Association of a Mixed Anxiety-Depression Syndrome and Symptoms of Major Depressive Disorder During Adolescence

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The relations between an empirically derived syndrome of Anxiety-Depression and an analogue measure of Major Depressive Disorder (MDD) are examined in a longitudinal study of a nationally representative sample of adolescents. Analyses of parents' reports and adolescents' self-reports indicate that there is moderate correspondence between scores on the Anxious-Depressed syndrome and symptoms of the MDD Analogue. Furthermore, scores on the syndrome predicted MDD Analogue symptoms 3 years later with sensitivities ranging from .69 to .71 and specificities from .69 to .93. Meeting criteria for either the Anxious-Depressed syndrome or the MDD Analogue was associated with low social or academic competence and high scores on other syndromes of psychopathology. Implications for integration of empirical/dimensional and categorical/diagnostic approaches are highlighted.

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INTRODUCTION

Assessment and taxonomy in developmental psychopathology have been characterized by debate between two fundamental perspectives. One perspective employs rationally derived diagnostic categories, whereas the other employs empirically derived quantitative measures of symptoms and syndromes. Recent evidence indicates that greater integration of these two perspectives would be desirable (e.g., Jensen *et al.*, 1996). The present study is designed to test relations between applications of these two perspectives to depressive symptoms and disorders as defined in the DSM-IV (American Psychiatric Association, 1994) versus syndromes derived from the Child Behavior Checklist (CBCL) and related measures (Achenbach, 1991a,b; Achenbach *et al.*, 1989). We focus on depression during adolescence because the two approaches have contrasting perspectives on depression and because adolescence may be an especially important developmental period for the emergence of depressive disorders (Compas *et al.*, 1993).

Some DSM diagnoses correspond quite closely to some empirically based syndromes of childhood and adolescence. For example, Attention-Deficit/Hyperactivity Disorder (AD/HD) as defined in the DSM and the Attention Problems syndrome from the CBCL overlap considerably in symptom criteria, and the syndrome has achieved good sensitivity and specificity in predicting diagnoses of AD/HD (e.g., Chen *et al.*, 1994). Furthermore, there is a comparable degree of impairment associated with DSM diagnoses of AD/HD and exceeding the cutoff on the Attention Problems syndrome (Jensen *et al.*, 1996). These findings suggest that rational and empirical approaches may identify similar patterns of symptoms and similar groups of children.

The correspondence between depressive syndromes and disorders is less clear than the correspondence for attentional problems. The DSM defines Major Depressive Disorder (MDD) and Dysthymic Disorder (DY) during childhood or adolescence according to the same criteria as during adulthood. Symptoms include depressed affect, anhedonia, disrupted sleep and appetite, concentration problems, and feelings of hopelessness. Although children and adolescents who meet criteria for MDD or DY can be identified reliably (e.g., Lewinsohn *et al.*, 1993; McGee *et al.*, 1990), these criteria may not be sensitive to developmental differences in the manifestation of depressive problems. In U.S. and Dutch samples, a syndrome comprising depressive and anxious symptoms has been derived from principal components analyses of ratings by parents, teachers, and adolescents (Achenbach, 1991a,b; Achenbach *et al.*, 1989; deGroot *et al.*, 1994; 1996). Four symptoms (depressed mood, feelings of worthlessness, excessive guilt, suicidal ideation or attempts) are common to the items on the Anxious-Depressed syndrome and the DSM criteria for MDD. Despite the inclusion of other items reflecting the core MDD symptoms in the principal components analyses, a "pure" depressive syndrome was not identified.

The differences between MDD and the Anxious-Depressed syndrome may reflect the following possibilities: First, symptoms of MDD versus the Anxious-Depressed syndrome may represent different pathological conditions. If they represent different conditions, low rates of correspondence between the syndrome and the disorder would be expected. Second, the Anxious-Depressed syndrome may represent nonspecific emotional distress in young people (see Fechner-Bates *et al.*, 1994, for a discussion of this issue as it pertains to adults). If this syndrome is a reflection of generalized distress, it would be expected to be associated with less severe levels of social impairment (cf. Fechner-Bates *et al.*, 1994). Third, the syndrome and disorder may encompass different levels or manifestations of depressive problems during childhood and adolescence; that is, they may reflect points on a continuum of depressive problems (Compas *et al.*, 1993). Elevated scores on the syndrome may reflect a less severe or earlier manifestation of the disorder than MDD. Children and adolescents who meet criteria for MDD thus may be a subset of those who obtain high scores on the Anxious-Depressed syndrome. Furthermore, elevation on the syndrome at one age may predict increased risk for MDD at later ages.

In a recent study of the relations between symptoms of MDD and the Anxious-Depressed syndrome, Rey and Morris-Yates (1991) found that scores on the Anxious-Depressed syndrome distinguished between Australian youths who met criteria for MDD versus no MDD, and MDD versus Separation Anxiety Disorder. However, they did not compare youths who exceeded the clinical cut points for the Anxious-Depressed syndrome and MDD. Several studies have reported strong associations between diagnoses of MDD and depressive symptoms on self-report inventories, which share many symptoms with the Anxious-Depressed syndrome. Cross-sectional studies have found relatively good sensitivity and specificity between self-report inventories of depressive symptoms and diagnoses (e.g., Angold and Rutter, 1992; Clarke *et al.*, 1992; Gotlib *et al.*, 1995; Roberts *et al.*, 1991). Prospective studies also have shown that depressive symptoms predict subsequent diagnoses of MDD (Gotlib *et al.*, 1995). Furthermore, Gotlib *et al.* (1995) found that adolescents with high scores on a self-report measure of depressive symptoms, but who failed to meet criteria for MDD, experienced subsantial social impairment and associated problems. Some of these "false positives" manifested as much impairment as adolescents who met criteria for MDD. These studies suggest that the symptoms that comprise the Anxious-Depressed syndrome may be associated both with a diagnosis of MDD and with substantial impairment.

The goal of the present study was to examine cross-sectional and longitudinal associations of symptoms on the Anxious-Depressed syndrome and DSM-IV criteria for MDD using parent reports and self-reports from a nationally representative sample of adolescents. To test the relations between the Anxious-Depressed syndrome and MDD symptoms, as well as levels of impairment associated with each, three research questions were examined. First, are adolescents who meet

criteria for MDD a subset of those who score in the clinical range on the Anxious-Depressed syndrome? Second, are scores in the clinical range on the Anxious-Depressed syndrome associated with levels of impairment and other syndromes of psychopathology that are comparable to those associated with MDD? Third, do scores in the clinical range on the Anxious-Depressed syndrome predict scores above the criteria for MDD over a 3-year period?

METHOD

Participants

Participants included 1720 adolescents on whom parent-report data were provided and 1585 adolescents who provided self-report data in 1989, when ages ranged from 10 to 19 years. Of these participants, 1992 data were available for 1640 adolescents based on parent reports and for 1514 adolescents based on self-reports. There were no significant age, gender, ethnic, or socioeconomic status (SES) differences between those who remained in the study and those who dropped out. Table I summarizes the gender, ethnic, and SES distributions. The sample was otherwise representative of adolescents in the United States in terms of ethnicity, SES as rated by the 9-point Hollingshead Index of Parental Occupation (Hollingshead, 1975), and geographic region (i.e., urban, suburban, or rural area).

Procedures

Participants were recruited by Temple University's Institute for Survey Research (ISR) with the purpose of including 100 adolescents of each sex at each

Table I. Sample Demographics

Demographic	YSR	CBCL
Mean age (*SD*)	14.4 (2.4)	14.0 (2.6)
Gender		
Girls	50.2%	49.8%
Boys	49.8%	50.2%
Ethnic distribution		
Non-Hispanic White	73.3%	73.5%
Non-Hispanic Black	15.8%	15.8%
Hispanic	7.7%	7.6%
Asian	1.3%	1.3%
Mixed or Other	2.0%	1.8%
Mean SES (*SD*)[a]	5.5 (2.2)	5.5 (2.2)

[a]Hollingshead (1975) score for occupation of parent holding the higher status job if both were remuneratively employed.

age from 4 to 16 years. Adolescents were excluded from the study if they were mentally retarded, physically handicapped, or no English-speaking guardian was available for the interview. Data were obtained in 1986, 1989, and 1992. Parents, adolescents, and their teachers completed questionnaires about the adolescents' emotional and behavioral functioning, and guardians were interviewed about family variables and stressors (see Achenbach et al., 1996, for details).

For the purpose of this investigation, only parent- and self-report data on adolescents from the 1989 and 1992 assessments were included. Data from 1986 were not used because self-reports were not collected at that time. Adolescents completed the Youth Self-Report (YSR; Achenbach, 1991b), and parents completed the CBCL (Achenbach, 1991a) in 1989. In 1992, adolescents under the age of 18 completed the YSR again, and their parents completed the CBCL. For adolescents who were older than 18 at the 1992 assessment, the Young Adult Self-Report (YASR: Achenbach, 1997) was administered, and their parents completed the Young Adult Behavior Checklist (YABCL; Achenbach, 1997). In 1989, parents were reimbursed $15 for their time, and adolescents were paid $10 for their participation. In 1992, parents were reimbursed $20 for participating, and adolescents received $15.

Measures

The YSR and CBCL assess emotional and behavioral problems within the preceding 6 months, as well as social competence. The YSR and CBCL consist of 102 and 118 emotional/behavioral problem items, respectively. Each item is rated as 0 = "not true," 1 = "somewhat or sometimes true," and 2 = "very true or often true." The CBCL and YSR are well suited to studies of depressive symptoms during adolescence for several reasons. First, they are among the most widely used instruments for the assessment of child and adolescent psychopathology (Vignoe and Achenbach, 1997). Second, they allow for comparison across informants on counterpart problems and scales. Third, they can be used to compare the 2 conceptualizations of depression described below. Fourth, the CBCL and YSR have shown excellent reliability and validity (Achenbach 1991a,b; Achenbach, 1995).

Eight cross-informant syndromes reflecting behavioral and emotional problems were derived through principle components analyses of the CBCL, YSR, and TRF, and include the following: Withdrawn, Somatic Complaints, Anxious-Depressed, Social Problems, Thought Problems, Attention Problems, Aggressive Behavior, and Delinquent Behavior (Achenbach, 1991a). The instruments also are scored for Internalizing and Externalizing groupings of the syndromes and total problems. In addition, Activity, Social, School, and Total Competence scores are available, with higher scores indicative of better functioning.

The YASR and YABCL are upward extensions of the YSR and CBCL, respectively. Counterparts for the Withdrawn, Somatic Complaints, Anxious-Depressed,

Aggressive Behavior, Delinquent Behavior, Thought Problems, and Attention Problems scales, plus an additional scale designated as Intrusive, were derived from the YASR and YABCL (Achenbach, 1997). All but 2 of the YASR problem scales were significantly associated with DSM-III-R diagnoses obtained from structured interviews. In addition, the YASR and YABCL problem scales significantly discriminated between young adults referred and those not referred for mental health services (Achenbach, 1997).

Of most interest for the present study is the Anxious-Depressed syndrome, which is the syndrome that most closely resembles diagnostic concepts of depression. The syndrome includes items reflecting both depressed and anxious affect: "unhappy, sad, depressed," "complains of loneliness," "cries a lot," "fears he/she might think or do something bad," "feels he/she has to be perfect," "feels or complains that no one loves him/her," "feels others are out to get him/her," "feels worthless or inferior," "nervous, highstrung, or tense," "too fearful or anxious," "feels too guilty," "self-conscious or easily embarrassed," "suspicious," and "worrying." Internal consistency for the syndrome on the YSR was alpha = .84 in the nonreferred sample and .71 in the referred sample; for the CBCL, alpha = .86 in the nonreferred sample and .82 in the referred sample. Test–retest reliability of the syndrome over 1 week was $r(80) = .86$ for the CBCL and $r(120) = .81$ for the YSR. The 14 items of the syndrome are scored 0, 1, or 2, for a total possible raw score of 28.

Although there is considerable controversy about the use of a mixed syndrome of anxiety and depressive symptoms, principal components/varimax analyses of the YSR and CBCL have not produced independent depression and anxiety scales. This syndrome was replicated in principal factor/promax analyses with a large sample of children in the Netherlands (Achenbach *et al.*, 1989; de Groot *et al.*, 1994). In addition, this empirically derived syndrome is similar to other clinically derived checklist measurs of depressive symptoms (e.g., the Children's Depression Inventory, CDI; Kovacs, 1981). For example, the CDI includes symptoms of anxiety in addition to symptoms thought to be more characteristic of depression. Eight of the 14 items comprising the Anxious-Depressed syndrome have equivalent items on the 27-item CDI.

Because diagnostic interviews were not obtained from subjects, Depressive Disorder was operationalized by an analogue of MDD that was constructed from items on the CBCL and YSR that parallel DSM-IV criteria (Connor *et al.*, 1998). In constructing this MDD Analogue scale, we drew on guidelines used by previous researchers who have constructed similar indices of depression from the CBCL (e.g., Clarke *et al.*, 1992; Fleming *et al.*, 1989; Nurcombe *et al.*, 1989; Rey, 1994). Appropriate checklist items were combined to create individual variables that closely match a particular DSM symptom. For example, the item "sleeps more" was combined with the items "sleeps less" and "trouble sleeping" to create a single variable to reflect the DSM symptom, "sleep disturbance." Similarly, "overeating" and "doesn't eat well" were combined to create a single variable for eating

disturbance. To ensure that only symptoms of considerable severity were included, participants were considered to have a DSM symptom only if they received a score of 2 (very true or often true) on any of the checklist items comprising the particular DSM symptom. There were 8 analogues of MDD symptoms, reflecting (1) depressed mood (or irritable mood or stubbornness, CBCL only), (2) sleep disturbance, (3) eating disturbance, (4) psychomotor problems, (5) fatigue or lethargy, (6) feelings of worthlessness or guilt, (7) difficulty concentrating, and (8) suicidal ideation. Anhedonia, an important but not necessary symptom for diagnosis with MDD, is the only symptom of MDD not directly assessed by the CBCL or YSR. Although the items reflect a good match for the DSM symptoms of MDD, CBCL and YSR ratings are based on a 6-month time frame rather than the 2-week time frame as specified by the DSM. To meet criteria for an Analogue diagnosis, an adolescent had to be scored 2 for the core symptom of unhappy or irritable mood plus at least 4 other symptoms. MDD Analogue scores were computed separately for parent and youth reports.

Evidence for the validity of this Analogue comes from several sources. The percentage of adolescents in the sample who met criteria for depression on the Analogue (1.3%) was roughly comparable to the percentage of adolescents who met diagnostic criteria for MDD based on diagnostic interviews in the Oregon community study (Lewinsohn et al., 1993). Clarke et al. (1992) reported adequate sensitivity (85%) and specificity (84%) for agreement of a similar analogue with DSM diagnoses derived from a structured clinical interview. Scores on the MDD Analogue used in the present study are associated with social or functional impairment because Connor et al. (1998) found that adolescents who met the criteria for depression were significantly lower in social competence than those who did not meet criteria. Correlational analyses revealed moderate to high within-informant correlations of the MDD Analogue and Anxious-Depressed syndrome. Self-reported Anxious-Depressed syndrome and the MDD Analogue correlated, $r = .56$, $p < .0001$, and parent-reported syndrome and MDD Analogue correlated, $r = .47$, $p < .0001$. Thus, these correlations indicate that these 3 measures of depressive symptoms are conceptually distinct yet moderately to strongly correlated (Compas et al., 1993).

RESULTS

Prevalence of Anxious-Depressed Syndrome and MDD Analogue

In the 1989 YSR assessment, 103 (6.5%) adolescents exceeded the borderline clinical cutoff (95th percentile) on the Anxious-Depressed syndrome, and 12 (0.8%) adolescents met criteria on the MDD Analogue. Parents' reports revealed a similar pattern, with 123 (7.1%) adolescents exceeding the clinical cutoff on the Anxious-Depressed syndrome, and 18 (1.0%) meeting criteria on the MDD

Analogue. On the basis of separate analyses of parent and adolescent reports, 11% of adolescents above the syndrome cutoff also met criteria for the MDD Analogue. However, of the adolescents who met criteria on the MDD Analogue on the basis of self-reports, 92% also exceeded the cutoff on the Anxious-Depressed syndrome. On the basis of parents' reports, 78% of adolescents who were above the cutoff on the MDD Analogue were also above the cutoff on the Anxious-Depressed syndrome.

The prevalence and overlap of the Anxious-Depressed syndrome and the MDD Analogue were similar in 1992. On the basis of the YSR, 103 (6.8%) adolescents exceeded the clinical cutoff on the Anxious-Depressed syndrome, and 14 (0.9%) met criteria on the MDD Analogue. For CBCL parent reports the pattern was similar, with 109 (6.6%) adolescents above the clinical cutoff for the Anxious-Depressed syndrome and 16 (1.0%) meeting criteria for the MDD Analogue. Once again, for adolescents above the Anxious-Depressed syndrome cutoff, adolescent and parent reports yielded similar frequencies of adolescents also meeting the MDD Analogue criteria, at 12% and 14%, respectively. For adolescents meeting MDD Analogue criteria, the degree of overlap with the Anxious-Depressed syndrome was similar to that for 1989, with 86% based on youth reports and 94% based on parent reports above the cutoff on the Anxious-Depressed syndrome.

Social Competence and Impairment

In separate analyses of the CBCL and YSR, we compared 3 groups of adolescents who differed in their standing on the syndrome and MDD Analogue: (1) above the cutoff on the Anxious-Depressed syndrome only, (2) met MDD Analogue criteria regardless of score on the syndrome, or (3) below the cutoff for both the syndrome and the MDD Analogue. Because of the high degree of overlap between syndrome and Analogue for individuals meeting the MDD Analogue criteria, it was not possible to distinguish between individuals meeting the MDD Analogue criteria who did versus did not surpass the clinical cutoff on the Anxious-Depressed syndrome; that is, virtually all of the adolescents who met the MDD Analogue criteria also exceeded the clinical cutoff on the Anxious-Depressed syndrome. To determine the degree of impairment in these groups, we compared them on social competency T-scores using multivariate analysis of variance (MANOVA) followed by univariate analyses (ANOVAs) and Student Newman-Keuls (SNK) post hoc tests as summarized in Table II.

When the 3 groups described above were constructed on the basis of adolescent reports on the YSR, the MANOVA comparing the 3 groups on activity, social, and overall social competence scores was significant ($F[6, 2876] = 2.45, p = .02$). The ANOVAs indicated that the groups differed on social competence and total competence T-scores. The SNK analyses did not identify any significant paired comparisons. Examination of mean scores suggests that adolescents not meeting

Table II. Univariate Comparisons of Nondepressed Adolescents and Those Meeting Criteria for the Anxious-Depressed Syndrome or MDD Analogue on Competency T-Scores According to Adolescent and Parent Reports

Competency Test	Adolescent Group[a]			
	Nondepressed	Anxious-Depressed Syndrome	MDD Analogue	F
YSR				
Activity	47.9_a	47.6_a	45.1_a	0.82 (ns)
Social	47.9_a	45.8_a	46.9_a	3.56^b
Total Competence	49.8_a	47.7_a	44.0_a	3.37^b
CBCL				
Academic	47.8_a	41.6_b	37.0_c	38.05^c
Activity	48.2_a	47.5_{ab}	44.1_b	2.61 (ns)
Social	48.3_a	44.2_b	41.0_b	19.28^c
Total Competence	50.2_a	44.2_b	40.7_b	20.71^c

[a]Means having the same subscript indicate that the groups did not significantly differ at the .05 level according to SNK post hoc tests.
[b]$p < .05$.
[c]$p < .0001$

criteria for either the MDD Analogue or the Anxious-Depressed syndrome had the highest social and total competence.

The MANOVA comparing parent reports of the same variables on the CBCL and an additional academic competence scale was significant ($F[8, 2796] = 12.66$, $p < .0001$). Univariate tests showed that comparisons on the social, academic, and total competence scales were all significant. SNK post hoc tests found that all 3 groups differed on academic T-scores, with adolescents who met criteria for the MDD Analogue having the lowest academic competence scores, followed by adolescents who met criteria for the Anxious-Depressed syndrome. Adolescents who did not meet criteria for either the syndrome or the MDD Analogue had the highest academic competence scores. Scores of SNK post hoc tests of social and total competence demonstrated that adolescents who did not meet criteria for either the syndrome or the Analogue had higher competence scores than adolescents who met criteria for either the syndrome or the Analogue. Adolescents who met criteria on the syndrome or the Analogue did not differ from each other.

Associated Psychopathology

Broad-Band Problem Scales

Using adolescent and parent reports, two MANOVAs with subsequent univariate and SNK post hoc tests showed that adolescents in the Anxious-Depressed syndrome only, the MDD Analogue, and the nondepressed groups differed significantly on the Internalizing, Externalizing, and Total Behavior Problems scales

Table III. Univariate Comparisons of Nondepressed Adolescents and Those Meeting Criteria
for the Anxious-Depressed Syndrome or MDD Analogue on Internalizing, Externalizing,
and Total Behavior Problems T-Scores According to Adolescent and Parent Reports

| Problem Scale | Adolescent Group[a] | | | |
	Nondepressed	Anxious-Depressed Syndrome	MDD Analogue	F
YSR				
Internalizing	49.2_c	68.4_b	75.4_a	261.09^b
Externalizing	49.7_c	61.7_b	68.3_a	90.68^b
Total Problems	49.5_c	66.7_b	74.9_a	202.00^b
CBCL				
Internalizing	49.9_c	69.2_b	76.5_a	320.89^b
Externalizing	49.9_c	63.4_b	71.3_a	145.63^b
Total Problems	49.7_c	67.4_b	76.1_a	247.99^b

[a]Means having the same subscript indicate that the groups did not significantly differ at the
.05 level according to SNK post hoc tests.
[b]$p < .0001$.

($F[6, 3160] = 81.3$, $p < .0001$, and $F[6, 3430] = 101.4$, $p < .0001$, respectively),
as summarized in Table III.

Adolescent reports on the YSR yielded significant differences on the following 3 scales: Internalizing, $F(2, 1582) = 261.1$, $p < .0001$; Externalizing, $F(2, 1582) = 90.7$, $p < .0001$; and Total Problems, $F(2, 1582) = 202.0$, $p < .0001$. SNK post hoc tests showed that each group was significantly different from the other 2 groups on all 3 scales, with adolescents who met criteria having higher problem scores than those who were in the clinical range on the Anxious-Depressed syndrome, who, in turn, had significantly higher problem scores than those who did not meet criteria for either the syndrome or the MDD Analogue.

Parent reports on the CBCL yielded an identical pattern, with univariate analyses also being significant for all 3 scales: Internalizing, $F(2, 1717) = 320.9$, $p < .0001$; Externalizing, $F(2, 1717) = 145.6$, $p < .0001$; and Total Problems, $F(2, 1717) = 248.0$, $p < .0001$. SNK post hoc tests revealed the same pattern as found for the YSR: Adolescents in the MDD Analogue group had higher problem scores than those in the Anxious-Depressed syndrome group, and those in the syndrome group had higher problem scores than those in the nondepressed group.

Narrow-Band Syndromes

Separate MANOVAs were conducted on adolescent and parent reports to test for differences on other narrow-band syndrome T-scores between adolescents who met criteria for the Anxious-Depressed syndrome only, the MDD Analogue, or neither syndrome nor MDD Analogue. The MANOVAs for adolescent and parent reports indicated that the 3 groups differed on all of the other narrow-band syndromes

Table IV. Univariate Comparisons of Nondepressed Adolescents and Those Meeting Criteria for the Anxious-Depressed Syndrome or MDD Analogue on YSR Syndromes According to Adolescent Reports

YSR Criterion	Adolescent Group[a]			F
	Nondepressed	Anxious-Depressed Syndrome	MDD Analogue	
Withdrawn	53.4_c	62.8_b	66.0_a	166.79^b
Somatic	53.5_c	61.3_b	71.4_a	145.57^b
Social Problems	53.6_c	60.1_b	61.5_a	69.60^b
Thought Problems	53.8_c	59.6_b	67.5_a	70.76^b
Attention Problems	53.6_c	63.1_b	74.1_a	193.98^b
Delinquent Behavior	53.9_c	60.4_b	68.2_a	85.41^b
Aggressive Behavior	53.7_c	61.7_b	66.3_a	110.22^b

[a] Means having the same subscript indicate that the groups did not significantly differ at the .05 level according to SNK post hoc tests.
[b] $p < .0001$.

(Withdrawn, Somatic Complaints, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior): $F(14, 3152) = 46.9, p < .0001$, and $F(14, 3422) = 61.6, p < 0.0001$, respectively.

For both adolescent reports (see Table IV) and parent reports (see Table V), the subsequent univariate analyses and SNK post hoc tests showed that adolescents who did not meet criteria for either depressive construct had significantly lower scores than the depressed groups on all syndromes. Adolescents who met criteria for the MDD Analogue had significantly higher scores across all other syndromes than adolescents who were in the clinical range on the Anxious-Depressed syndrome.

Table V. Univariate Comparisons of Nondepressed Adolescents and Those Meeting Criteria for the Anxious-Depressed Syndrome or MDD Analogue on CBCL Syndromes According to Parent Reports

CBCL Criterion	Adolescent Group[a]			F
	Nondepressed	Anxious-Depressed Syndrome	MDD Analogue	
Withdrawn	53.6_c	63.8_b	73.4_a	257.97^b
Somatic	54.1_c	58.8_b	72.3_a	101.95^b
Social Problems	53.6_c	63.5_b	66.7_a	200.22^b
Thought Problems	53.3_c	61.0_b	69.4_a	165.58^b
Attention Problems	53.9_c	65.2_b	73.4_a	277.72^b
Delinquent Behavior	54.0_c	60.9_b	67.5_a	101.34^b
Aggressive Behavior	53.7_c	64.2_b	72.6_a	241.64^b

[a] Means having the same subscript indicate that the groups did not significantly differ at the .05 level according to SNK post hoc tests.
[b] $p < .0001$.

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1989 Status of Adolescents Meeting MDD Analogue Criteria in 1992

To describe the developmental course from 1989 to the MDD Analogue in 1992, the 1989 status of those adolescents who met criteria for the MDD Analogue in 1992 was determined separately for self-reports and parent reports.

Adolescent Reports

Based on self-reports, 14 (0.9%) adolescents met criteria for the MDD Analogue in 1992. Of these adolescents, 8 (57.1%) did not meet criteria for syndrome or disorder in 1989, 5 (35.7%) met criteria only for the Anxious-Depressed syndrome, and 1 (7.1%) met criteria for both the syndrome and the MDD Analogue. Thus, adolescents who met criteria for 1 of the 2 constructs in 1989 account for 42.8% of those who later met criteria for the MDD Analogue in 1992. Thus, a sizeable portion of adolescents who met criteria for the MDD Analogue in 1992 exhibited depressive symptoms 3 years earlier.

Parent Reports

Parent reports indicated that 16 (1%) of adolescents met criteria for the MDD Analogue in 1992. Of these adolescents, 5 (31.3%) did not meet criteria for the Anxious-Depressed syndrome or for the MDD Analogue in 1989, 7 (43.7%) met criteria only for the Anxious-Depressed syndrome, and 4 (25%) met criteria for both the syndrome and the MDD Analogue. Thus, somewhat consistent with self-reports, a large portion of adolescents (68.7%) who met criteria for the MDD Analogue in 1992 exhibited depressive symptoms 3 years earlier according to parents.

Three-Year Outcomes of Anxious-Depressed Syndrome

To understand the consequences of elevated scores on the Anxious-Depressed syndrome, the number of adolescents who exceeded the cutoff for the Anxious-Depressed syndrome, the MDD Analogue, or neither construct was determined in 1992, for those subjects who exceeded the 95th percentile cutoff on the Anxious-Depressed syndrome in 1989.

Adolescent Reports

For adolescents providing both 1989 and 1992 data, 97 (6.4%) scored above the 95th percentile on the Anxious-Depressed syndrome in 1989. Three years later, 62 (63.9%) of these adolescents did not meet criteria for either indicator, 34 (35.1%) met criteria for the Anxious-Depressed syndrome, and 6 (6.2%) met

criteria for the MDD Analogue. Note that, because the two constructs of depression were not mutually exclusive, 35 (36.1%) of adolescents who met criteria for the Anxious-Depressed syndrome in 1989 also met criteria for at least one depressive construct in 1992. Thus, more than one-third of the adolescents who originally met criteria for the syndrome were still exhibiting signs of depression 3 years later, but a sizeable percentage, over 60%, had shown improvement.

Parent Report

For adolescents with parent ratings available from both 1989 and 1992, 118 (7.2%) of adolescents exceeded the 95th percentile cutoff on the Anxious-Depressed syndrome in 1989. Of this group, in 1992, 69 (58.5%) did not meet criteria for either the MDD Analogue or the Anxious-Depressed syndrome, 38 (32.2%) met criteria for the syndrome, and 11 (9.3%) met criteria for both the MDD Analogue and the Anxious-Depressed syndrome. Results from youth and parent reports were generally consistent, indicating that many adolescents who meet criteria for the Anxious-Depressed syndrome continued to have depressive problems 3 years later. However, nearly 60% of these adolescents did not meet criteria for either the Anxious-Depressed syndrome or the MDD Analogue in 1992.

Receiver Operator Characteristic (ROC) Analyses: Anxious-Depressed Syndrome as a Predictor of MDD Analogue

To identify a cutoff score on the syndrome that maximized sensitivity and specificity when predicting the MDD Analogue, ROC analyses were performed. ROC analyses calculate the sensitivity, specificity, and area under the curve (AUC) for designated cut points on a scale. The AUC is the most commonly used index of accuracy in ROC and varies between 0.5 (a useless scale) and 1.0 (a perfect scale). Interpretation of the AUC is that it represents the probability of the scale (i.e., the Anxious-Depressed syndrome) correctly classifying a randomly selected pair of adolescents, one of whom meets criteria for the outcome (i.e., the MDD Analogue) and one of whom does not. We tested T-scores of 67, 60, and 55 on the Anxious-Depressed syndrome, which approximate 1.75, 1.0, and 0.5 standard deviations above the mean, respectively. ROC analyses were conducted separately for youth reports and parent reports.

Adolescent Reports

A 1989 syndrome cutoff score of $T \geq 67$ was significantly related to meeting criteria for the MDD Analogue 3 years later ($\chi^2[1, n = 1514] = 19.82$, $p <$ .0001). Adolescents who obtained scores of 67 in 1989 were 11.6 times more

Table VI. Sensitivity, Specificity, and AUC Calculated from
ROC Analyses for 3 Cutoff Scores on the Anxious-Depressed
Syndrome by Youth and Parent Reports

T-Score	Sensitivity	Specificity	AUC
YSR			
67	0.43	0.94	0.68
60	0.50	0.81	0.66
55	0.71	0.69	0.70
CBCL			
67	0.69	0.93	0.81
60	0.75	0.78	0.77
55	0.75	0.63	0.69

likely to meet criteria for the MDD Analogue in 1992 than those who did not. A syndrome cutoff of $T \geq 60$ also was significantly related to meeting criteria for the MDD Analogue 3 years later ($\chi^2[1, N = 1514] = 7.5, p < .0061$). Adolescents who had $T \geq 60$ in 1989 were 4.4 times more likely to meet criteria for the MDD Analogue in 1992 than those who had T-scores below 60. Finally, a syndrome cutoff score of $T \geq 55$ also was significantly associated with meeting the criteria for the MDD Analogue 3 years later ($\chi^2[1, N = 1514] = 8.3, p < .0043$). Adolescents who had $T \geq 55$ in 1989 were 5.4 times more likely to meet criteria for the MDD Analogue in 1992 than adolescents who had syndrome T-scores below 55. Rates of sensitivity, specificity, and AUC are presented in Table VI. Of the 3 cutoff scores, the AUCs indicate that sensitivity and specificity are slightly better when using a T-score of 55 on the Anxious-Depressed scale to predict the MDD Analogue 3 years later. However, the odds ratio is highest for a T-score of 67.

Parent Reports

For the CBCL, a syndrome cutoff score at $T \geq 67$ was significantly related to meeting criteria for the MDD Analogue 3 years later ($\chi^2[1, N = 1641] = 39.3, p < .0001$). Adolescents who scored $T \geq 67$ in 1989 were 31.2 times more likely to meet criteria for the MDD Analogue in 1992 than those who did not. The syndrome cutoff score at $T \geq 60$ also was significantly related to meeting criteria for the MDD Analogue 3 years later ($\chi^2[1, N = 1641] = 16.9, p < .0001$). Adolescents who had $T \geq 60$ in 1989 were 10.8 times more likely to meet criteria for the MDD Analogue in 1992 than those who had T-scores below 60. Finally, a syndrome cutoff score at $T \geq 55$ was significantly associated with meeting the criteria for the MDD Analogue 3 years later ($\chi^2[1, N = 1641] = 7.9, p < .005$). Adolescents who had T-scores at or above 55 in 1989 were 5.1 times more likely to meet criteria for the MDD Analogue in 1992 than adolescents who had syndrome T-scores below 55 (see Table VI for rates of sensitivity, specificity, and

AUC). Of the 3 cutoff scores, the odds ratio as well as sensitivity and specificity are maximized when using a T-score of 67 on the CBCL Anxious-Depressed scale to predict the MDD Analogue 3 years later. That is, the highest AUC of 0.81 corresponds to a T-score of 67, whereas the AUCs for a T-score of 60 and 55 were 0.77 and 0.69, respectively.

In general, the 3 cutoff scores on the CBCL were somewhat more sensitive indicators of the parent-rated MDD Analogue 3 years later than were the YSR scores in predicting the youth-rated MDD Analogue. However, specificity was similar across informants. In addition, a higher cutoff score on the CBCL ($T \geq 67$) best maximized rates of sensitivity and specificity, whereas a moderate score on the YSR ($T \geq 55$) was more appropriate according to youth reports.

DISCUSSION

The present study provides evidence for the association of an empirically derived syndrome of mixed anxiety and depression symptoms with symptoms of DSM-IV major depression. Although the Anxious-Depressed syndrome and DSM criteria for MDD share very few symptoms, there was considerable correspondence in adolescents who were identified by these separate constructs. These findings are useful in evaluating the three possible interpretations of the association of the Anxious-Depressed syndrome and an analogue of MDD that were presented in the Introduction. That is, the Anxious-Depressed syndrome and an analogue of MDD could be distinct disorders, the Anxious-Depressed syndrome could be an index of nonspecific emotional distress, or the Anxious-Depressed syndrome and the MDD Analogue could reflect different points on a continuum of depressive problems.

The Anxious-Depressed syndrome and the MDD Analogue do not appear to be distinct sets of problems. There was considerable overlap in adolescents who exceeded the clinical cutoff on the Anxious-Depressed syndrome and those who met criteria on the Analogue of MDD in both the cross-sectional and longitudinal analyses. In the cross-sectional analyses, the correspondence of the syndrome with the MDD Analogue was greater for parent reports than for adolescents' self-reports, but it was moderate to high in both instances. Clearly, when the Anxious-Depressed syndrome is operationalized in the manner that it was here (a score above the 95th percentile in the normative sample), it overpredicts classification according to criteria for MDD. Only a small portion of adolescents (11–14%) who exceeded the cutoff on the syndrome also met criteria on the MDD Analogue. However, most adolescents who met criteria on the Analogue of MDD also exceeded the cutoff on the Anxious-Depressed syndrome (78–94% in the cross-sectional analyses).

Four items from the YSR and 3 items from the CBCL Anxious-Depressed scale also were included in the MDD Analogue category. Although the two constructs share some criteria, these shared items alone could not account for the

overlap of the syndrome and MDD Analogue groups because meeting criteria for the MDD Analogue requires the endorsement of at least 5 symptoms as "very true or often true." In addition, meeting criteria for the syndrome requires the endorsement of more than the 3 to 4 shared items. Thus, it would be impossible to meet criteria for either the MDD Analogue or the Anxious-Depressed syndrome on the basis of shared items alone.

The Anxious-Depressed syndrome appears to reflect more than symptoms of nonspecific emotional distress. Adolescents who exceeded the clinical cutoff on the syndrome, whether on the basis of self-reports or parent reports, also experienced significant impairment of their social and academic functioning. Scores on the measures of competency generally were indistinguishable from those of adolescents who met criteria on the MDD Analogue. These data suggest that the Anxious-Depressed syndrome is indicative of more than simple emotional distress and may be comparable to MDD in its impact on overall functioning. These findings are consistent with those of Gotlib *et al.* (1995), who found that adolescents who scored high on self-report meausres of depressive symptoms but did not meet criteria for MDD experienced significant impairment in social functioning. With regard to other forms of psychopathology, adolescents who were in the clinical range on the Anxious-Depressed syndrome scored higher than nondepressed adolescents on all other syndromes, indicating that this syndrome is associated with multiple comorbid conditions. However, adolescents who met criteria on the MDD Analogue scored higher on the other syndromes than did adolescents in the clinical range on the syndrome, suggesting that symptoms of MDD are associated with greater overall disturbance and psychopathology. It is noteworthy that adolescents who were in the clinical range on either of the depression constructs scored in the clinical range on both internalizing and externalizing syndromes. That is, comorbid problems were not limited to other internalizing problems.

These findings are most consistent with the view that the Anxious-Depressed syndrome and the MDD Analogue represent points on a continuum of depressive problems. Most adolescents who met criteria on the MDD Analogue comprise a subset of those who exceeded the clinical cutoff on the Anxious-Depressed syndrome. Furthermore, a score above the cutoff on the syndrome was a moderately good predictor of meeting the criteria on the MDD Analogue 3 years later. These findings are consistent with the hierarchical and sequential modal proposed by Compas *et al.* (1993) and are consistent with previous studies that have examined the association between MDD and other indices of depressive symptoms that do not meet DSM diagnostic criteria (e.g., Angold and Rutter, 1992).

Although parent reports resulted in better sensitivity than youth reports when predicting the MDD Analogue from the Anxious-Depressed syndrome, youth reports and parent reports produced comparable specificity rates. The AUC was largest at differing points, depending on the informant, with a lower T-score as the optimal cutoff on the YSR (55) than on the CBCL (67). Thus, the AUC analyses

might suggest that lower self-report scores from adolescents compared to their parents were indicative of serious depressive problems despite being well below the YSR's established clinical cutoff. However, the differences in the AUC for the T-score cutoffs of 67, 60, and 55 on the YSR were very small. Substantial improvement can be made in specificity with the a cut point of a T-score of 67 (specificity of .94) as compared to a cut point of 55 (specificity of .69), with only a small decrease in AUC (.68 and .70, respectively).

Although the Anxious-Depressed syndrome was a significant predictor of symptoms of MDD 3 years later, the 2 measures did not achieve perfect correspondence. The syndrome had excellent specificity but only moderate sensitivity; that is, rates of false positives were high whereas false negatives were low. This is not unexpected, however, if the syndrome reflects a less severe or an earlier manifestation of depressive problems than are represented by meeting criteria for MDD.

The present study supports earlier findings that depression is often a recurrent or chronic process (e.g., Kovacs et al., 1984a,b). However, about 60% of adolescents who met criteria for the Anxious-Depressed syndrome in 1989 did not meet criteria for the syndrome or MDD Analogue (i.e., were nondepressed) in 1992. These results represent a recovery from depression consistent with rates of recurrence and chronicity found by Lewinsohn et al. (1993). However, because depression may be episodic, it is possible that at any given point in time, many adolescents will have recently recovered from a depressive episode, whereas others will be in the midst of one. Thus, the nature and timing of assessments greatly affect the end result. More frequent evaluations or calculations of the number of episodes in the period between assessments would be most informative of the developmental processes of depression. It is likely that more frequent assessments would indicate higher rates of recurrence and chronicity than found in the current study.

Although these findings demonstrate the value of clarifying the relationship between a depressive syndrome and diagnosis, several qualifications should be considered. First, the CBCL- and YSR-derived MDD Analogue is not a DSM-IV diagnosis of MDD. One concern is the lack of an anhedonia symptom on these checklists, and this symptom reportedly is found in a large percentage of referred adolescents with MDD (e.g., Carlson, 1981; Ryan et al., 1987). In addition, whereas the CBCL, YSR, and YASR include sleep disturbance items, the YABCL does not because it is unlikely that parents would be reliable and valid reporters of sleep problems in young adults who live outside of the home. Although adolescents were still required to meet criteria for at least 4 other corresponding depressive symptoms besides the mood component, inclusion of these items may have increased the number of subjects in the MDD Analogue category. Second, DSM-IV criteria require that depressive symptoms occur almost every day for at least 2 weeks and that symptoms be associated with a moderate degree of psychosocial impairment. In contrast, the checklists measure symptoms over a 6-month duration and do not infer psychosocial impairment. However, in this study, the prevalence rate of the MDD

Analogue category and its association with functional impairment and comorbidity parallels that reported for a DSM diagnosis of MDD. Studies have continued to find a high correspondence between CBCL-derived diagnoses or syndromes and DSM diagnoses (e.g., Clarke *et al.*, 1992; Rey and Morris-Yates, 1991).

In spite of these limitations, the findings of this study have several important implications for understanding the relationship between categorical and quantitative approaches to adolescent psychopathology, and more specifically to depressive problems during adolescence. The syndrome of mixed anxiety and depression symptoms clearly is related to symptoms of MDD during adolescence. Moreover, the Anxious-Depressed syndrome itself is not a benign condition, in terms of either current functioning or subsequent risk for MDD symptoms.

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