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The Structure and Correlates of Self-Reported Symptoms in 11-Year-Old Children

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Self-reports of DSM-III symptomatology were obtained from 792 11-year-old children using the Diagnostic Interview Schedule for Children (DISC). We report results concerning 13 subscales derived from the DISC. Factor analysis of the subscales suggested a broad distinction between "externalizing" and "internalizing" disorder for boys' self-report. For girls, two separate internalizing factors representing anxiety and depression emerged. We also found sex differences in correlates of self-reported disorder. Finally, we examined agreement between child and parent and teacher reports. Overall, agreement was relatively low, although somewhat higher for child-parent than for child-teacher.

In the past, the assessment of psychopathology in children has tended to rely on parent and teacher report as the primary sources of information on problem behaviors. This has been particularly so in the case of "externalizing" disorders such as inattention, hyperactivity, and conduct problems. At least some of the reluctance in using self-report to assess these types of behaviors has arisen from the view that such self-reports are of doubtful validity. This, in turn, has led to a paucity of self-report data in the case of the hyperactive child (Ross & Ross, 1982). Increasingly, however, child self-report

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is being used for the assessment of "internalizing" disorders such as anxiety and depression (O'Leary & Johnson, 1986). At the same time, there has been a move toward the development of structured psychiatric interviews with children, to assess both externalizing and internalizing disorders. As Paget (1984) points out, the interest in such structured assessment parallels recent efforts to establish a more broadly based system of diagnostic classification. Thus, several of the more recently developed diagnostic interviews have been specifically keyed to DSM-III criteria for disorder (Gutterman, O'Brian & Young, 1987).

To date, much of the research on childhood psychopathology has focused upon individual disorders in isolation, without due recognition of the extent to which disorders may coexist (Anderson, Williams, McGee, & Silva, 1987). This is apparent in the use of self-report checklists that are assumed to measure the symptoms of a particular disorder, such as depression. However, the use of a checklist to measure, say, depressive symptomatology may be misleading in the absence of information concerning the degree to which self-reported depression correlates with self-reports of other types of disorder. In contrast, the use of a structured interview assessing different types of disorder allows an investigation of interrelationships among disorders. Furthermore, it provides a first step in identifying those categories or dimensions of disorder that can be differentiated from each other (Quay, Routh, & Shapiro, 1987). As yet, there has been little research examining the extent to which self-reported disorders in childhood are interassociated.

A related issue concerns the identification of the correlates of different types of disorder based upon children's self-report. While there are published reports of the correlates of individual self-reported disorders, such as depression (e.g., Blumberg & Izard, 1985; Kandel & Davies, 1982; Vincenzi, 1987) and delinquency (Elliott & Voss, 1974; Johnson, 1979; Kaplan, Martin, & Johnson, 1986), there has been little work on identifying unique correlates that might differentiate among disorders. Such correlates would include family background variables and measures of academic achievement. In this regard, there has been little research on the correlates of self-reports of inattentive-hyperactive behaviors or self-reports of anxiety.

A third issue raised by the use of child self-report concerns the degree to which such reports correlate with those of parents and teachers. What evidence there is suggests that there is greater parent-child agreement in reporting externalizing symptoms than internalizing ones (Herjanic & Reich, 1982). Edelbrock, Costello, Dulcan, Conover, and Kalas (1986) have also reported somewhat higher parent–child consensus with respect to externalizng symptoms. In their study, overall levels of agreement were moderate: r = .51 for a measure of externalizing symptoms versus r = .17 for their measure of internalizing symptoms. In both studies, however, most of the children had been referred for psychiatric evaluation. Other studies investigating

parent–child or teacher–child agreement have usually assessed only one or two disorders (see Achenbach, McConaughy, & Howell, 1987).

This study reports some findings from the use of a structured diagnostic interview with a large sample of 11-year-old children from Dunedin, New Zealand. The children were inteviewed with the Diagnostic Interview Schedule for Children or DISC (Costello, Edelbrock, Kalas, Kessler, & Klaric, 1982). The broad aim was to examine the nature of the self-report data that this interview provides. More specifically, we report some normative data concerning both behavioral and emotional problems experienced by the children, and we examined the interrelationships among the various measures of psychopathology based upon DSM-II criteria. A further aim was to investigate the relationships between different types of self-reported disorders and other variables, including IQ, academic achievement, self-esteem, and family background. Finally, we examined the degree of correspondence between the child's self-report and both parent and teacher report of behavior problems.

METHOD

Subjects

The Dunedin Multidisciplinary Health and Development Study is a longitudinal research project investigating the health, development, and behavior of a large sample of New Zealand children (McGee & Silva, 1982). The children were part of a cohort born between April 1, 1972, and March 31, 1973, at Queen Mary Hospital, Dunedin. There were 1,139 children living in Otago province (where Dunedin is situated) who were eligible for inclusion in the study at age 3. Of these children, 1,037 were traced and assessed; the remaining children were traced too late or their parents refused participation. The sample has been assessed every 2 years thereafter. At age 11, 925 children remained enrolled in the study, representing 81% of the original eligible sample.

New Zealand has a relatively high standard of living and the Dunedin sample is socioeconomically advantaged in comparison with the remainder of New Zealand (Elley & Irving, 1972). The sample is underrepresentative of Maori and other Polynesian children, so it is predominantly European in background.

Measures

The children who came to the Dunedin Unit were interviewed by one of the authors (J.A.), a child psychiatrist, using the DISC (Version XIII-

III). The DISC is a structured interview with questions based upon DSM-III criteria for disorders of childhood and adolescence. Responses to questions are scored 0, 1, or 2, corresponding to "no," "sometimes," or "yes," and can be used to make diagnoses or summed to produce dimensional measures of disorders (see Edelbrock, Costello, Dulcan, Kalas, & Conover, 1985). The dimensional measures included inattention, impulsivity, hyperactivity, conduct disorder, oppositional disorder, separation anxiety, over-anxious disorder, phobia, obsessive-compulsiveness, and depression sub-scales for affective, cognitive, vegetative, and suicidal components. The items relating to mania and schizophrenic disorder were included, but because the positive response rate was so low, scales were not formed. Data relating to substance abuse and gender identity disorder were not collected from this population sample since the base rate was expected to be very low, and because of time restraints. Details concerning the use of the DISC at age 11 are provided by Anderson et al. (1987).

A total of 803 children came to the Dunedin Unit for assessment within 2 months of their birthday between February 1983 and March 1984. Of this 803, 792 were interviewed with the DISC; the remaining 11 could not be interviewed because of time constraints or unavailability of the interviewer. There were 122 other children enrolled in the study who received briefer assessments at home or in school, in other parts of New Zealand or overseas. This did not include the DISC.

When the child was 11 years old, the parent and teachers completed the Rutter Child Scales A and B, respectively (Rutter, Tizard, & Whitmore, 1970), as well as additional items relating to inattentive, hyperactive, and impulsive behaviors (see McGee, Williams, & Silva, 1985) and depression (see Anderson et al., 1987). These additional items were needed to supplement the Rutter scales, which have relatively few items assessing these behaviors. Both parents and teachers completed the inattentive and related ratings; only the parents were given the depression items.

The children also were assessed on the WISC-R IQ scale (Wechsler, 1974; the subscales of comprehension and picture arrangement were omitted owing to time constraints); the Students' Perception of Ability Scale (SPAS; Chapman, Silva, & Boersma, 1983), a 35-item scale designed to measure academic self-concept; and a 10-item scale based upon the Rosenberg (1965) measure of "global" self-esteem. Scores on academic achievement tests were available for 616 of the 792 children given the DISC. The academic achievement measures included the Progressive Achievement Tests (PAT) measures of Reading Comprehension and Reading Vocabulary (Elley & Reid, 1969, 1971); the PAT Mathematics Test (Reid & Hughes, 1974); and the Proof-Reading Tests of Spelling, or PRETOS (Croft, Gilmore, Reid, & Jackson,1981). These tests, published by the New Zealand Council for Educational Research, were designed to measure school achievement (see Silva,

1984). They were administered to a large sample of 2,600 Dunedin children, and about one-quarter of these children were enrolled in the Dunedin study.

Finally, a general measure of "family adversity" was used to assess the family background of study members. This measure, cumulative to age 11, was based upon frequent changes of residence, frequent changes of school, solo parenting, low SES (father semiskilled/unskilled), separation of the child from his or her parents, mother less than 20 years at birth of first child, low maternal cognitive ability as measured by the SRA verbal test (Thurstone & Thurstone, 1973), a low score on a measure of family relations index of the Family Environment Scales of Moos (1974), marriage guidance sought by parents, and a high score for the mother on a checklist of mental health symptoms (Rutter et al., 1970). The elements were known to correlate either singly or in combination with various behavioral measures. Some aspects of adversity were assessed on several occasions.

The measures of parent and teacher report of behavior problems and the child's IQ, self-esteem, school achievement, and level of family adversity were chosen to investigate their relationship with the child's self-reported symptoms. The variables were included on the basis of their etiological significance evident in the literature on childhood psychopathology. In the case of the school achievement measures, it is unfortunate that the tests were not administered to all study members. However, we believe that these measures provide an excellent assessment of school achievement and the sample size would seem adequate to investigate the relationships between academic achievement and reported symptoms.

Missing Data

Only 748 children of the potential 792 children had completed scores for all the DISC measures. This was due to some items' being coded as "don't know." We compared these 748 children with the 44 children who did not complete the DISC and the remaining 133 children enrolled in the study but not given the DISC. The differences between the groups for IQ, the five educational tests, and the SPAS were not statistically significant. There were, however, statistically significant differences for both the parent and teacher Rutter scales, the disadvantage scale, and the measure of self-esteem. Post hoc tests showed that the differences between the group not seen and the group that did not complete the DISC were not significant, but that the group that completed the DISC had significantly lower mean scores for both the Rutter scales and the disadvantage scale and a higher mean score for the self-esteem measure than the other two groups. Data was available for some symptom scores for more than 748 children.

RESULTS

Descriptive Results

We decided to concentrate the analysis of the DISC on the 13 subscale scores as outlined by Edelbrock et al. (1985, 1986), rather than to initiate an analysis of individual items. This was done for two reasons. First, because the DISC was administered to children from the general population rather than a clinic-referred sample, many of the individual questions had low base rates. This would have resulted in omitting many such items from a factor analysis of the overall pool of questions. We believed that such a factor analysis at the level of individual DISC items could not be considered a meaningful analysis of the structure of the DISC. Second, it seemed appropriate to analyze the data in terms of the proposed subscales since these are in accord with a major diagnostic classification in use, i.e., DSM-III. Furthermore, Edelbrock and colleagues have reported results using these subscales, so we are able to offer more information concerning already existing measures rather than developing our own, perhaps idiosyncratic, set of measures.

The means and standard deviations for the 13 subscales of the DISC are reported in Table I, for boys and girls separately. There were statistically significant sex differences for inattention, impulsivity, hyperactivity, and conduct disorder, for which boys had higher mean scores than girls, and for separation anxiety and phobia, for which girls had higher mean scores.

Table I. Means and Standard Deviations for the 13 Symptom Scales for Boys and Girls

	Boys (N = 395)		Girls (N = 353)		
DISC scale	*Mean*	*SD*	*Mean*	*SD*	*t* value
1. Inattention	1.7	2.2	1.3	2.0	2.88[a]
2. Impulsivity	1.8	2.4	1.2	1.9	3.73[a]
3. Hyperactivity	2.3	3.1	1.6	2.4	3.16[a]
4. Conduct	2.4	2.3	1.7	1.3	5.11[a]
5. Oppositional	1.3	2.0	1.0	1.5	2.37
6. Separation anxiety	1.1	1.9	1.7	2.6	3.45[a]
7. Overanxiety	2.7	3.1	3.3	3.4	2.33
8. Obsessive-compuslive	0.3	0.8	0.4	0.9	1.66
9. Phobia	0.5	1.2	0.8	1.5	3.09[a]
10. Affective	2.3	2.5	2.6	2.4	1.79
11. Suicidal	0.5	1.2	0.4	0.9	1.26
12. Vegetative	0.7	1.1	0.6	0.9	1.29
13 Cognitive	1.1	1.4	1.1	1.2	0.49
Total	18.7		17.7		

[a]Statistically significant ($p < .05$) using the Bonferroni inequality to control for number of significance tests (Grove & Andreasen, 1982).

Table II. Correlation Matrix and Reliability Coefficients for Boys (N = 395[a] and Girls (N = 359)

DIS-C subscales	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Inattention	.65	.51	.38	.18	.32	.41	.41	.15	.20	.26	.16	.24	.32
2. Impulsivity	.65	.71	.45	.31.	.38	.35	.38	.15	.14	.24	.24	.34	.39
3. Hyperactivity	.48	.51	.74	.24	.42	.26	.30	.15	.11	.32	.21	.11	.30
4. Conduct	.36	.47	.30	.44	.35	.18	.14	.14	.12	.12	.19	.09	.07
5. Oppositional	.51	.61	.41	.47	.65	.19	.33	.19	.17	.38	.33	.32	.28
6. Separation anxiety	.40	.33	.29	.33	.27	.70	.50	.28	.38	.29	.15	.30	.26
7. Overanxiety	.47	.40	.32	.28	.34	.48	.71	.29	.34	.49	.34	.36	.49
8. Obsessive-compulsive	.28	.25	.17	.25	.27	.18	.46	.34	.38	.38	.20	.29	18
9. Phobia	.30	.14	.08	.14	.11	.39	.35	.19	.60	.23	.04	.17	.20
10. Affective	.31	.34	.28	.31	.34	.39	.53	.40	.20	.67	.47	.42	.41
11. Suicidal	.35	.31	.26	.39	.39	.39	.43	.31	.11	.49	.66	.36	.33
12. Vegetative	.29	.29	.22	.29	.23	.33	.45	.42	.14	.47	.48	.41	.41
13. Cognitive	.38	.39	.22	.34	.38	.33	.44	.39	.06	.50	.50	.52	.45[b]

[a]Correlations for the boys are below the leading diagonal.
[b]Reliability coefficient (Cronbach's α) for the symptom scores for the whole sample are in the leading diagonal.

Factor Analysis of the Subscales

The correlation matrix for the 13 scales is shown in Table II. No attempt was made to compare the correlations between boys and girls because of the large number of potential comparisons. Separate factor analyses were carried out for boys and girls using the principal factor method followed by an oblique rotation. The first five eigenvalues for the boys' data were 5.24, 1.42, 1.18, 0.81, and 0.74. Both the eigenvalues greater than 1 criterion and Catell's scree test suggested that three factors for boys might be appropriate. However, after rotation the sum of the squared loadings on the third factor was less than 1, which suggested that it was less important than the other factors. Tabachnick and Fidell (1983) suggest that the number of factors for which the sum of the squared loadings is greater than 1 after rotation is probably a good estimate of the number of reliable factors. Inspection of the factor loadings also suggested that two factors were more interpretable than three. For the girls' data the first six eigenvalues were 4.46, 1.34, 1.24. 1.04, 0.78, and 0.68, which suggested that four factors might be appropriate. However, the sum of the squared loadings and interpretability suggested that three factors provided a more appropriate solution.

Factor loadings for boys are shown in Table III. The first factor loaded on the scales for both depression and anxiety, while the second factor loaded most highly on the scales relating to inattention, impulsivity, hyperactivity, conduct disorder, and oppositional behavior. The correlation be-

Table III. Factor Loadings for the Factor Analyses for Boys and Girls

	Boys (N = 395)		Girls (N = 353)		
DIS-C subscales	Factor 1	Factor 2	Factor 1	Factor 2	Factor 3
1. Inattention	.08	−.71[a]	−.14	−.64	.18
2. Impulsivity	−.07	−.90	−.07	−.81	−.02
3. Hyperactivity	−.02	−.61	.02	−63	−.07
4. Conduct	.18	−.43	.00	−.40	−.04
5. Oppositional	.04	−.69	.30	−.44	−.11
6. Separation anxiety	.42	−.19	−.09	−.28	.58
7. Overanxiety	.66	−.10	.30	−.18	.39
8. Obsessive-compulsive	.59	.05	.28	.13	.42
9. Phobia	.25	−.07	−.01	.04	.64
10. Affective	.73	.02	.75	.09	.13
11. Suicical	.62	−.06	.73	.00	−.18
12. Vegetative	.77	.13	.51	−.01	.13
13. Cognitive	.64	−.05	.40	−.19	.10

[a]Factor loadings of .40 and above are shown underlined.

tween the factors was .63, which meant that the factors had variance in common. The two factors accounted for 51.3% of the variance.

A three-factor solution, which appeared to be appropriate for the girls' data, is also reported in Table III. The first factor had its highest loadings on the depression scales. The second factor loaded most highly on the scales for inattention, impulsivity, hyperactivity, conduct disorder, and oppositional behavior, while the third factor loaded most highly on the anxiety scales. The overanxious disorder scale, however, did load quite highly on the first factor and separation anxiety on the second factor. The correlations between the first factor and the second and third factor were .61 and .45, respectively, and the correlation between the second and third factor was .45. The three factors accounted for 54.3% of the variance.

Symptom Scores

The results of the factor analyses suggest a somewhat different factor structure for boys and girls. However, rather than analyze the results for boys and girls in a separate manner, we decided to base our further analyses on four broad symptom scores for (a) Inattention-Hyperactivity (IH), (b) Conduct-Oppositional Behavior (CO), (c) Anxiety (Ax), and (d) Depression (D). These broad areas of psychopathology are well recognized and differentiated in terms of both previous research and clinical practice. Furthermore, we believe it would be of interest to other researchers to attempt to identify individual correlates of these four types of self-reported symptoms. The measures were obtained by summing the scores for inattention, impulsivity, and hyperactivity in the case of IH; summing the scores for conduct and oppositional behavior (CO); summing the separation anxiety, overanxiety, obsessive-compulsive, and phobia scores for Ax; and summing the four depression scores for D.

The means and standard deviations for these four scores as well as the correlation matrices for boys and girls are shown in Table IV. There were statistically significant sex differences for IH and CO on which boys scored higher. Girls, on the other hand, scored higher on Ax. There was no significant sex difference for D. These sex differences reflect the results obtained for the individual 13 subscales. The differences between the respective correlations between boys and girls were not statistically significant (the Bonferroni inequality was used to maintain the family-wise error rate at $p < .05$).

Symptom scores, IQ, and Academic Achievement

To examine the relationship between the four symtom scores and the background variables, multiple regression analyses were carried out for boys

Table IV. Means, Standard Deviations, and Correlation Matrix for Boys and Girls for the Symptom Scores for Inattention-Hyperactivity, Conduct-Oppositional, Anxiety, and Depression Symptom Scales

	Boys (N = 395)		Girls (N = 353)		Correlations[a]			
Symptoms measures	*Mean*	*SD*	*Mean*	*SD*	1	2	3	4
1. Inattention-hyperactivity[b]	5.7	6.4	4.1	5.1		.52	.49	.43
2. Conduct-oppostional[b]	3.7	3.7	2.7	2.4	.60		.35	.36
3. Anxiety[b]	4.6	5.2	5.9	6.1	.49	.42		.55
4. Depression	4.6	4.8	4.7	4.3	.45	.49	..63	

[a]The correlations for boys are below the leading diagonal.
[b]Sex differences significant by t test, $p < .05$.

and girls separately, with the symptom scores as dependent variables. If the overall analyses were significant, they were followed by univariate tests and then step-down F tests. The latter are equivalent to univariate regression analyses in which the dependent variables are successively entered as independent variables in the analysis. Such tests allowed an examination of the relationship between a particular symptom score and background variables after adjusting for the contribution of other symptom scores. The use of step-down tests, however, necessitates an ordering of the variables. In general, variables assumed or proven to be significant should appear earlier in the step-down ordering (Bock, 1975). In ensuing analyses, we believed that the appropriate ordering for the symptom scores was externalizing disorders followed by internalizing disorders. Earlier research from the Dunedin study (e.g., McGee et al., 1985, McGee, Anderson, Williams, & Silva, 1986) has suggested the importance of the relationship between inattention and IQ and literacy measures. This being so, we have ordered IH first, then CO. In the case of Ax, and D, we tested both orders of entry.

The correlations between IH, CO, Ax, and D and Full Scale WISC-R IQ are reported in Table V for boys and girls separately. The overall test was statistically significant ($p < .05$) in both cases; the multiple R was .29 for boys $F(4, 390) = 8.98$, and .23 for girls, $F(4, 348) = 4.81$. The univariate tests showed that each of the four scales was significantly associated with IQ for boys. However, the step-down test showed that after adjusting for IH, the relationships between the other scales and IQ were no longer significant. The results for girls show that Ax is the only scale with which IQ has a statistically significant correlation. Step-down tests confirmed this association.

The multiple correlations for the measures of academic achievement are also reported in Table V. The overall tests were statistically significant

Table V. Correlations (r) or Multiple Correlations (Multiple R) of Measures of IQ, Academic Achievement, Self-Esteem, and Family Disadvantage with Inattention-Hyperactivity, Conduct-Oppositional, Anxiety, and Depression Measures

	IQ r	School performance multiple R^b	Self-esteem multiple R^c	Family disadvantage r
Boys	(N = 395)	(N = 236)	(N = 392)	(N = 375)
Inattention-hyperactivity	.28[a]	.31[a]	.38[a]	.23[a]
Conduct-oppositional	.18[a]	.23	.35[a]	.18[a]
Anxiety	.20[a]	.27[a]	.34[a]	.21[a]
Depression	.15[a]	.20	.39[a]	.15[a]
Girls	(N = 353)	(N = 208)	(N = 346)	(N = 353)
Inattention-hyperactivity	.08	.20	.35[a]	.14[a]
Conduct-oppositional	.11	.21	.22[a]	.21[a]
Anxiety	.21[a]	.33[a]	.39[a]	.13
Depression	.07	.17	.33[a]	.15[a]

[a]Statistically significant $p < .05$. In order to maintain the family-wise error rate at $p < .05$, $p < .0125$ (.05/4) was used for each test.
[b]School performance included measures of reading comprehension, reading vocabulary, listening, mathematics, and the proofreading spelling test.
[c]Self-esteem included the Rosenberg self-esteem measure and the SPAS.

for both boys and girls. The canonical correlation between the sets of academic achievement and symptom scores was .33 for boys, approximate $F(20, 924) = 2.02$, and .34 for girls, approximate $F(20, 812) = 1.93$, $p < .05$, in both cases. The univariate tests showed that as far as the boys were concerned, both IH and Ax were related to academic achievement. However, after adjusting for IH, the relationship between Ax and academic achievement was no longer significant. For girls, it appeared that only Ax was related to achievement, an association that remained after adjusting for the other three scales. None of the associations between the academic scores and IH (boys) and Ax (girls) was significant after initially controlling for IQ.

Symptom Scores and Self-Esteem

The results relating to SPAS and the measure of self-esteem are reported in Table V. The canonical correlation between the symptom scores and the self-esteem measures were .46 for boys, approximate $F(8, 776) = 13.7$, and .44 for girls, approximate $F(8, 684) = 10.43$. The univariate tests for boys and girls indicated that all the scores were significantly related to the self-esteem measures. The step-down tests for boys showed that if the variables were entered in the order IH, CO, Ax, and D the step-down tests were significant for all the variables except CO. If, however, the order for D and Ax was reversed, the step-down test for D was statistically significant while

that for Ax was not. The step-down tests for girls suggested that the IH and Ax were significantly related to self-esteem. When the order for Ax and D was changed, the step-down test for both D and Ax remained significant. After controlling for IQ these results remained substantially the same.

Symptom Scores and Family Adversity

The correlations for the measure of family adversity are reported in Table V. The multiple correlation between the symptom scores and disadvantage was .26 for boys, $F(4, 390) = 6.96$, and .23 for girls $F(4, 348) = 4.76$, $p < .05$, in both cases. The univariate tests showed that all the scores were related to disadvantage except for the Ax score for girls. The step-down tests for boys showed that after adjusting for IH, the relationship between disadvantage and the remaining scores were no longer significant. For girls, both the IH and CO scales were associated with family adversity; the relationship between the latter scale and adversity remained significant after adjusting for IH.

Correlation Between Self-Report and Parent and Teacher Report

Finally, Table VI shows the correlations between the child's self-reported symptoms and behavioral reports from the parents and teachers. In the case of the parent report, the following measures were available at age 11: Inattention (impulsivity), Hyperactivity, Antisocial Behavior, Worry-Fearfulness

Table VI. Correlations for Boys and Girls Separately Between Self-Report and Parent and Teacher Report for Scores Relating to Inattention/Impulsivity, Hyperactivity, Conduct-Antisocial Behavior, Anxiety-Worry, and Depression

	Boys		Girls	
Type of measure	Parent	Teacher	Parent	Teacher
Inattention/impulsivity	.31 (N = 399)	.35 (N = 412)	.23 (N = 369)	.36 (N = 371)
Hyperactivity	.29 (N = 405)	.14[a] (N = 414)	.30 (N = 370)	.14[a] (N = 374)
Conduct-oppositional (antisocial behavioral)	.31 (N = 398)	.28 (N = 411)	.29 (N = 366)	.14[a] (N = 372)
Anxiety (worry-fearfulness)	.16 (N = 393)	.20 (N = 400)	.19 (N = 361)	.13[a] (N = 360)
Depression	.25 (N = 391)	–	.24 (N = 360)	–

[a]Not statistically significant ($p > .05$). All other correlations significant.

(based upon McGee et al., 1985), and Depression (Anderson et al., 1987). For the teacher reports, only the Inattention, Hyperactivity, Antisocial Behavior, and Worry-Fearfulness measures were available (McGee et al., 1985). To examine the correlations with self-report, we distinguished between the inattention/impulsivity and hyperactivity aspects of the child's report. The correlations shown in Table VI represent correlations based upon measures of similar behavioral/emotional dimensions, although the measures per se for child and adult were somewhat different. Three of the correlations for girls were not statistically significant; these were between teacher's report of Hyperactivity and self-report of IH, teacher's report of Antisocial Behavior and self-report of CO, and teachers' report of Worry-Fearfulness and self-report of Ax. In addition, the correlation between teacher and self-report of Hyperactivity for boys was nonsignificant. The remaining correlations, while being statistically significant, were only moderate. In general, the parent-child correlations were higher than the teacher-child correlations.

DISCUSSION

Because of problems regarding low base rates for items on the DISC, we were unable to fully analyze the factor structure of the interview per se. However, the factor analysis of the 13 subscales of the DISC reinforced the broad distinction between "externalizing" and "internalizing" disorder. The factor structure did show sex differences, with Ax and D being represented as separate factors for the girls' self-report data. Nevertheless, measures based upon the Ax and D subscales correlated at .55 for girls, compared with .63 for boys. Overall, therefore, a considerable degree of overlap existed among the various self-report measures. This degree of intercorrelation among measures only serves to reinforce the argument that studies based upon the self-report of individual types of disorder (e.g., anxiety of depression) need to be treated cautiously. For example, several papers have now appeared investigating the relationship between depression and other variables, using self-report measures such as the Child Depression Iventory (CDI) to measure depression (Blumberg & Izard, 1985; Fauber, Forehand, Long, Burke, & Faust, 1987; Kaslow, Rehm, & Siegel, 1984; Schwartz, Friedman, Lindsay, & Narrol, 1982; Vincenzi, 1987). Our results suggest that such self-reports of depression are likely to be so highly correlated with other types of disorder as to preclude identification of the unique correlates of depression. The same could be said to be true for any self-report measure. Clearly, studies relying upon childhood/preadolescent self-report need to assess various forms of psychopathology and need to use multivariate techniques to attempt to disentangle relationships among disorders and between disorders and other

variables. (Such an argument could equally well apply to research using parent or teacher report.)

In previous research from the Dunedin Unit we have reported that the correlates of parent and teacher ratings of behavior problems are essentially the same for boys and girls (McGee et al., 1985, 1987). The results of this study, however, suggest that the pattern of relationships between self-reported disorders and other significant variables may be different for boys and girls. For example, the step-down analysis indicated a significant correlation between IH and both IQ and school achievement for the boys' self-reports. This is in agreement with findings relating to parent and teacher ratings of inattention (McGee et al., 1985, 1987). On the other hand, only the Ax measure correlated with IQ and school achievement for the girls. This result suggests that the etiological significance of low IQ and poor school achievement may be different for boys and girls. In passing, it is also worth noting that the findings with respect to school achievement for boys and girls contrast sharply with recent suggestions that depression is related to reading ability and school progress (Fauber et al., 1987; Vincenzi, 1987).

The measures of self-perception of ability and self-esteem also showed a somewhat different pattern of association with symptom scores for boys and girls. Both IH and D were predictive of the self-esteem and SPAS scores, for boys; Ax was unrelated to these self-perception measures after adjusting for the former two symptoms scores. For girls, IH and Ax were significantly associated with self-perceptions. These results partially confirm our earlier analysis of the relationships between depression and self-perception of ability and self-esteem, at least for boys (McGee et al., 1986). In this regard, it is of interest that the scores for CO were unrelated to the self-perception measures. While poor self-esteem and self-rejection have long been considered to be implicated in the explanation of delinquency (e.g., Kaplan et al., 1986), we found no evidence for such an association at age 11 in either boys or girls.

The results for the family adversity measure indicate that IH is associated with such adversity in both boys and girls. This is in agreement with our earlier findings concerning family adversity and both parent and teacher ratings of inattention (McGee et al., 1985). However, only the results for the girls showed an association between self-reports of CO and family adversity. In this regard, the univariate correlation between CO and family adversity for girls was .21 compared with the correlation between IH and family adversity of .14. Family adversity, therefore, may be of particular importance in the genesis of antisocial behavior in girls, compared with the other types of disorder. This finding is also in agreement with research suggesting that the families of female delinquents may be more dysfunctional than those of male delinquents (Henggeler, Edwards, & Borduin, 1987).

Finally, the results indicate a relatively low level of agreement between self-reported behaviors and both parent and teacher report. While there were somewhat higher levels of agreement in the case of externalizing disorder, the effect was not marked. Agreement was highest for IH and lowest for self- and teacher reports of hyperactivity and antisocial behavior and worry-fearfulness in girls. The latter finding may reflect less awareness on the part of teachers for problems experienced by girls. Edelbrock et al. (1986) have reported correlations for parent-child measures in the age range 10 to 13 years, and these correlations are similar in level to those reported in our study.

In summary, the findings indicate a significant degree of intercorrelation among self-report measures of disorder in preadolescents. The level of intercorrelation indicated that the findings of "single disorder" studies based upon child or adolescent self-report need to be interpreted with some caution. Furthermore, our results indicate the potential importance of examining sex differences in the correlates of self-reported disorder.

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