used DSM-III (American Psychiatric Association, 1980), DSM-III-R (American Psychiatric Association, 1987), or ICD-9 (World Health Organization, 1978) diagnostic criteria to identify psychiatric cases. It can be doubted whether all individuals who meet DSM or ICD diagnostic criteria should be regarded as disordered. It is possible that certain individuals who meet criteria for a disorder function quite well and do not perceive much distress. However, there are no prevalence studies in which the degree of functional impairment or subjective perception of distress was assessed.

The aim of the present study was to assess the prevalence of psychiatric disorder in young adults aged 19 to 24 in the general population, following different approaches to assess and to define psychiatric disorder. DSM-III-R disorders, as well as measures of functional impairment, social disability, the individuals' subjective need for professional help, and referral to mental health services were assessed.

Methods

Study design

We applied a two-stage multimethod design. At Stage 1, we used the Young Adult Self-Report (YASR; Achenbach, 1990), as a screening instrument. At Stage 2, subjects who scored above the 90th percentile (P90) of the cumulative frequency distribution of the Total Problem score of the YASR for each separate sex were interviewed. In addition, we interviewed a random sample of individuals who scored below P90.

Stage 1 instruments

The (YASR) is a questionnaire for subjects aged 18 to 30. It was modeled on the Child Behavior Checklist (CBCL; Achenbach, 1991b), a parent questionnaire for ages 4 to 18. Items are worded in the first person.

In the present study, we used the second part of the YASR, that contains 110 items, covering emotional and behavioral problems during the past six months. The response format is 0=not true, 1=somewhat or sometimes true, and

2=very true or often true. A Total Problem score is derived by summing the scores of each item. The YASR is a reliable and valid instrument. Achenbach et al. (1995) and Ferdinand et al. (1995a) found significantly higher Total Problem scores in referred than in nonreferred young adults, while Wiznitzer et al. (1992) found that the Total Problem score of the YASR discriminated between referred and nonreferred young adults with much greater accuracy than the General Health Questionnaire (GHQ-28; Goldberg and Hillier, 1979), and with slightly greater accuracy than the Symptom Checklist (SCL-90; Derogatis et al., 1973). Furthermore, Ferdinand and Verhulst (1994) found that the Total Problem score of the YASR was a significant predictor of referral to mental health services, an individual's subjective need for professional help, and deliberate self-harm across a 2-year time-span.

For adolescents aged 11 to 18 Achenbach (1991a) constructed eight "cross-informant" syndromes based on parent reports (CBCL), teacher reports (TRF; Teacher's Report Form; Achenbach, 1991c), and self-reports (YSR; Youth Self-Report; Achenbach, 1991d) in large clinical samples. The 'Withdrawn', 'Somatic Complaints', and 'Anxious/Depressed' syndromes constitute the 'Internalizing' scale, with problems reflecting internal distress. The 'Delinquent Behavior', and 'Aggressive Behavior' syndromes constitute the 'Externalizing' scale, with problems reflecting conflicts with other people and their expectations of the individual. 'Social Problems', 'Thought Problems', and 'Attention Problems' were not categorized into a specific group. Ferdinand and Verhulst (1994) and Ferdinand et al. (1995a) supported the applicability of the cross-informant syndromes with young adults.

Stage 2 instruments

The YASR was completed again during the week before the Stage 2 interview. During the interview, the SCAN (Schedules for Clinical Assessment in Neuropsychiatry; World Health Organization, 1991), the SIDP-R (Structured Interview for DSM-III-R Personality-Revised; Pfohl et al., 1989), the GSDS-II (see Ormel et al., 1993), and the GAF scale (Global Assessment of Functioning Scale; American Psychiatric Association, 1987) were applied. Information was also obtained on referral to mental health services during the past six months and

on the individual's subjective need for professional help without actually having received help during the six months prior to the interview (see Chapter 1, Table 1.1).

The SCAN was used to assess DSM-III-R Axis 1 somatoform, dissociative, anxiety, depressive, bipolar, sleep, and eating disorders, and problems associated with alcohol and other substance abuse in the past six months, except for disorders that cover other time periods by definition. The interview covered 61 disorders. We did not assess psychotic and cognitive disorders, because the probability of selecting individuals with these disorders in a general population sample is very low.

The central principle of the SCAN is that the interviewer has to make his or her own judgment on the presence or absence of symptoms, and their severity. The interviews were performed by two clinicians (RF and MR), who were trained by an official WHO training center for the SCAN.

The CATEGO-5 program (World Health Organization, 1992), was used to derive DSM-III-R diagnoses and a total symptom score, which is the sum of positive DSM-III-R symptoms.

We tested the validity of the SCAN by comparing the mean Stage 2 YASR Total Problem, Internalizing, and Externalizing scores for individuals who received a DSM-III-R diagnosis (cases) against those who did not receive a diagnosis (non-cases). By performing 3 ANOVAs, including two single-sex groups (62 males versus 69 females) and cases ($n=40$) against non-cases ($n=91$) as independent variables, we found that cases had significantly ($p<0.01$) higher YASR Total Problem (20%), Internalizing (18%), and Externalizing (4%) scores than non-cases. The percentages in parentheses indicate the percentage of variance accounted for (effect size), that can be judged according to Cohen (1988); variances between 1.0% and 5.9% are considered small, between 6.0% and 13.8% medium, and over 13.8% large.

Pearson correlations between the total symptom score of the SCAN and the Total Problem score of the YASR were 0.69 ($p<0.001$) in males and 0.78 ($p<0.001$) in females.

Following the method of Steiger (1980) of testing differences between correlations in one sample, we found that the SCAN total symptom score

correlated significantly higher ($Z=2.43$; $p<0.025$) with the Internalizing scale ($r=0.70$; $p<0.001$) than with the Externalizing scale ($r=0.56$; $p<0.001$). However, both correlations were large, according to Cohen's (1988), indicating that the SCAN total symptom score was indicative of both internalizing and externalizing problems to a considerable degree.

We did not find significant sex differences in correlations between SCAN total symptom scores and YASR scores.

The SIDP-R, a structured interview, was used to assess DSM-III-R borderline and antisocial personality disorders. The interviewer has to make his/her own judgment on the degree to which separate DSM-III-R criteria for personality disorders are present.

The GSDS-II is a semi-structured interview to assess social disabilities in the past month. Problems in the following areas are scored by the interviewer: self care, family functioning, relationships with parents and siblings, the relationship with a partner and with children, participation in social life, relationships with friends and acquaintances, and occupational functioning. The scoring format is 0=no disability, 1=some disability, 2=moderate disability, and 3=severe disability. A total score is derived by summing the scores for each problem area.

The GAF scale was scored by the interviewer after completion of the interview. The scoring format ranges from 1 (highest) to 90 (lowest) degree of functional impairment. The highest level of impairment during the past week was selected.

The GAF scale is divided into nine equal intervals. The highest interval (81-90) indicates good functioning, while lower scores indicate problems in functioning. For instance, scores between 61 and 70 can be used to indicate some difficulty in functioning or mild problems, while the interval between 51 and 60 represents moderate impairment, e.g. conflicts with coworkers or having few friends. Scores between 1 and 10 are given if an individual is in danger of severely hurting self or others, or in case of persistent inability to maintain minimal personal hygiene.

Empirical information on the ability of the GAF scale to discriminate between psychiatrically disturbed and normal individuals is not available. For the Global Assessment Scale (GAS; Endicott et al., 1976), which has a scoring format

similar to that of the GAF scale, the authors stated that the majority of individuals in treatment scored below 71 (cut-off point 71). Dufton and Siddique (1992) found that 96.6% of 59 day hospital patients scored below 61 (cut-off point 61) on the GAF scale at admission, indicating a good sensitivity. However, because they did not assess GAF scores in nonreferred subjects, we do not know the specificity of this cut-off point.

We tested the validity of GAF cut-off points, by comparing GAF scores to YASR scores, which indicate psychopathology, and to the total score of the GSDS-II, which indicates social disability. Individuals who scored below a cut-off point were classified as disordered (case), while subjects who scored equal to or above a cut-off point were classified as normal (non-case).

For cut-off point of 61, we performed 2 ANOVAs, including two groups by gender (62 males, 69 females) and cases versus non-cases as independent variables. We found significantly ($p<0.01$) higher scores for cases ($n=27$) versus noncases ($n=103$) for the Total Problem score of the YASR (26%) and the total score of the GSDS-II (39%). Two other ANOVAs indicated that effects were smaller if the cut-off point was 71 rather than 61. For a cut-off point of 71, we found significant ($p<0.01$) differences between cases ($n=64$) and non-cases ($n=66$) for the Total Problem (22%) of the YASR, and for the total score of the GSDS-II (35%).

We also compared the usefulness of cut-off points of 61 and 71 in discriminating between subjects who were classified as disordered or normal, according to other criteria for psychiatric disorder (Table 6.1). These criteria were (a) the individual's subjective perception of distress, indicated by actual referral to mental health services or the individual's subjective need for professional help, and (b) a deviant Stage 2 Total Problem score of the YASR. Deviance was defined as a Stage 2 Total Problem score above the Stage 1 P90. The validity of this cut-off point was supported by Wiznitzer et al. (1992).

For the first criterion (subjective distress), the proportion of subjects correctly classified was higher when the cut-off point was 61 (80.0%) than when it

Table 6.1. GAF scores <61, between 61 and 70, or ≥71, and referral, subjective need for help, or YASR Total Problem Score >P90.

	GAF score		
	<61 (n=27)	61-70 (n=37)	≥71 (n=66)
Referred	7	6	0
Need for help	7	5	2
No need for help and not referred	13	26	64
YASR Total Problem score >P90	21	12	11
YASR Total Problem score ≤P90	6	25	55

Note. Numbers indicate the number of subjects.

was 71 (61.8%). For the second criterion (deviant Total Problem score), the proportion of subjects correctly classified was also higher for a cut-off point of 61 (77.7%) than for 71 (67.7%).

We also determined correlations between GAF scores and total scores on the YASR and the GSDS-II. We found that the correlation between GAF scores and YASR Total Problem scores (r=0.62, p<0.001) was significantly (Z=2.18, p<0.05) lower than the correlation between GAF scores and GSDS-II total scores (r=0.74, p<0.001). However, both correlations were large (>0.50).

Correlations between GAF scores and other instruments did not differ significantly between sexes.

In the present study, GAF scores were given after interviewing subjects with the SCAN, the SIDP-R, and the GSDS-II. There might be a contamination effect between the interviews and GAF scores. However, this effect was probably small, because the interviews were semi-structured. Furthermore, GAF scores were also based on the observation of the subjects in their social environment (home, family).

Interrater reliability of SCAN, GSDS-II and GAF scale. Audio-recordings were made of 18 randomly selected interviews. Each interviewer scored 9 audiotaped interviews carried out by the other, using the SCAN and DSM-III-R

criteria to discriminate healthy from disordered individuals. The classifications assigned to all 18 individuals were the same (11 with no diagnosis, and 7 with at least one diagnosis; $\kappa=1.00$, $p<0.001$). Furthermore, the overall kappa for individual diagnoses was 0.69 ($p<0.001$).

We found intraclass correlation coefficients of 0.91 for the GAF scale, and of 0.88 for the GSDS-II total score.

Population

Stage 1. The present study was part of an 8-year follow-up of an ongoing longitudinal study (Chapter 1, Table 1.1). The original sample of children aged 4 to 16 was drawn in 1983 from the Dutch province of Zuid-Holland, that encompassess both highly urbanized and rural areas. Using municipal birth registers that list all residents, we drew a random sample of 100 children of each sex and age with the Dutch nationality ($n=2,600$). Two small municipalities of a total of 86 declined to participate. Of the 2,447 parents of children that were reached, 2,076 (84.4%) completed the CBCL on their child (see Verhulst et al., 1985a, 1985b for details). Mental retardation was a criterion for exclusion.

The Time 1 sample was followed up at 2-year intervals. The present study concerned subjects who were aged 11 to 16 years at Time 1. At Time 5, an introduction letter was sent to subjects aged 19 to 24, who were then phoned to make an appointment with an interviewer. To enhance the response, those who did not respond at Time 4 were contacted by phone without sending a letter in advance.

The Time 1 target sample consisted of 1,125 adolescents between 11 and 16. At Time 1, 925 parents completed the CBCL. At Time 5, 865 subjects were approached, while 60 who had refused to cooperate before Time 5 were not contacted. YASRs were obtained from 322 males (79.9%), and 384 females (85.9%). This was 76.3% of the subjects in the Time 1 sample, and 62.8% of the original target population. Response rates were corrected for 22 who could not be traced.

To investigate the extent of selective dropout, we compared dropouts and 'remainers' with respect to Time 1 CBCL Total Problem scores, Time 4 YSR or YASR Total Problem scores, and socio-economic status (SES) of the parents at

Time 1. Time 4 YSR and YASR Total Problem scores were computed omitting 10 items that were not included in both instruments; such YSR and YASR Total Problem scores are comparable measures of psychopathology (Ferdinand et al., 1995a). SES was assessed via a six-step scale (Verhulst et al., 1985a, 1985b; Van Westerlaak, 1975), with 1=lowest and 6=highest level of SES.

After recoding Total Problem scores below P90 as '0' and above P90 as '1', we performed multiple logistic regressions with cooperation versus attrition at Time 5 as dependent variable. Because Time 4 YSRs and YASRs were available for only 656 subjects, we entered Time 1 CBCL Total Problem scores and SES as candidate predictor variables in the first analysis. In a second analysis, we included the Time 4 YSR/YASR Total Problem score as candidate predictor, beside the Time 1 CBCL Total Problem score and SES. No significant effects were found, which confirmed that the sample used in the present study was a representative one.

Stage 2. At Stage 2, all individuals (n=73) who scored above P90 of the Total Problem score of the YASR, and a random sample of 73 subjects who scored below P90, were asked to cooperate. After receiving a letter explaining the study, subjects were phoned to make an appointment. Those who could not be reached were requested to either return a postpaid reply, indicating a phone number they could be reached at, or to contact one of the interviewers.

Subjects were interviewed at home, which enabled the interviewer to make an optimal judgment of their functioning. Stage 2 interviewers were not acquainted with the information from Stage 1 or Stage 2 YASR.

At stage 2, 131 subjects (62 males and 69 females) were interviewed. GAF scores were obtained for 130 subjects. After correction for 3 individuals who lived abroad, the response rate at Stage 2 was 91.6%. By mail we obtained 11 YASRs from subjects who declined to be interviewed. Dropouts did not differ from remainers with respect to mean YASR Total Problem scores at Stage 1 (dropouts 35.9, remainers 46.5; Mann-Whitney U test; Z=1.14, p=n.s.) and Stage 2 (dropouts 29.7, remainers 43.8; 2-tailed t-test; t=1.90, p=n.s.).

Results

The stability of psychopathology between Stage 1 and Stage 2

The mean interval between Stage 1 and Stage 2 was eight months and ten days (*s.d.* = 45 days; range: 4.0-15.0 months). To determine whether Stage 1 YASR scores could be used to compute prevalence rates on the basis of Stage 2 diagnostic interviews, we computed correlations between Stage 1 and Stage 2 YASR problem scores, and differences in mean scores. We did not use changes from above to below P90 of YASR scale scores, or vice versa, to indicate the stability of psychopathology across time, because such changes might be small and therefore hardly meaningful.

Spearman correlations were computed because Stage 1 YASR scores of the Stage 2 interview population (<P90 n=64; >P90 n=67) did not have a normal distributon. Across the genders, Spearman correlations between Stage 1 and Stage 2 scores were 0.79 ($p<0.001$) for the Total Problem score, 0.79 ($p<0.001$) for the Internalizing scale, and 0.77 ($p<0.001$) for the Externalizing scale. No significant sex differences were found.

Wilcoxon signed-rank tests indicated that mean Total Problem scores at Stage 1 (males: 40.4; females: 49.9) and Stage 2 (males: 39.9; females: 45.1) did not differ significantly for males ($Z=0.22$, p=n.s.) and for females ($Z=1.67$, p=n.s.). Stage 1 and Stage 2 Internalizing scores did not differ significantly for males ($Z=0.07$, p=n.s.) or for females ($Z=1.57$, p=n.s.). However, while there was no significant difference between mean Externalizing scores at Stage 1 and Stage 2 for males ($Z=0.85$, p=n.s.), mean Externalizing scores were significantly ($p<0.05$) higher at Stage 1 (*mean*=10.7) versus Stage 2 (*mean*=9.8) for females.

Prevalence rates of psychiatric morbidity

DSM-III-R Axis I diagnoses were assigned to 29 of the 67 subjects who scored above P90 of the Time 5 Total Problem score of the YASR, and to 11 of the 64 who scored below P90. Twenty-four subjects fulfilled criteria for one disorder, 9 for two, and 7 for at least three disorders. Prevalence rates of DSM-III-R disorders, functional impairment, and referral to mental health services are presented in Table 6.2.

Table 6.2. Prevalence rates of DSM-III-R disorders and GAF scores, and relations to referral to mental health services.

	Prevalence rate[1]	*(95% CI[2])*
DSM-III-R diagnosis	19.3%	(11.2-27.4)
DSM-III-R diagnosis and GAF <71	14.2%	(7.1-21.3)
DSM-III-R diagnosis and GAF <61	4.6%	(0.8-8.4)
≥2 DSM-III-R diagnoses	7.3%	(2.1-12.5)
GAF <71	35.0%	(24.9-45.0)
GAF <61	9.0%	(3.7-14.3)
Referral[3]	4.4%	(0.6-8.2)
Referral + DSM-III-R diagnosis	2.6%	(0.0-5.4)
Referral + GAF <61	2.3%	(0.0-5.0)

Note.

[1] P = prevalence = ((k1/m1) x m + (k2/m2) x (n-m)) / n.

[2] *95%CI* = 95%confidence interval: P - 1.96 x *SE*(P) ≤ P ≤ P + 1.96 x *SE*(P); $(SE(P))^2 = (k1/m1\text{-}k2/m2)^2 \times m \times (n\text{-}m) / n^3 + (m/n)^2 \times k1 \times (m1\text{-}k1) / m1^3 + ((n\text{-}m)/n)^2 \times k2 \times (m2\text{-}k2) / m2^3$; P90 = 90th percentile score of the Time 5 YASR total problem score; *n* = total number of subjects who completed the YASR; *m* = number of subjects who scored above P90; *n-m* = number of subjects who scored below P90; *m1* = number of interviewed subjects who scored above P90; *k1* = number of cases in subjects who scored above P90; *m2* = number of interviewed subjects who scored below P90; *k2* = number of cases in subjects who scored below P90; *SE* = standard error (Levy and Lemeshow, 1991).

Prevalence rates of individual DSM-III-R Axis 1 disorders, and their relations to GAF scores <61 and referral to mental health services are presented in Table 6.3.

Prevalence rates were 0.2% (*95%CI*=0.0-0.5%) for antisocial personality disorder and 0.3% (*95%CI*=0.0-0.8%) for borderline personality disorder.

Comorbidity

Of the 23 diagnoses of sleep disorders, 12 (52.2%) were isolated diagnoses, while the comorbidity rate was highest with dissociative disorder

Table 6.3. Prevalence rates of DSM-III-R Axis 1 disorders[1], and relations to GAF scores and referral to mental health services.

	Prevalence rate (95% CI[2])	Prevalence rate[3] (95% CI[2]) GAF score <61	Prevalence rate[4] (95% CI[2]) GAF score < 61 not referred
Alcohol dependence	4.2% (0.0-8.9)	1.3% (0.0-4.0)	1.3% (0.0-4.0)
Affective disorders:	2.6% (0.0-5.4)	2.1% (0.0-4.8)	1.8% (0.0-4.5)
Major depression	2.0% (0.0-4.7)	1.7% (0.0-4.3)	1.5% (0.0-4.1)
Melancholia	1.3% (0.0-4.0)	1.3% (0.0-4.0)	1.3% (0.0-4.0)
Dysthymia	0.6% (0.0-1.2)	0.5% (0.0-1.0)	0.2% (0.0-0.5)
Anxiety disorders:			
Panic disorder	3.5% (0.0-7.2)	0.3% (0.0-0.8)	0.3% (0.0-0.8)
Sleep disorders:	9.2% (3.5-15.0)	3.8% (0.0-7.5)	2.1% (0.0-4.8)
Primary insomnia	9.2% (3.5-15.0)	3.6% (0.0-7.4)	2.1% (0.0-4.8)
Primary hypersomnia	0.2% (0.0-0.5)	0.2% (0.0-0.5)	0.2% (0.0-0.5)
Sleep/wake schedule	0.2% (0.0-0.5)	0.2% (0.0-0.5)	0.2% (0.0-0.5)
Dream anxiety disorder	0.2% (0.0-0.5)	0.0%	0.0%
Eating disorders:			
Anorexia nervosa	0.3% (0.0-0.8)	0.3% (0.0-0.8)	0.2% (0.0-0.5)
Somatoform disorders:			
Hypochondriasis	0.5% (0.0-1.0)	0.3% (0.0-0.8)	0.2% (0.0-0.5)
Dissociative disorders:	7.4% (2.2-12.6)	4.1% (0.3-7.9)	2.3% (0.0-5.0)
Psychogenic amnesia	2.0% (0.0-4.7)	0.5% (0.0-1.0)	0.2% (0.0-0.5)
Dissociative disorder not otherwise specified	5.8% (1.2-10.3)	3.9% (0.2-7.7)	2.3% (0.0-5.0)

Note. [1] Prevalence rates of disorders not shown in the body of the Table were 0.0%
[2] 95% CI = 95% confidence interval
[3] Prevalence rates for DSM-III-R disorders plus GAF scores <61
[4] Prevalence rates for DSM-III-R disorders plus GAF scores <61, without referral to mental health services

(n=10; 43.5%).

There were 17 diagnoses of dissociative disorders. Four (23.5%) were isolated, while the highest comorbidity rate was with sleep disorder (n=8; 58.8%).

Four subjects were diagnosed as alcohol dependent. Two (50.0%) had no other disorders, while two (50.0%) also had dissociative disorder.

Four isolated diagnoses of panic disorder were found, while two (33.3%) were combined with sleep disorder and dissociative disorder.

There were five isolated diagnoses of affective disorders were found, and

four (44.4%) that were associated with sleep disorder and dissociative disorder.

Sex differences. Prevalence rates for each sex separately revealed no significant sex differences.

Discussion

DSM-III-R disorders

Prevalence rates. The prevalence rate of SCAN/DSM-III-R Axis I disorders was 19.3%. This was higher than the prevalence of 6.7% for PSE-9/ICD-9 disorders (PSE-9: 9th version of the Present State Examination; Wing et al., 1974), reported by Hodiamont et al. (1987) for the area of the Dutch city of Nijmegen. The fact that the SCAN covers a greater number of disease categories (n=61), and a longer time-span (at least 6 months) than the PSE-9 (36 disease categories and 1 month), may be responsible for this difference.

The highest prevalence rates were for sleep disorders (9.2%) and dissociative disorders (7.4%), indicating that these form major problem areas in young adults.

No cases were detected of substance use other than alcohol use. This may be explained by the fact that in the Dutch society drug abusers often break up with their homes and families and are therefore likely to become untraceable in a longitudinally assessed sample, while alcohol use is more often socially accepted. But it is also possible that the prevalence of disorders from the use of substances other than alcohol was actually very low. In that case, the finding of a zero instead of a very low prevalence rate may have been a chance finding.

Comorbidity. A high rate of comorbidity was found between sleep and dissociative disorder. For other disorders that occurred frequently (alcohol dependence, panic disorder, affective disorder), comorbidity rates were also highest with sleep disorder and dissociative disorder. This indicated that clinicians should be aware that young adults who initially present themselves with other types of psychopathology may also be suffering from sleep and/or dissociative disorders. Furthermore, the low rate of isolated dissociative disorder indicated that young adults who present with dissociative disorder are very likely to suffer from other disorders as well.

Sex differences. No sex differences were found for any prevalence rate,

although other Dutch general population studies reported higher rates of self-reported internalizing problems (Ferdinand and Verhulst, 1995c) and a higher referral rate (Ferdinand and Verhulst, 1994) in young women than in young men. The relatively low number of interviews, resulting in high standard errors of prevalence rates for the separate genders, was probably responsible for the absence of sex differences in the present study.

Functional impairment

The prevalence rate of any DSM-III-R disorder (19.3%) differed significantly from the prevalence of any DSM-III-R disorder and a GAF score <61 (4.6%). This difference was particularly related to the following disorders (Table 6.3): alcohol dependence (4.2% versus 1.3%), panic disorders (3.5% versus 0.3%), sleep disorders (9.2% versus 3.8%), and dissociative disorders (7.4% versus 4.1%). Hence, a large proportion of individuals who fulfilled criteria for these disorders were only mildly impaired, if at all. This implied that prevalence studies should assess functional impairment as well as DSM-III-R disorders to obtain a comprehensive picture of psychopathology in young adults.

Some DSM-III-R disorders made it more difficult than others to function in daily life than other disorders, which may be explained by several factors. Firstly, DSM-III-R criteria for certain disorders might put little emphasis on impairment. Secondly, low thresholds for some disorders may make them overinclusive. Thirdly, some of the criteria for rating a symptom in the SCAN may not be strict enough.

The majority of subjects with DSM-III-R disorders and GAF scores below 61 suffered from affective disorders (prevalence = 2.1%), sleep disorders (prevalence = 3.8%), or dissociative disorders (prevalence = 4.1%), indicating that these are what prevention programs for psychopathology in young adults should focus on.

The prevalence rate for GAF scores below 61 without fulfilling criteria for any DSM-III-R disorder was 4.4%. In other words, almost half (4.4%/9.0%) of the subjects who were at least moderately impaired did not receive a DSM-III-R diagnosis. Gaps in the coverage of SCAN/DSM-III-R criteria or relatively high tresholds for diagnoses in some areas of psychopathology could be responsible for

these findings. The lack of data on the whole range of personality disorders may be another contributor.

Referral to mental health services

The Dutch mental health care system is organized so that people who fall ill visit a general practitioner (GP) first; the GP then decides whether they should be referred to more specialized care.

The prevalence rate of DSM-III-R disorders (19.3%) was higher than the referral rate in the general population (4.4%). However, because most subjects who fulfilled criteria for a diagnosis were only mildly impaired, if at all, SCAN/DSM-III-R disorders cannot be used to determine the magnitude of the gap between need for psychiatric care and actual referral. Instead, GAF scores can be used for this purpose.

The prevalence rate of a GAF score below 61 in which there was no referral for mental health services was 6.7%, which implied that almost 75% (6.7%/9.0%) of the young adults who were at least moderately impaired did not receive professional help. GAF scores below 61 were indicative of the following signs of psychopathology: deviant YASR Total Problem scores, subjective need for professional help, and actual referral to mental health servives. The high percentage of unmet needs for professional help underscores the importance of knowing what factors influence referral to mental health services.

Most subjects with GAF scores <61 who were not referred fulfilled criteria for sleep disorder (prevalence=2.1%) or dissociative disorder (prevalence=2.3%), indicating that these disorders constitute important areas of untreated psychopathology in Dutch young adults. Further studies are needed to assess the natural course of these disorders. If the problems would appear to be rather stable, this would underscore the need for intervention.

Most subjects who scored below 61 on the GAF scale, and who fulfilled criteria for alcohol dependence or affective disorder, were not treated (Table 6.3). Hence, general practitioners should always consider whether subjects with these problems receive adequate treatment. Furthermore (in addition to alcohol, which has often been a subject of governmental campaigns), affective disorders deserve more attention in terms of prevention and intervention.

CHAPTER 7

THE PREVALENCE OF SELF-REPORTED PROBLEMS IN YOUNG ADULTS FROM THE GENERAL POPULATION

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THE PREVALENCE OF SELF-REPORTED PROBLEMS IN YOUNG ADULTS FROM THE GENERAL POPULATION

Abstract

Objectives: To assess the prevalence of a wide range of behavioral and emotional problems in young adults. Methods: We assessed 706 19- to 24-year-olds from the Dutch general population with the Young Adult Self-Report (YASR). Results: Large or medium (variance >5.9%) sex effects were found for alcohol use and for the items 'Brags' and 'Swears' (males>females), and for the items 'Cries a lot' and 'Fears' (females>males). With respect to socially desirable items, females more often reported attitudes or behaviors pertaining to helping other people, while males more often reported competitive behaviors or attitudes. For YASR syndromes, higher mean scores for females than males were found for the Withdrawn, Somatic Complaints, and Anxious/Depressed syndromes, while mean scores on the Delinquent Behavior syndrome were higher for males than females. No age effects were found. Compared to other problem areas, thought problems and delinquent behavior in males, and social problems and delinquent behavior in females were least likely to be associated with other types of problems. Conclusions: Normative data of behavioral and emotional problems in young adults are similar across the 19- to 24-year-age-span. To obtain a comprehensive picture of behavioral and emotional problems in young adults, instruments that do not cover attention problems, thought problems, social problems and delinquent behaviors, should not be used. The prevalence rates reported in this manuscript can be used to make comparisons with data from individuals or other samples.

Introduction

This study provides prevalence rates of a broad range of behavioral and emotional problems as reported by young adults aged 19 to 24 years from the Dutch general population. The instrument used in this study was the Young Adult Self-Report (YASR; Achenbach, 1990). The present study was preceded by three studies that provided prevalence rates for ages 4 to 18, using instruments comparable to the YASR (Verhulst et al., 1985b; Verhulst and Akkerhuis, 1986; Verhulst et al. 1989). These studies used the Child Behavior Checklist, a parent questionnaire for ages 4 to 18 (CBCL; Achenbach, 1991b), the Youth Self-Report (YSR; Achenbach, 1991d), and the Teacher's Report Form (TRF; Achenbach, 1991c) to assess the prevalence of problem behaviors in the general population. The CBCL, TRF, and YSR have roughly the same format. The YASR contains approximately

the same items as the YSR, except that a few items pertaining to childhood problems were replaced by problems pertaining to adults' functioning.

Achenbach (1990) developed the YASR, because assessment procedures yielding comparable information on psychopathology for children and adults were not available. Longitudinal studies following problem behaviors from childhood into adulthood usually employed different assessment procedures for children versus adults. It was therefore unclear from these studies whether differences in the level and type of psychopathology reflected developmental processes or merely differences between assessment procedures. Meanwhile, the YASR and its precursor instruments have been used for follow-up investigations by Achenbach et al. (1995), Ferdinand et al. (1995a), and Ferdinand and Verhulst (1994, 1995a, 1995b).

Two main approaches can be distinguished for the assessment of prevalence rates of psychopathology:

(1) the categorical approach, which treats behavioral/emotional problems as diagnostic categories, by which subjects who fulfil criteria for psychiatric disorder are classified as disturbed, and those who do not meet criteria for any disorder as normal.

(2) the quantitative or dimensional approach, which considers behavioral/emotional problems as quantitative variations of problems most subjects display to some degree. By summing symptom scores, it is possible to quantify the degree of psychopathology. The categorical approach can also be applied to quantitative scores, by employing cutpoints above which individuals are regarded deviant.

Previous studies that investigated the prevalence of psychopathology in young adults applied a categorical approach, using DSM-III(-R) (American Psychiatric Association, 1980, 1987) or ICD-9 criteria (World Health Organization, 1978) to assess psychiatric morbidity (Bebbington et al., 1981; Bland et al., 1988; Canino et al., 1987; Ferdinand et al., 1995b; Henderson et al., 1979; Hodiamont et al., 1987; Mavreas et al., 1986; Myers et al., 1984; Oakley-Browne et al., 1989; Regier et al., 1988; Reinherz et al., 1993). Studies providing prevalence rates of problem behaviors in young adults using a quantitative approach, are not available to our knowledge.

The aim of the present study was to provide prevalence rates of a wide range of self-reported behavioral/emotional problems assessed with the YASR, by combining a quantitative and a categorical approach. We assessed a sample of 706 young adults aged 19 to 24 years, representative of the Dutch general population.

Methods

Instrument

The Young Adult Self-Report (YASR: Achenbach, 1990) is a self-report questionnaire for subjects aged 18 to 30. It was modeled after the Child Behavior Checklist (CBCL, Achenbach, 1991b), and has the same format, except that items are worded in the first person.

The YASR consists of 2 parts. The first part comprises 14 competence items, covering job, education, relationship with a partner, and contacts with others. The second part contains 110 problem items, covering a broad range of emotional and behavioral problems during the past six months, and 15 socially desirable items. Furthermore, 13 problem items and 3 socially desirable items concerning work, education, and relationship with a partner, and 4 items on substance use were added to the original CBCL format. The response format is 0=not true, 1=somewhat or sometimes true, and 2=very true or often true. A Total Problem score is derived by summing the scores of the 110 problem items. Achenbach et al. (1995), Ferdinand and Verhulst (1994), Ferdinand et al. (1995a) and Wiznitzer et al. (1992) reported on the good reliability and validity of the instrument.

For adolescents aged 11 to 18, Achenbach (1991) constructed eight "cross-informant" syndromes, that were based on parent reports (CBCL), teacher reports (TRF; Teacher's Report Form; Achenbach, 1991c), and self-reports (YSR; Youth Self-Report; Achenbach, 1991d) in large clinical samples. The 'Withdrawn', 'Somatic Complaints', and 'Anxious/Depressed' syndromes constitute the 'Internalizing' scale. Internalizing problems reflect internal distress. The 'Delinquent Behavior', and 'Aggressive Behavior' syndromes constitute the 'Externalizing' scale. These syndromes reflect conflicts with other people and their expectations of the individual. 'Social Problems', 'Thought Problems'

(predominantly containing items on hallucinations, delusions, and obsessive compulsive problems), and 'Attention Problems' were not categorized into a specific group. Ferdinand and Verhulst (1994) and Ferdinand et al. (1995a) supported the applicability of the cross-informant syndromes to young adults aged 18 to 25.

Population

The original sample of children aged 4 to 16, was drawn from the Dutch province of Zuid-Holland in 1983. This area encompassess over 3,000,000 people living in environments ranging from rural to highly urbanized. Using municipal birth registers that list all residents, a random sample was drawn of 100 children of each sex and age with the Dutch nationality (n=2,600). Two small municipalities out of a total of 86 declined to participate. One municipality first contacted the parents of selected children to request permission in advance, five of whom declined to participate. Of the 2,447 parents of children who were reached, 2,076 (84.4%) cooperated by completing the CBCL on their child (for details, see Verhulst et al., 1985a, 1985b).

The original 1983 (Time 1) sample was followed up at 2-year intervals. The present population was part of an eight-year follow-up. Young adults, initially aged 11 to 16 years and aged 19 to 24 years at follow-up, were asked to cooperate for the fifth time (Time 5) in 1991, by completing the YASR, that was administered by self-completion. After receiving an introduction letter, subjects were phoned to make an appointment with an interviewer. Nonresponders at six-year follow-up (Time 4; 1989) were contacted by phone without sending a letter in advance.

The original 1983 target sample of children aged 11 to 16 years consisted of 1,125 children. At Time 1, 925 parents completed the CBCL. At Time 5, 865 subjects were asked to cooperate. Usable YASRs were obtained from 322 males (79.9%) and 384 females (85.9%). This was 76.3% of the children in the Time 1 sample, and 62.8% of the original target population. Response rates were corrected for 22 untraceables.

To investigate the extent of selective dropout, we compared dropouts and remainers with respect to Time 1 CBCL Total Problem scores, Time 4 YSR or

YASR Total Problem scores, and socio-economic status (SES) of the parents at Time 1. Time 4 YSR and YASR Total Problem scores were computed without counting 10 items that were not included in both instruments. Such YSR and YASR Total Problem scores are comparable measures of psychopathology (Ferdinand et al., 1995a). SES was assessed via a six-step scale of parental occupation (see Verhulst et al., 1985a, 1985b), with 1=lowest and 6=highest level of SES.

After recoding Total Problem scores below P90 (P90 = 90th percentile score of the cumulative frequency distribution for each sex separately) as '0' and above P90 as '1', we performed multiple logistic regressions (method: likelihood ratio) with cooperation versus attrition at Time 5 as dependent variable. Because Time 4 YSRs and YASRs were available for only 656 subjects, we entered Time 1 CBCL Total Problem scores and SES as candidate predictor variables in the first analysis. In a second analysis, we included the Time 4 YSR/YASR Total Problem score as candidate predictor, beside the Time 1 CBCL Total Problem scores and SES. At a significance level of $p<0.05$ for the full models, no significant effects were found, which confirmed that the sample used in the present study was a representative one.

Results

Specific problem and socially desirable items

For specific problem and socially desirable items, the percentages of young adults who scored a specific item as 1 or 2 respectively are presented in Table 7.1. Scores on the 4 items on substance use are summarized in Table 7.2.

Table 7.1. Prevalence rates of problem scores and socially desirable item scores, and the percentage of variance accounted for by significant ($p < 0.01$) sex and age effects.

Item	Males		Females		Sex[a]
	somewhat/ sometimes true	very true/ often true	somewhat/ sometimes true	very true/ often true	
1 Acts young	26	2	28	3	-
2 Allergy	13	11	16	20	F 2
3 Argues a lot	34	1	26	2	-
4 Asthma	3	2	2	1	-
5 Acts like opposite sex	3	1	1	1	-
6 Can get along (SD)	14	84	21	77	-
7 Brags	41	1	19	0	M 7
8 Can't concentrate	47	10	51	13	-
9 Can't get mind off thoughts	20	5	20	10	-
10 Can't sit still	41	21	38	17	-
11 Too dependent	25	1	34	4	F 2
12 Lonely	16	3	26	4	F 2
13 Confused	8	1	18	4	F 4
14 Cries a lot	2	0	24	3	F 11
15 Honest (SD)	43	50	37	60	F 2
16 Mean to others	19	0	8	1	M 2
17 Daydreams	30	9	42	10	F 1
18 Harms self	1	0	1	0	-
19 Demands attention	35	0	38	4	-
20 Destroys own things	3	0	1	0	M 1[d]
21 Destroys others' things	3	0	0	0	M 1
22 Worries about future	36	5	31	6	-
23 Not comfortable with others	14	1	18	2	-
24 Doesn't eat well	23	5	27	7	-
25 Doesn't get along	13	0	9	1	-
26 Lacks guilt	32	5	19	4	M 2
27 Jealous	35	1	38	1	-
28 Willing to help (SD)	25	72	13	86	F 4
29 Fears	12	3	27	12	F 7
30 Worries about relations with opposite sex	13	2	11	2	-
31 Fears impulses	13	1	12	1	-
32 Needs to be perfect	38	14	40	12	-
33 Feels unloved	5	3	8	1	-
34 Feels persecuted	7	0	9	0	-
35 Feels worthless	7	1	12	1	-
36 Accident-prone	12	3	8	2	-
37 Fighting	7	0	1	0	M 2
38 Is teased	5	1	1	0	M 2
39 Hangs around with others who get in trouble	22	3	17	4	-

Table 7.1, continued.

Item	Males		Females		Sex[a]
	somewhat/ sometimes true	very true/ often true	somewhat/ sometimes true	very true/ often true	
40 Hears things	2	0	1	1	-
41 Acts without thinking	34	2	42	4	F 1[c]
42 Likes to be alone	67	11	71	12	-
43 Lying, cheating	13	0	7	0	-
44 Bites fingernails	21	19	21	15	-
45 Nervous	42	4	55	9	F 3
46 Nervous movements	6	1	5	2	-
47 Nightmares	6	0	15	1	F 2
48 Not liked	15	0	13	0	-
49 Can do things better (SD)	57	12	50	4	M 4
50 Fearful, anxious	6	1	19	4	F 4
51 Dizzy	34	2	42	4	F 1[d]
52 Feels too guilty	16	2	23	5	F 2
53 Eats too much	27	4	35	7	F 2
54 Overtired	25	4	38	8	F 3
55 Overweight	13	3	28	8	F 5
56a Aches, pains	5	1	8	2	-
56b Headaches	13	2	29	11	F 4
56c Nausea, feels sick	3	0	13	1	-
56d Eye problems	1	0	2	1	-
56e Skin problems	5	3	14	6	F 3
56f Stomachaches	10	1	21	6	F 5
56g Vomiting	1	0	4	1	-
56h Heart pounding	4	1	7	2	-
56i Numbness, tingling	3	1	6	2	-
56j Other physical problems	5	2	6	3	-
57 Attacks people	3	0	1	0	M < 1[d]
58 Picking	24	4	15	5	-
59 Easily makes friends (SD)	47	46	46	50	-
60 Likes new things (SD)	37	58	34	63	-
61 Poor performance at school or job[b]	19	3	12	2	M 1
62 Clumsy	8	3	16	3	-
63 Prefers older people	38	7	39	12	-
64 Prefers younger people	27	4	26	1	-
65 Refuses to talk	9	1	7	1	-
66 Repeats actions	3	0	2	1	-
67 Loses friends quickly	6	2	7	0	-
68 Screams a lot	6	1	12	0	-
69 Secretive	48	13	44	10	-
70 Sees things	0	0	2	1	-
71 Self-conscious	29	4	45	8	F 4
72 Sets fires[c]	1	0	0	0	-

Table 7.1, continued.

Item	Males		Females		Sex[a]
	somewhat/ sometimes true	very true/ often true	somewhat/ sometimes true	very true/ often true	
73 Makes good use of opportunities (SD)	55	36	58	32	-
74 Shows off	34	3	23	2	M 2
75 Shy	41	8	54	10	F 2
76 Trouble falling asleep	18	4	24	5	-
77 Sleeps much	15	4	15	8	-
78 Wakes up too early	10	2	13	4	-
79 Speech problem	9	2	5	1	-
80 Stands up for rights (SD)	40	56	51	41	M 3
81 Worries about job or schoolwork	18	7	16	7	-
82 Steals	4	0	1	0	-
83 Stores up unneeded things	6	3	6	1	-
84 Strange behavior	7	3	4	2	-
85 Strange thoughts	8	1	3	1	-
86 Stubborn	57	20	62	19	-
87 Moody	49	13	52	22	F 2
88 Enjoys others (SD)	36	63	27	72	-
89 Suspicious	27	5	29	3	-
90 Swearing	55	8	37	2	M 7
91 Suicidal thoughts	4	1	4	1	-
92 Likes to make others laugh (SD)	49	44	53	36	-
93 Talks too much	44	10	50	15	F 1
94 Teases a lot	30	6	29	3	-
95 Hot temper	27	4	37	6	F 1[d]
96 Thinks about sex	37	6	15	1	M 9
97 Threatens people	3	0	0	0	M 2
98 Likes to help (SD)	41	54	28	71	F 2
99 Concerned with neat, clean	32	6	38	11	F 1
100 Trouble sleeping	3	2	7	3	-
101 Trouble finishing tasks	21	3	24	3	-
102 Lacks energy	18	3	32	4	F 2
103 Unhappy, sad, depressed	12	2	23	4	F 3
104 Loud	14	3	10	1	-
105 Does things that may cause trouble with the law	9	2	1	0	M 5
106 Fair to others (SD)	19	75	16	82	F 1[d]
107 Enjoys jokes (SD)	14	86	19	80	-
108 Takes life easy (SD)	18	79	27	71	-
109 Tries to help (SD)	36	63	23	76	F 2
110 Wishes to be opposite sex	1	0	1	0	-
111 Withdrawn	22	2	16	1	-

Table 7.1, continued.

Item	Males		Females		Sex[a]
	somewhat/ sometimes true	very true/ often true	somewhat/ sometimes true	very true/ often true	
112 Worries	38	5	39	12	F 5
113 Concerned about how to look	19	3	37	7	F 4
114 Trouble making decisions	41	4	53	11	-
115 Does not pay debts	5	0	3	0	-
116 Too concerned about health	21	2	24	4	-
JOB					
117 Trouble getting work done	5	3	6	1	-
118 Satisfied with job (SD)	29	59	26	64	-
119 Might lose job	12	0	2	1	M 2
120 Stays away from job	4	1	4	0	-
SCHOOL					
121 Trouble studying	41	6	39	9	-
122 Satisfied with school (SD)	31	56	35	48	-
123 Trouble with teachers	15	4	11	1	-
124 Skips classes	22	4	22	6	-
PARTNER					
125 Disagrees about sex	19	1	12	1	-
126 Disagrees about money	29	2	23	2	-
127 Disagrees about the amount of time together	31	3	18	5	-
128 Disagrees about what todo together	27	2	21	3	-
129 Disagrees about getting children	15	3	10	2	-
130 Disagrees about living arrangements	16	4	8	5	-
131 Trouble with partner's family	22	8	26	6	-
132 Satisfied with partner (SD)	3	90	7	88	-
ALCOHOL					
Frequency of use					M 14
Drunk					M 9
Concerned self					-
Concerned others					-
OTHER SUBSTANCE USE					
Drugs					M 2
Smoking					-

Note. Items are designated with their YASR item numbers and summary labels for their content. SD indicates socially desirable items. Numbers in the body of the table indicate the prevalence of item scores 1 and 2 in males and females respectively, and the percentage of variance in item scores accounted for by sex, where the effect was significant at $p<0.01$.

[a]F=females scored higher; M=males scored higher.

[b]Younger subjects scored higher (*variance*=3%).

[c]Older subjects scored higher (*variance*<1%).

[d]Not significant when corrected for the number of analyses.

Table 7.2. Prevalence rates for substance use.

Alcohol use

Number of drinks/week	Males*	Females
0	12%	30%
1	17%	35%
2-6	40%	27%
7-14	17%	6%
15-21	7%	2%
>21	6%	0%

Days being drunk in the last 6 months	Males*	Females
0	56%	85%
1-2	29%	12%
3-4	7%	2%
5-6	4%	1%
>6	5%	1%

Drug use for nonmedical purposes

Days using drugs in the last 6 months	Males	Females
0	88%	95%
1-2	3%	2%
3-4	2%	1%
5-6	1%	0%
>6	6%	2%

Smoking

Number of cigarettes	Males	Females
0 in last 6 months	58%	62%
<20/week	11%	10%
20-70/week	12%	10%
11-20/day	14%	13%
>20/day	5%	5%

Note. *=Males scored significantly higher.

Table 7.3. Percentage of variance accounted for by significant ($p<0.01$) effects of sex and age on competence scores.

	Item	Sex[a]	Age[b]
I	Job		
I	a. Get along with co-workers	-	-
	b. Get along with boss	-	-
	c. Job performance	-	-
II	Education		
II	a. Get along with students	-	-
	b. Get along with teachers	-	-
	c. Achievement	-	O 5[c]
III	Partner		
III	a. Get along with partner	-	-
	b. Share responsibilities	-	-
IV	Contacts with others		
IV	a. Number of friends	M 1	-
	b. Frequency of contacts with friends	M 1[c]	-
	c. Frequency of contacts at own home	-	-
	d. Frequency of contacts at their home	-	-
V	a. Get along with parents	-	-
	b. Get along with sibs	-	-

Note. Items are designated with their YASR item numbers and summary labels for their content. Numbers in the body of the table indicate the percentage of variance in item scores accounted for by each independent variable, where the effect was significant at $p<0.01$. [a]F=females scored higher; M=males scored higher. [b]O=older subjects scored higher; [c]Not significant when corrected for the number of analyses.

To assess age and sex effects, we performed ANOVAs with item scores as dependent variables, and 2 sexes (male versus female) and 6 age groups (age 19-24) as independent variables. We did not include SES at Time 5 as an independent variable for two reasons. Firstly, a considerable number (n=347; 49.1%) of subjects were still in education at Time 5, while others had a job. Secondly, young adults may depend on a variety of sources (parents, scholarship, own job) for their financial incomes. Since neither financial income nor level of job or education during young adulthood is probably a stable condition, the value of socio economic status as indicative of social class differences is probably limited.

The results of the ANOVAs are summarized in Table 7.1. Because of the small number of items for which an age effect was found, age effects were not displayed in Table 7.1. Interactions between age and sex were not detected.

Because significant differences may arise by chance, we controlled for chance findings by correcting for the number of comparisons according to Sakoda et al. (1954). At a protection level of $p<0.01$, we found that of the total of 141 analyses for the 141 problem items, socially desirable items, and items on work, education, or relationship with a partner, 6 age and 6 sex effects were probably chance findings. Because the six significant effects with the smallest F-values were most likely to be chance findings, we superscripted these effects in Table 7.2.

We applied Cohen's (1988) criteria to judge effect sizes for ANOVAs. Effects accounting for 1.0% to 5.9% of variance are considered small, 6.0% to 13.8% are medium, and ≥13.9% are large.

Sex effects. Table 7.1 shows that females scored significantly higher on 34 items (30 after correction for chance findings), and males scored higher on 20 items (18 after correction for chance findings).

For the 110 problem items, 13 problem items on work, education or relationship with a partner, and 4 substance use items, we found one large effect, which was for the frequency of alcohol use (males > females). Of the 6 items for which medium effects were found, 4 were scored higher by males ('Brags', 'Swearing', 'Thinks about sex too much', 'Being drunk') and 2 by females ('Cries a lot', 'Fears'). Of the 32 items for which small effects were found, 10 (8 after correction for chance findings) were scored higher by males, and 22 (19 after correction for chance findings) by females. One effect accounting for <1.0% of

variance was probably a chance finding.

Of the total of 18 socially desirable items, 2 were scored significantly higher by males, and 5 (4 after correction for chance findings) by females. All effects were small.

Age effects. Because according to Sakoda et al. (1954) 6 age effects were expected to occur by chance, the 2 age effects found were probably a chance finding.

Competence items

To assess effects and interactions of age and sex on the scores for competence items, we performed ANOVAs in a 2(sex) x 6(age groups) factorial design. The results are summarized in Table 7.3. Only 3 effects were found, 2 of which were probably a chance finding (Sakoda et al., 1954). After correction for chance findings, the only (small) sex effect, in favor of males, concerned the number of friends. Interactions between age and sex were not found.

We did not compute normative data for the competence items, because no data on their validity were available.

Total Problem and syndrome scores

Table 7.4 provides the following normative data for the Total Problem and syndrome scores: means, standard deviations, and 90th percentile scores of the cumulative frequency distributions for both sexes. These norms may be useful to researchers and clinicians to make comparisons with data obtained for other samples.

Sex and age effects. To assess sex and age effects for Total Problem and syndrome scores, we performed ANOVAs in a 2 sex (males and females) x 6 age groups (19-24) factorial design. Table 7.4 shows that the mean Total Problem score was slightly but significantly higher for females than for males (variance=1%). Furthermore, females scored significantly higher than males on the Withdrawn (variance=1%), Somatic Complaints (variance=8%), and Anxious/Depressed (variance=4%) syndromes, and the Internalizing (variance=5%) scale. Males scored significantly higher than females on the Delinquent Behavior syndrome (variance=2%). Age effects were not found.

Comorbidity

To investigate the degree of comorbidity between different types of problems, we computed Pearson correlations between the YASR syndrome scores for each sex separately (Table 7.5). Correlations between a specific syndrome and the Total Problem score were computed after substracting the syndrome score from the Total Problem score.

Discussion

Problem items

Normative data for behavioral and emotional problems in young adults from the general population can be used by researchers and clinicians, to make comparisons with data from individuals or other samples. Some positive item scores can hardly be regarded as deviant when present in isolation, because they were scored by many young adults in the general population. Other items, however, were scored by so few subjects that these behaviors may be a target for professional attention. Table 7.6 presents items for which the prevalence of a positive item score (score 1 or 2) was $<5\%$ for both sexes.

Sex effects. A larger number of problem items was scored higher by females (34; 30 after correction for chance findings) than males (20; 18 after correction for chance findings). There was a small but significant sex difference in Total Problem scores, with females scoring higher than males.

The one large and four medium sex effects for item scores, with males scoring higher than females, mainly concerned alcohol use and tough behavior ('Brags', 'Swears'), while the two medium effects, with females scoring higher than males, concerned 'Cries a lot' and 'Fears'. Males more often displayed externalizing problems, representing conflicts with other people, while females suffer more often from internalizing problems, that represent internal distress.

Age effects. No age effects were found (after correction for chance findings), which indicated that the mean level of problem scores remained stable across different ages. This finding, based on a cross-sectional design, was supported by the longitudinal study of Ferdinand and Verhulst (1995b), who found that mean YASR Total Problem scores did not change significantly across a 2-year

Table 7.4. Normative data for total problem and syndrome scores.

	Males			Females			
	Mean(sd[a])	*Median*	*P90*[b]	*Mean(sd*[a])	*Median*	*P90*[b]	Sex effect[c]
Withdrawn	2.9(2.0)	3.0	6.0	3.3(2.1)	3.0	6.0	F 1[d]
Somatic complaints	1.2(1.5)	1.0	3.0	2.4(2.3)	2.0	6.0	F 8
Anxious/depressed	3.5(3.6)	3.0	8.0	5.1(4.5)	4.0	12.0	F 4
Social problems	1.7(1.8)	1.0	4.0	1.7(1.6)	1.0	4.0	-
Thought problems	0.7(1.2)	0.0	2.0	0.7(1.2)	0.0	2.0	-
Attention problems	3.7(2.5)	3.0	7.0	4.3(2.8)	4.0	8.0	-
Delinquent behavior	2.1(1.6)	2.0	4.0	1.6(1.4)	1.0	4.0	M 2
Aggressive behavior	5.7(4.0)	5.0	11.0	5.6(3.4)	5.0	10.0	-
Internalizing problems	7.5(5.7)	6.0	14.0	10.5(7.3)	9.0	20.5	F 5
Externalizing problems	7.8(5.1)	7.0	15.0	7.3(4.1)	7.0	13.0	-
Total problem score	27.4(16.6)	26.0	50.7	31.7(18.1)	28.0	55.5	F 1

Note.

[a] *sd* = standard deviation.

[b] P90 = 90th percentile of the cumulative frequency distribution of scores for each sex separately.

[c] F= females scored higher; M = males scored higher; the numbers indicate the variance accounted for by significant ($p < 0.01$) sex effects.

[d] Not significant when corrected for the number of analyses.

Table 7.5. Correlations between syndrome scores.

Males

	WIT	ANX	SOM	THO	SOC	ATT	DEL	AGG	INT	EXT	TPS
WIT	1.0	.66	.43	.25	.53	.53	.31	.32	.83	.36	.63
ANX	.66	1.0	.45	.33	.57	.62	.24	.41	.93	.40	.69
SOM	.43	.45	1.0	.34	.40	.47	.30	.40	.66	.42	.59
THO	.25	.33	.34	1.0	.26	.39	.29	.35	.37	.37	.47
SOC	.53	.57	.40	.26	1.0	.64	.37	.47	.62	.49	.64
ATT	.53	.62	.47	.39	.64	1.0	.31	.51	.67	.50	.70
DEL	.32	.24	.30	.29	.37	.31	1.0	.53	.33	.74	.49
AGG	.32	.41	.40	.35	.47	.51	.53	1.0	.46	.96	.60
INT	.83	.93	.66	.37	.62	.67	.33	.46	1.0	.47	.74
EXT	.36	.40	.42	.37	.49	.50	.74	.96	.47	1.0	.59
TPS	.63	.69	.59	.47	.64	.70	.49	.60	.74	.59	1.0

Females

	WIT	ANX	SOM	THO	SOC	ATT	DEL	AGG	INT	EXT	TPS
WIT	1.0	.67	.44	.36	.50	.49	.39	.34	.80	.41	.63
ANX	.67	1.0	.51	.56	.55	.67	.44	.48	.93	.54	.77
SOM	.44	.51	1.0	.37	.32	.55	.30	.42	.74	.44	.61
THO	.36	.56	.37	1.0	.35	.49	.37	.42	.54	.47	.60
SOC	.50	.55	.32	.35	1.0	.58	.39	.45	.56	.50	.59
ATT	.49	.67	.55	.49	.58	1.0	.43	.59	.70	.63	.76
DEL	.39	.44	.30	.37	.39	.43	1.0	.39	.46	.65	.51
AGG	.34	.48	.42	.42	.45	.59	.39	1.0	.51	.95	.71
INT	.80	.93	.74	.54	.56	.70	.46	.51	1.0	.57	.79
EXT	.41	.54	.44	.47	.50	.63	.65	.95	.57	1.0	.66
TPS	.63	.77	.61	.60	.59	.76	.51	.71	.79	.66	1.0

Note. All correlations significant at $p < 0.001$.
WIT = Withdrawn; ANX = Anxious/Depressed; SOM = Somatic Complaints; THO = Thought Problems; SOC = Social Problems; ATT = Attention Problems; DEL = Delinquent Behavior; AGG = Aggressive Behavior; INT = Internalizing; EXT = Externalizing; TPS = Total Problem score.

Table 7.6. Problem items for which the prevalence of a positive score (1 or 2) was <5% for both sexes.

Acts like opposite sex	Repeats actions
Attacks people	Sees things
Destroys others' things	Sets fires
Destroys own things	Steals
Eye problems	Threatens people
Harms self	Wishes to be opposite sex
Hears things	

period in 528 young adults from the general population, aged 18 to 23 years at initial assessment.

In terms of norms, the lack of age effects for YASR item scores indicated that normative data are similar across the 19- to 24-year-age-span.

Socially desirable and social competence items

Sex effects. Five (4 after correction for chance findings) socially desirable items were scored higher by females ('Honest', 'Willing to help', 'Likes to help', 'Fair to others', 'Tries to help'), while 2 were scored higher by males ('Can do things better', 'Stands up for own rights'). Hence, females more often reported attitudes or behaviors pertaining to helping other people and being honest and fair, while males more often reported competitive behaviors or attitudes. This sex difference in the prevalence of socially desirable behaviors was reflected in the sex difference in types of problem behaviors. Females more often suffered from internal distress, which was reflected by higher scores than males on the Withdrawn, Somatic Complaints, and Anxious/Depressed syndromes. On the contrary, males more often reported conflicts with other people, which was reflected by higher scores on the Delinquent Behavior syndrome.

Sex differences in socially desirable items were reflected in the only significant sex difference (after correction for chance findings) in social competence items: the self-reported number of friends was slightly, but significantly, higher in males than in females. This finding suggested that the greater tendency in males versus females to have conflicts with other people went

together with more contacts outside the family. This would seem to fit well with the traditional sex roles, with males being more oriented outside and females inside the family.

Age effects. After correction for chance findings, no age effects were found. This indicated that norms for socially desirable and social competence items were similar for all age groups.

Total Problem and syndrome scores

In both clinical practice and research, the normative data provided in Table 7.4 can be used to determine to which extent Total Problem or syndrome scores of an individual deviate from those of individuals of the same sex from the general population. The 90th percentile scores can be used as a borderline above which subjects can be regarded deviant. The validity of Total Problem and syndrome scores was supported by Ferdinand et al. (1995a), who found significantly higher Total Problem and syndrome scores in subjects who were referred to mental health services versus subjects from the general population, aged 19 to 25 years. Furthermore, Ferdinand et al. (1995b), who assessed 131 young adults from the general population with the SCAN (World Health Organization, 1991), found that 43.3% of the subjects who scored above P90 of the Total Problem score received a DSM-III-R diagnosis (American Psychiatric Association, 1987), versus 17.2% of those who scored below P90.

Sex effects. Females scored significantly higher on the Withdrawn, Somatic Complaints and Anxious/Depressed syndromes, and on the Internalizing scale, while males scored significantly higher on the Delinquent Behavior scale. These findings corresponded with the greater number of medium sex effects in favor of females for items covering Internalizing problems, and the greater number of medium or large sex effects in favor of males for items covering Externalizing problems.

Internalizing problems indicate internal distress, and therefore might lead to an individual's subjective need for professional help or actual referral to mental health services. Indeed, Ferdinand and Verhulst (1994) found that 18- to 23-year-old females from the general population more often reported referral and need for help than males in a 2-year follow-up. Conversely, males more often reported

police contacts and alcohol abuse, which may be associated with the higher scores on the Delinquent Behavior syndrome.

Age effects. The lack of age effects for Total Problem and syndrome scores, that corresponded with the lack of age effects for individual problem items, indicated that norms for YASR syndromes were similar for all age groups covered by this study.

Comorbidity

Correlations between YASR syndromes and the Total Problem score indicate the degree to which specific problems are associated with problems in other areas of psychopathology. The lowest correlations between syndrome and Total Problem scores were for the Thought Problems (r=0.47) and Delinquent Behavior (r=0.49) syndromes in males, and for the Social Problems (r=0.59) and Delinquent Behavior (r=0.51) syndromes in females. In other words, compared to other problem areas, problems in these areas were least likely to be associated with other types of problems. Therefore, instruments for the assessment of psychopathology in young adults should include these areas, to provide a comprehensive picture of behavioral and emotional problems.

The usefulness of the YASR to assess a broad range of problems was underscored by Ferdinand and Verhulst (1994). They found that the Delinquent Behavior syndrome of the YASR predicted police or judicial contacts, that can be regarded as a sign of disturbance, across a 2-year period, in subjects initially aged 18 to 22 years. In contrast, police contacts were not predicted by scores of the Symptom Checklist (SCL-90; Derogatis et al., 1973), a widely used instrument to assess psychopathology in adults.

The highest correlations between syndrome scores and Total Problem scores were for the Attention Problems (males: r=0.70; females: r=0.76) and Anxious/Depressed (males: r=0.69; females: r=0.77) syndromes. Hence, scores on these syndromes were associated with a relatively great array of problems in other areas as well. With respect to the Attention Problems syndrome, pertaining to problems of hyperactivity, concentration, and impulsivity, we might conclude that these problems form an underestimated problem area of maladjustment in young adults. Other assessment instruments for adult psychopathology, such as the

GHQ (Goldberg and Hillier, 1979) and the SCL (Derogatis et al., 1973), and widely used diagnostic interviews such as the DIS-III (Robins, 1981a) and the SCAN (World Health Organization, 1991), provide little information on problems such as those covered by the Attention Problems syndrome.

Cross-national comparability

In a cross-national comparison study of self-reported problems in 11- to 18-year-olds from the general population, Verhulst et al. (1993) found that all mean YSR syndrome scores were significantly higher in American versus Dutch subjects. Arindell et al. (1987) found a similar effect for scales of the (self-report) Fear Survey Schedule, Dutch undergraduate university students scoring significantly lower than American or British students (mean age 20 years; range 18-35 years). The Verhulst et al. (1993) study concerned a younger age group than the present study. Furthermore, because Arindell et al. (1987) only assessed anxiety, in samples that may have been selected differently in different countries, their findings may neither be generalized to a broader range of problems, nor to the general population. The studies of Verhulst et al. (1993) and Arindell et al. (1987) suggest that our data should be interpreted cautiously outside The Netherlands. Nevertheless, the present study's normative data can be useful in countries that lack nation-specific YASR norms. Further research on the cross-cultural comparability of YASR scores is needed.

Conclusions

The present study provided general population norms for YASR item, syndrome, and Total Problem scores. The absence of age effects facilitates the use of the YASR, since results for ages 19 to 24 are comparable. This study also demonstrated the usefulness of the Delinquent Behavior and Attention Problems syndromes to obtain a comprehensive picture of psychopathology in young adults.

CHAPTER 8

GENERAL DISCUSSION

GENERAL DISCUSSION

Introduction

In this Chapter, the results of Chapter 2 through 7 will be summarized, and recommendations for future research will be given. First, continuity and change of problems from adolescence into young adulthood will be discussed. Second, information on the psychometric properties of the YASR will be summarized. Third, issues pertaining to the prevalence of psychiatric disorder in young adults will be discussed.

The development of psychopathology from adolescence into young adulthood

This study assessed the stability of psychopathology from adolescence into young adulthood. The data can be used to determine the need for intervention and prevention for different problem areas. Furthermore, our findings underscored the importance of comorbidity as contributor to the persistence of several types of problems. However, an important limitation of this study, that is associated with the lack of information from multiple informants at initial assessment during adolescence and follow-up assessment during young adulthood will now be discussed.

Two methods were used in this study to investigate the persistence of psychopathology across time. The first method was the use of comparable instruments across time to elicit information from the same type of informant. Chapter 3 describes how the Youth Self-Report (YSR) was completed by adolescents aged 15 to 18 years who, four years later, completed the Young Adult Self-Report (YASR).

The second method was to use comparable instruments across time, for assessing different types of informants. This procedure was described in Chapter 4. Initially, 13- to 16-year-olds were assessed with the Child Behavior Checklist (CBCL), a parent questionnaire, while subjects were reassessed with the Young Adult Self-Report (YASR), a self-report questionnaire, 8 years later.

Table 8.1. Comparison of 4-year and 8-year stability coefficients.

	males		females	
	4-year[1] r	8-year[2] r	4-year[1] r	8-year[2] r
Internalizing problems	.44	.15[3]	.49	.38
Externalizing problems	.57	.30	.55	.17[3]
Total problem score	.46	.21[4]	.52	.26

Note.
[1] 4-year stability coefficients: correlations between YSR and YASR scores; initial age 15 to 18; age at follow-up 19 to 22
[2] 8-year stability coefficients: correlations between CBCL and YASR scores; initial age 13 to 16; age at follow-up 21 to 24
[3,4] All correlations significant at $p<0.001$ except [3] not significant and [4] $p<0.01$

In females, the 8-year stability coefficient of the Externalizing scale, reflecting a Pearson correlation between CBCL Externalizing scores in 13- to 16-year-olds and YASR Externalizing scores in 21- to 24-year-olds, was $r=0.17$ (n.s.). This was much lower than the 8-year stability coefficient of the Internalizing scale ($r=0.38$, $p<0.001$; Table 8.1). In contrast, the 4-year stabilities of Internalizing and Externalizing scores, derived from the YSR and the YASR of females initially 15- to 18-year-old, did not differ significantly (Table 8.1). Initially 13- to 14-year-old and 21- to 22-year-old females were not assessed in the 4-year follow-up study. However, because we applied the CBCL in our 8-year follow-up study, while the YSR was used in the 4-year follow-up study, it remained unclear whether the low 8-year stability of externalizing problems reflected a low stability in 13- to 14-year-old or 21- to 22-year-old females. Informant differences (parents versus subjects themselves) may also have contributed to the low 8-year stability of externalizing problems.

Recommendations for future research

The discrepancies between the results of Chapter 3 and Chapter 4 demonstrate (a) the difficulties arising when different informants are used at consecutive times of assessment, and (b) the need for different informants to

obtain a comprehensive picture of the course of psychopathology.

Future studies investigating stability and change of psychopathology, from childhood or adolescence into young adulthood, using multiple informants (parents, teachers, subjects themselves) at both initial assessment and follow-up are needed. To facilitate longitudinal research, Achenbach (1990) derived the YASR from the YSR. The YASR and the YSR rely on information from subjects themselves. Because parents form another valuable source of information, Achenbach constructed the Young Adult Behavior Checklist (YABCL; Achenbach et al., 1995), a parent questionnaire for young adults derived from the CBCL. In Table 8.2, a possible design of a longitudinal study using multiple informants at different times of assessment is shown.

Table 8.2. The possible design of a longitudinal study of the stability of psychopathology from adolescence into young adulthood using multiple informants.

	Time 1	Time 2	Time 3	Time 4	Time 5
Age	11-18	13-18	15-18	17-18	
Instruments	CBCL	CBCL	CBCL	CBCL	
	YSR	YSR	YSR	YSR	
	TRF	TRF	TRF	TRF	
Age		19-20	19-22	19-24	19-26
Instruments		YABCL	YABCL	YABCL	YABCL
		YASR	YASR	YASR	YASR

Note.
CBCL = Child Behavior Checklist (Achenbach 1991b)
TRF = Teacher's Report Form (Achenbach, 1991c)
YSR = Youth Self-Report (Achenbach, 1991d)
YASR = Young Adult Self-Report (Achenbach, 1990)
YABCL = Young Adult Behavior Checklist (Achenbach et al., 1995)

The psychometric properties of the YASR

Although information on the psychometric properties of the YASR was presented in almost every chapter of this thesis, the the validity and reliability of the YASR were not discussed in the preceding chapters, except Chapter 2, in which the predictive validity of the YASR was described. Therefore, the main findings concerning the validity and reliability of the YASR will now be summarized and discussed.

Validity

The applicability of the YSR cross-informant scales developed by Achenbach (1991) to YASR scores of young adults was tested through confirmatory factor analysis, as described in Chapter 3. The findings indicated that the YSR cross-informant scales can be used to describe psychopathology in young adults, which facilitated longitudinal comparisons of psychopathology in adolescents and young adults.

However, our confirmatory analysis did not indicate that the YSR factor solution formed the optimal solution to describe psychopathology in young adults. First, our analysis did not test the applicability of separate cross-informant syndromes to psychopathology in young adults. Hence, some cross-informant syndromes may not be optimal descriptors of psychiatric syndromes in young adults. Second, we performed a confirmatory analysis with an a-priori 9-factor solution (the 9 YSR cross-informant scales), without taking into account that a 9-factor solution is not necessarily the optimal solution to describe associations between YASR scores in young adults.

The criterion validity of the YSR scales in young adults, with referral to mental health services as external criterion, was described in Chapter 3. Syndrome scores of 645 referred and 594 nonreferred young adults were compared. Referred subjects scored significantly higher on all scales. Large effects were found for the Withdrawn (16% of variance), Anxious/Depressed (26%), Social Problems (16%), Thought Problems (21%), and Internalizing (23%) scales, while effects were medium for the Somatic Complaints (12%), Attention Problems (12%), Delinquent Behavior (11%), and Externalizing (8%) scales, and small for the Aggressive Behavior scale (5%). These findings supported the

criterion related validity of the YASR scales.

The smallest differences between referred and nonreferred subjects were for the Delinquent Behavior, Aggressive Behavior, and Externalizing scales. This might indicate that the validity of these scales was lower than that of the other scales. However, the small effects for these syndromes may also indicate that young adults were less likely to be referred for externalizing problems than for other problems. This was confirmed by the finding (Chapter 2) that each internalizing syndrome predicted referral to mental health services or subjects' subjective need for professional help over a 2-year period, while externalizing problems did not. This indicated that externalizing problems in clinically referred young adults were likely to be 'co-morbid' to other problems, that formed the reason of referral to mental health services.

In Chapter 6, the convergent validity of YASR scores and DSM-III-R Axis 1 disorders, derived from the Schedules for Clinical Assessment in Neuropsychiatry (SCAN; World Health Organization, 1991), was described. Mean YASR Total Problem (*variance*=20%), Internalizing (*variance*=18%), and Externalizing (*variance*=4%) scores for individuals who received a SCAN/DSM-III-R diagnosis were significantly higher than for those who did not receive a diagnosis. Furthermore, Pearson correlations between the total symptom score of the SCAN and the Total Problem score of the YASR were 0.69 ($p<0.001$) in males and 0.78 ($p<0.001$) in females. The SCAN total symptom score correlated significantly higher ($Z=2.43$; $p<0.025$) with the Internalizing scale ($r=0.70$; $p<0.001$) than with the Externalizing scale ($r=0.56$; $p<0.001$). This may be associated with the fact that the SCAN was designed to assess diagnoses that mainly cover internalizing problems.

The predictive validity of YASR syndrome and Total Problem scores was supported by the finding that the Total Problem score and each syndrome score of the YASR, except Thought Problems and Aggressive Behavior, predicted indices of maladjustment across a 2-year time-span.

Reliability

The (18 days) test-retest of the total problem score of the YASR in an epidemiological sample (Chapter 3) was $r=0.89$ ($n=58$). Furthermore, we

computed Cronbach's alphas (Cronbach, 1951), indicating the internal consistency, for each scale, in a clinically referred sample. We found adequate ($\alpha > 0.70$; Nunnally, 1978), alphas for each scale, except for the Delinquent Behavior scale ($\alpha = 0.68$) and the Thought Problems scale ($\alpha = 0.67$) in males, and for the Delinquent Behavior scale in females ($\alpha = 0.54$).

The low alphas for the Delinquent scale were probably associated with the exclusion of three of the YSR Delinquent Behavior scale items from the YASR, since Cronbach's alpha depends on the number of items in a scale. However, the alpha for the Deliquent Behavior scale may also have been reduced by a low prevalence of delinquent behaviors in a clinical sample, while the scale may be a reliable and valid measure for delinquent behaviors in an epidemiological sample. This was supported by the predictive value of the Delinquent Behavior syndrome for police contacts, and not for referral to mental health services, across a 2-year time-interval (Chapter 2).

The low alpha for the Thought Problems scale probably reflected the low prevalence of its constituent items.

Recommendations for future research

Because the YSR factor solution may not form the optimal description of psychopathology in young adults, future studies investigating the factor structure of the YASR in clinically referred and nonreferred subjects are needed. For this purpose both exploratory and confirmatory factor analyses should be applied, to test whether the YASR syndromes that have recently been described by Achenbach et al. (1995) for clinically referred American young adults can be applied to YASR scores derived from clinically referred young adults from The Netherlands and other countries.

The concurrent validity of the YASR constructs can be tested against DSM or ICD diagnoses that are derived by standardized assessment procedures.

To test the validity of the Delinquent Behavior and Aggressive Behavior scales, neither comparisons between clinically referred and nonreferred subjects, nor comparisons between subjects who received a DSM diagnosis against those who did not receive a diagnosis, are sufficient. To test the validity of externalizing scores, YASR scores of subjects who are frequently arrested by the police or who

are convicted for crimes are needed.

To enhance longitudinal research, the age range of the YASR should be extended to ages above 30.

The prevalence of psychiatric disorder in young adults

Chapter 6 and Chapter 7 concerned the prevalence of psychiatric disorder in young adults. In Chapter 6, we used the SCAN to assess DSM-III-R disorders. The SCAN was a valid and reliable instrument. The advantage of the use of the SCAN over the DIS-III (Robins et al., 1981a, 1981b) is formed by the fact that it is administered by clinicians, and thereby might be more closely related to clinical practice than the DIS-III, which is administered by lay interviewers. The fact that previous prevalence studies (Bebbington et al., 1981; Bland et al., 1988; Canino et al., 1987; Henderson et al., 1979; Hodiamont et al., 1987; Mavreas et al., 1986; Myers et al., 1984; Oakley-Browne et al., 1989; Regier et al., 1988) used DIS/DSM-III (or PSE-9/DSM-III or ICD-9) instead of SCAN/DSM-III-R disorders hampered the comparability of our results to previous findings.

Recommendations for future research

Since the SCAN and the DIS will probably be the most widely used instruments to assess psychopathology in adults in the near future, studies investigating the concurrent validity of SCAN/DSM and DIS/DSM disorders in clinical and community samples are needed.

List of abbreviations

ADDH	Attention Deficit Disorder with Hyperactivity
ANOVA	Analysis of variance
CBCL	Child Behavior Checklist
CI	Confidence interval
DSM	Diagnostic and Statistical Manual for Mental Disorders
DIS	Diagnostic Interview Schedule
GAF scale	Global Assessment of Functioning Scale
GHQ	General Health Questionnaire
GSDS-II	Groningen Social Disabilities Schedule - Second version
ICD	International Classification of Diseases
MANOVA	Multivariate analysis of variance
OR	Odds Ratio
P50	50th percentile score of a cumulative frequency distribution
P90	90th percentile score of a cumulative frequency distribution
PSE	Present State Examination
SCAN	Schedules for Clinical Assessment in Neuropsychiatry
SCL	Symptom Checklist
SES	Socio-economic status
SIDP-R	Structured Interview for DSM-III-R Personality-Revised
TRF	Teacher's Report Form
YSR	Youth Self-Report
YASR	Young Adult Self-Report
YABCL	Young Adult Behavior Checklist

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Summary

In Chapter 1, the aims of the study were presented. The first aim of the study was to determine developmental pathways of psychopathology from adolescence into young adulthood. To assess the course of psychopathology from adolescence into adulthood, assessment procedures yielding comparable information at the first assessment and at follow-up assessments are needed. If different assessment procedures are used across time, it is unclear whether differences in the level and type of psychopathology across time reflect developmental changes or merely the differences between assessment procedures.

To compare assessments from adolescence to adulthood, Achenbach (1990) constructed the Young Adult Self-Report (YASR), a self-report questionnaire to assess psychopathology for ages 18 to 30. The YASR has roughly the same format as the Youth Self-Report (YSR; Achenbach, 1991d), a self-report questionnaire for ages 11 to 18. The second aim of the study was to assess the reliability and validity of the YASR.

The third aim was to assess the prevalence of psychiatric disorder in young adults. It was hypothesized in Chapter 1 that, in the absence of a 'gold standard' for psychiatric disorder, different approaches should be applied to determine prevalence rates of psychopathology in young adults. Firstly, assessment procedures covering psychiatric symptoms and measures of functional impairment are needed to obtain a comprehensive picture of psychopathology. Secondly, a dimensional and a categorical approach should be used simultaneously, to minimize the loss of statistical information.

Chapter 2 provided information on the ability of the YASR, the Symptom Checklist (SCL-90) and the General Health Questionnaire (GHQ-28) to predict maladjustment in young adults. 528 18- to 22-year-olds from the general population were initially assessed with the YASR, the GHQ-28 and the SCL-90. Two years later, signs of maladjustment were assessed. Referral to mental health

services and need for professional help were predicted by Total Problem scores of the YASR, the GHQ-28, and the SCL-90, and by the Internalizing scale of the YASR. Furthermore, the Internalizing scale predicted suicide attempts or suicidal ideation, whereas the Externalizing scale predicted police contacts. The YASR Delinquent Behavior syndrome was the only significant predictor of alcohol abuse. The findings supported the validity of the YASR as an instrument for the assessment of psychopathology in young adults.

Chapter 3 concerned the 4-year course of behavioral and emotional problems from adolescence into young adulthood in a general population sample. The sample consisted of 364 individuals, initially aged 15 to 18 years. Subjects filled out the Youth Self-Report (YSR) at the first time of assessment. At follow-up, 2 and 4 years later, subjects aged 19 or above completed the Young Adult Self-Report (YASR), while subjects under 19 years of age filled out the YSR. Almost 40% of the adolescents who were classified as deviant (scoring above the 90th percentile (P90) of the cumulative frequency table of the Total Problem score of the YSR) initially, were still deviant 4 years later. There was no significant difference in the continuity of internalizing problems versus externalizing problems in this sample. All types of problems tended to persist to a similar degree. This held also for problems that are often regarded as typical childhood problems, such as attention problems and hyperactivity.

In the methods section of Chapter 3, we provided information on the validity and reliability of the YASR. We tested the applicability of the YSR scales for 11- to 18-year-olds to the scores obtained with the YASR for 645 19- to 25-year-old clinically referred subjects.

Confirmatory factor analysis, using the 81 YSR scale items that are similar for the YSR and the YASR, yielded a high goodness of fit index for the YSR scales. We also compared YASR scores in the clinical sample with those in a nonreferred sample of 594 19- to 23-year-olds. Referred subjects scored significantly higher on each scale.

Cronbach's alphas (Cronbach, 1951) were ≥70 for each scale, except for the Delinquent Behavior scale (α=0.68) and the Thought Problems scale (α=0.67) in males, and for the Delinquent Behavior scale in females (α=0.54). We found an 18-day test-retest reliability (n=58) of r=0.89 for the total problem score in subjects who were randomly drawn from a general population sample.

In Chapter 4, we reported on the stability and change of behavioral and emotional problems from adolescence into young adulthood. Subjects from the general population, aged 13 to 16 years, were assessed with the Child Behavior Checklist (CBCL) at initial assessment, and with the YASR 8 years later. Furthermore, signs of maladjustment, such as referral to mental health services, police contacts, suicide attempts, and alcohol abuse, were assessed at follow-up. Twenty-seven percent of the individuals with deviant CBCL Total Problem scores had deviant YASR Total Problem scores at follow-up. The probability of deviant YASR Total Problem scores at follow-up was raised 7.4-fold by deviant scores on the CBCL syndromes Somatic Complaints and Anxious/Depressed at initial assessment. Referral to mental health services was predicted by the Anxious/Depressed syndrome, while suicide attempts were predicted by the Withdrawn syndrome of the CBCL.

In Chapter 5, we described the stability and change in emotional and behavioral problems in young adults over a 2-year time-span. A sample of 528 18- to 22-year-olds from the general population was assessed with the Young Adult Self-Report (YASR) on 2 occasions. Stability coefficients for the Total Problem score of the YASR were 0.63 for males and 0.75 for females. Fourty-nine percent of the subjects who were initially classified as deviant, were still deviant at follow-up. Of all YASR syndromes, the highest stability was for the Anxious/Depressed scale. The findings indicated that problems in young adulthood do not tend to disappear spontaneously, which argues against a wait-and-see policy with respect to interventions and for research on the efficacy of treatment of problematic adolescents.

Chapter 6 concerned the effectiveness of different assessment procedures for determining prevalence rates of psychiatric disorder in young adults. In a two-stage multi-method procedure, the Young Adult Self-Report, the Schedules for Clinical Assessment in Neuropsychiatry (SCAN), the Structured Interview for Personality Disorders-Revised, and the Global Assessment of Functioning (GAF) Scale were used to assess prevalence rates in 706 19- to 24-year-olds from the general population. Furthermore, individuals' subjective perception of distress and referral to mental health services were assessed. The prevalence of any SCAN/DSM-III-R disorder was 19.3% (95% confidence interval: 11.2%-27.4%). Most subjects who received a SCAN/DSM-III-R diagnosis were only mildly impaired, if at all. The highest prevalence rates of dysfunctioning (GAF score <61) without referral to mental health services were for dissociative disorder (2.3%), sleep disorder (2.1%), alcohol dependence (1.3%) and affective disorder (1.8%). It was concluded that instruments that assess functional impairment in addition to DSM-III-R diagnoses are indispensable in prevalence studies.

In Chapter 7 prevalence rates of a wide range of behavioral and emotional problems in young adults were presented. We assessed 706 19- to 24-year-olds from the Dutch general population with the Young Adult Self-Report (YASR). Large or medium (*variance* $>5.9\%$) sex effects were found for alcohol use and for the items 'Brags' and 'Swears' (males > females), and for the items 'Cries a lot' and 'Fears' (females > males). With respect to socially desirable items, females more often reported attitudes or behaviors pertaining to helping other people, while males more often reported competitive behaviors or attitudes. For YASR syndromes, higher mean scores for females than males were found for the Withdrawn, Somatic Complaints, and Anxious/Depressed syndromes, while mean scores on the Delinquent Behavior syndrome were higher for males than females. No age effects were found. Compared to other problem areas, thought problems and delinquent behavior in males, and social problems and delinquent behavior in females were least likely to be associated with other types of problems. It was

concluded that normative data of behavioral and emotional problems in young adults are similar across the 19- to 24-year-age-span. To obtain a comprehensive picture of behavioral and emotional problems in young adults, instruments that do not cover thought problems, social problems and delinquent behaviors, should not be used.

In Chapter 8, the results of Chapters 2 to 7 were summarized and discussed. Attention was paid to the use of multiple informants to assess the course of psychopathology from childhood into young adulthood. Furthermore, issues concerning the psychometric properties of the YASR were discussed. Recommendations for future longitudinal research and future prevalence studies, and for research on the validity of the YASR were given.

Samenvatting (Summary in the Dutch language)

In Hoofdstuk 1 werden de doelstellingen van de studie gepresenteerd. De eerste doelstelling betrof het bepalen van het beloop van psychopathologie vanuit de adolescentie naar de jong-volwassenheid. Hiervoor zijn diagnostische procedures nodig die voor aanvangs- en vervolgmetingen vergelijkbare informatie opleveren. Als niet-vergelijkbare procedures worden gebruikt, blijft het onduidelijk of verschillen in niveau en type van psychopathologie over de tijd informatie geven over het beloop van pychopathologie, of slechts over verschillen tussen meetprocedures.

Om diagnostiek, over kindertijd en volwassenheid heen, te standaardiseren vervaardigde Achenbach (1990) de Zelf In te vullen Vragenlijst voor Jong-Volwassenen (Young Adult Self-Report; YASR), een vragenlijst voor 18- to 30-jarigen. De YASR beslaat een grote diversiteit aan emotionele en gedragsproblemen. De YASR heeft bijna dezelfde opmaak als de YSR (Youth Self-Report; Zelf In te vullen Vragenlijst voor Jongeren; Achenbach, 1991d), een zelfbeoordelings vragenlijst voor 11- tot 18-jarigen.

De tweede doelstelling van deze studie was het onderzoeken van de validiteit en betrouwbaarheid van de YASR.

De derde doelstelling was het bepalen van de prevalentie van psychiatrische stoornissen onder jong-volwassenen. Om de prevalentie van psychopathologie te bepalen zijn epidemiologische methoden nodig.

In Hoofdstuk 1 wordt gesteld dat, bij gebrek aan een 'gouden standaard' voor psychiatrische stoornis, verschillende methoden dienen te worden toegepast om prevalenties van psychopathologie onder jong-volwassenen te meten. Ten eerste zijn er procedures nodig om zowel psychiatrische symptomen als functionele beperkingen te bepalen, om een duidelijk beeld te verkrijgen van psychisch functioneren. Ten tweede dient een combinatie van de dimensionele en de categoriale benadering te worden toegepast om het verlies van statistische

informatie tot een minimum te beperken.

Hoofdstuk 2 biedt informatie over het vermogen van de YASR, de Symptom Checklist (SCL-90), en de General Health Questionnaire (GHQ-28), om tekenen van psychisch disfunctioneren onder jong-volwassenen te voorspellen. 528 18- tot 22-jarigen uit de algemene bevolking vulden bij de eerste meting de YASR, de GHQ-28 en de SCL-90 in. Twee jaar later werden tekenen van psychisch disfunctioneren bepaald. Verwijzing naar een instelling voor geestelijke gezondheidszorg en subjectieve behoefte aan professionele hulp werden voorspeld door de Totale Probleemscores van de YASR, de GHQ-28, en de SCL-90, en door de YASR schaal Internaliserend gedrag. Internaliserend gedrag voorspelde ook suicide pogingen of suicidale preoccupatie, terwijl de YASR schaal Externaliserend gedrag politie contacten voorspelde. De YASR schaal Delinquent gedrag was de enige significante predictor van alcohol misbruik. De bevindingen steunden de validiteit van de YASR bij het meten van psychopathologie onder jong-volwassenen.

Hoofdstuk 3 betrof het beloop van gedragsproblemen en emotionele problemen over een periode van vier jaar, de overgang van adolescentie naar jong-volwassenheid beslaand, in een steekproef uit de algemene bevolking. De steekproef bestond uit 364 individuen, 15 tot 18 jaar oud bij aanvang van de studie, die de YSR invulden bij de aanvangsmeting. Bij vervolgmetingen, twee en vier jaar later, vulden personen van 19 jaar of ouder de YASR in, terwijl personen jonger dan 19 jaar de YSR invulden. Bijna 40% van de adolescenten die aanvankelijk werden geclassificeerd als afwijkend (Totale Probleemscore van de YSR boven de 90ste percentielscore van de cumulatieve frequentieverdeling), waren vier jaar later nog steeds afwijkend. In deze steekproef bestond geen significant verschil tussen de continuiteit van Internaliserend en Externaliserend gedrag. Alle soorten problemen vertoonden een gelijke mate van persistentie over de tijd. Dit had ook betrekking op problemen die vaak worden beschouwd als problemen van de kinderleeftijd, zoals aandacht problemen en hyperactiviteit.

De methoden paragraaf van Hoofdstuk 3 voorziet in informatie over de validiteit en betrouwbaarheid van de YASR. Wij onderzochten de toepasbaarheid van de YSR scalen voor 11-tot 18-jarigen op scores, verkregen met de YASR, van 19- tot 25-jarige klinisch-verwezen personen.

Wij onderzochten de toepasbaarheid van de YSR schalen op YASR scores door middel van een confirmatieve factor analyse, waarbij alleen de 81 YSR schaal items die hetzelfde zijn voor de YSR en de YASR werden gebruikt. Deze procedure leverde een hoge 'goodness-of-fit' index voor de YSR schalen op. Wij vergeleken ook de YASR scores van de klinische steekproef met die van een niet-klinische steekproef van 594 19- tot 23-jarigen uit de algemene bevolking. Op alle YSR scalen scoorden verwezen individuen significant hoger dan niet-verwezen personen.

Cronbach's alphas (Cronbach, 1951) waren ≥70 voor elke schaal, behalve voor Delinquent Gedrag (α=0.68) en Denkproblemen (α=0.67) bij mannen, en voor Delinquent Gedrag bij vrouwen (α=0.54). Wij vonden een (18 dagen) test-hertest betrouwbaarheid (n=58) van r=0.89 voor de Totale Probleemscore bij personen die aselect werden getrokken uit een algemene-bevolkings-steekproef.

In Hoofdstuk 4 rapporteerden wij over stabiliteit en verandering van gedrags- en emotionele problemen bij de overgang van adolescentie naar jong-volwassenheid. Bij aanvang van het onderzoek vulden ouders van 13- tot 16-jarigen uit de algemene populatie de Child Behavior Checklist in (CBCL; Achenbach, 1991b). Acht jaar later de proefpersonen zelf de YASR in. Bij de vervolgmeting werd ook informatie verkregen over indices van psychisch disfunctioneren, zoals verwijzing naar een instelling voor geestelijke gezondheidszorg, contact met politie of justitie, suicide pogingen, en alcoholmisbruik. Zenenentwintig procent van diegenen met afwijkende CBCL Totale Probleemscores hadden tevens afwijkende YASR Totale Probleemscores 8 jaar later. De kans of een afwijkende YASR Totale Probleemscore bij follow-up werd 7.4 keer groter in geval van afwijkende scores op de CBCL syndromen

Lichamelijke Klachten en Angstig/Depressief bij aanvang. Verwijzing naar een instelling voor geestelijke gezondheidszorg werd voorspeld door Angstig/Depressief, terwijl suicide pogingen werden voorspeld door het CBCL syndroom Teruggetrokken.

In Hoofdstuk 5 onderzochten wij de stabiliteit en verandering van emotionele problemen en gedragsproblemen bij jong-volwassenen over een periode van twee jaar. 528 18- tot 22-jarigen uit de algemene populatie vulden de YASR in bij twee gelegenheden. De stabiliteitscoefficiënt van de Totale Probleemscore van de YASR was $r=0.63$ voor mannen en $r=0.75$ voor vrouwen. Negenenveertig procent van de personen die bij de eerste meting als afwijkend werden geclassificeerd waren twee jaar later nog steeds afwijkend. Van al de YASR syndromen had de Angstig/Depressief schaal de grootste stabiliteit. De bevindingen lieten zien dat problemen van jong-volwassenen vaak niet zomaar verdwijnen. Dit pleit tegen een afwachtende houding ten aanzien van professionele interventie, en voor onderzoek naar het effect van behandelingen bij jong-volwassenen.

Hoofdstuk 6 betrof het toepassen van verschillende diagnostische procedures bij het bepalen van prevalenties van psychiatrische stoornissen bij jong-volwassenen. Met behulp van een twee-traps multi-methodische aanpak, werden de YASR, de SCAN (Schedules for Clinical Assessment in Neuropsychiatry), de SIDP-R (Structured Interview for DSM-III-R Personality-Revised), en de GAF schaal (Global Assessment of Functioning Scale) gebruikt om prevalenties te bepalen bij 706 19- tot 24-jarigen uit de algemene bevolking. Ook werden verwijzing naar een instelling voor geestelijke gezondheidszorg en iemands subjectieve beleving van problemen gemeten. De prevalentie van het hebben van een SCAN/DSM-III-R diagnose was 19.3% (95% betrouwbaarheidsinterval: 11.2%-27.4%). De meeste personen met een SCAN/DSM-III-R diagnose waren slechts licht, of helemaal niet, beperkt in hun functioneren. De hoogste prevalenties van disfunctioneren(GAF score <61)

zonder daarvoor professionele hulp te krijgen betroffen dissociatieve stoornissen (2.3%), slaapstoornissen (2.1%), alcohol afhankelijkheid (1.3%), en affectieve stoornissen (1.8%). Het bleek dat instrumenten die functionele beperkingen meten, naast DSM-III-R diagnoses, onmisbaar zijn bij prevalentiestudies.

In Hoofdstuk 7 worden prevalenties gepresenteerd voor een grote hoeveelheid gedragsproblemen en emotionele problemen bij jong-volwassenen. 706 19- tot 24-jarigen ut de algemene bevolking vulden de YASR in. Grote of middelgrote geslachts verschillen (*variantie* > 5.9%) werden gevonden voor alcoholgebruik, voor de items 'Schept op' en 'Vloekt' (mannen > vrouwen), en voor de items 'Huilt vaak' en 'Angsten' (vrouwen > mannen). Wat sociale wenselijkheids items betreft rapporteerden vrouwen vaker een houding of gedrag betrekking hebbend op het helpen van anderen, terwijl mannen vaker competitief gedrag of een competitive houding scoorden. Vrouwen scoorden hoger dan mannen op de YASR syndromen Teruggetrokken, Somatische Klachten, en Angstig/Depressief, terwijl mannen hoger dan vrouwen scoorden op Delinquent Gedrag. Er waren geen leeftijdeffecten. Vergeleken met andere probleemgebieden vertoonden denkproblemen en delinquent gedrag bij mannen, en sociale problemen en delinquent gedrag bij vrouwen, de kleinste associatie met andere soorten problemen. Er werd geconcludeerd dat normatieve data voor gedragsproblemen en emotionele problemen bij jong-volwassenen gelijk zijn voor alle leeftijden tussen de 19 en 24 jaar. Om een compleet beeld van emotionele problemen en gedragsproblemen te verkrijgen dienen instumenten die geen onderdelen bevatten die betrekking hebben op denkproblemen, sociale problemen, en delinquent gedrag niet te worden gebruikt.

In Hoofdstuk 8 werden de resultaten van de Hoofdstukken 2 t/m 7 kort samengevat en bediscussieerd. Er werd aandacht besteed aan het gebruik van multipele informanten om het beloop van psychopathologie vanuit de kindertijd naar de jong-volwassenheid te onderzoeken. Verder werd de validiteit van de YASR bediscussieerd. Aanbevelingen voor toekomstig longitudinaal en

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About the author

Robert Franklin Ferdinand was born on December 24th, 1964 in Spijkenisse, The Netherlands. He passed his secondary school exam in 1982 at the 'Christelijk Lyceum' in Apeldoorn. Starting his medical study at 17 years of age, he attended medical school at the Erasmus University Rotterdam from 1982 to 1990. As a 19-year-old (1984) he also attended the "Nuts Academie" in Rotterdam, to study mathematics.

Beside the regular study program, he studied medication effects in children with neuropsychiatric disorders at the Department of Child and Adolescent Psychiatry (head: Prof. Dr. F.C. Verhulst; supervisor: Dr. W.B. Gunning), Erasmus University/Sophia Children's Hospital Rotterdam during one year (1987-1988). In 1989 he spent 2 months at the Ruprecht Karls University/University Hospital Heidelberg, Germany, at the Department of Neurology (head: Prof. Dr. H. Winter). In 1990 he spent 2 months at the University of Antwerpen/University Hospital Antwerpen, Belgium, at the Department of Neurosurgery (head: Prof. Dr. P. Selosse).

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During his studies, Robert Ferdinand was a singer and he played double bass in 'Erasmusica', the students' orchestra and choir of Rotterdam. He was a member of the Erasmusica board for three years. Furthermore, he was one of the founders of 'Salonorkest Prima Vera', in which he played as a pianist.

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