

Taxonomy, Assessment, and Diagnosis of Depression During Adolescence

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Research on depressive phenomena during adolescence has focused on 3 separate constructs: depressed mood, depressive syndromes, and depressive disorders. Approaches to the assessment, taxonomy, and diagnosis of these 3 conceptualizations are reviewed. Each of the approaches is represented by different assessment tools measuring related but distinct aspects of depressive phenomena. The constructs share a common set of symptoms reflecting negative affectivity but differ in their inclusion of symptoms of anxiety, somatic problems, and disrupted concentration and in the duration and severity of the symptoms they include. Depressed mood, syndromes, and disorders are integrated as 3 levels of depressive phenomena in a hierarchical and sequential model, and moderating factors are hypothesized to account for the relationships among the 3 levels. The need for a stronger developmental focus to understand depressive phenomena during adolescence is emphasized.

Adolescence is a critical period for understanding the nature and course of depressive emotions and disorders (Petersen, Compas, & Brooks-Gunn, 1992; Petersen et al., 1993). Compared with childhood, early adolescence is associated with significant increases in reports of depressed or sad mood and increases in the prevalence of depressive disorders (e.g., Fleming & Offord, 1990; Petersen, Sarigiani, & Kennedy, 1991; Rutter, 1986, 1991). By middle to late adolescence, rates of depressed mood and clinical depression approach levels that are observed in adult populations (e.g., Fleming & Offord, 1990). Furthermore, individuals who manifest substantial levels of depression during adolescence are at increased risk for recurrent depressive problems in adulthood (e.g., Harrington, Fudge, Rutter, Pickles, & Hill, 1990). Studies of nonhuman primates have also identified adolescence as an especially important period of development for understanding depressive responses (Suomi, 1991). It appears that the convergence of a number of biological, social, and psychological changes during adolescence contributes to the increased risk for depression during this developmental period (e.g., Brooks-Gunn & Warren, 1989; Compas, Grant, & Ey, in press; Petersen, Kennedy, & Sullivan, 1991).

In spite of the significance of depression during adolescence, research has been hindered by two factors. First, researchers have drawn on different definitions of depression and different taxonomic systems, including a focus on (a) depressed mood, (b) empirically derived syndromes that include depressive symptoms, and (c) a constellation of symptoms that meet diagnostic criteria for a psychiatric disorder. These three ap-

proaches to depressive phenomena during adolescence have all been included under the general label *depression*, leading to confusion and miscommunication. Second, a wide variety of assessment and diagnostic tools have been used in the measurement of adolescent depression. These measures have varied in the breadth versus specificity of the symptoms they assess, in the source of information on which they rely (adolescents, parents, teachers, and clinicians), and in their psychometric quality. Heterogeneity in the conceptualization and measurement of depression during adolescence has resulted in a fragmentation of research efforts and impeded determination of the prevalence of depressive phenomena, understanding of the developmental course of depression, and identification of etiological factors. Clarifying the relations among the three approaches is the first step toward understanding the nature of depression in adolescence.

In addition to increasing our understanding of depression during this developmental period, clarification of the nature and measurement of depressive phenomena during adolescence should also contribute important knowledge to the more general field of developmental psychopathology. The problems that have emerged in the conceptualization and assessment of adolescent depression are representative of the difficulties that have been encountered in broader efforts to study psychopathology from a developmental perspective (e.g., Achenbach, 1985). That is, similar problems in conceptualization and measurement have characterized research on a number of childhood problems, including various disruptive behavior disorders (e.g., Hinshaw, 1987; Loeber, Lahey, & Thomas, 1991). Furthermore, depressive symptoms and disorders appear to covary at high rates with other symptoms and disorders (for reviews, see Brady & Kendall, 1992; Compas & Hammen, in press). Therefore, clarification of the nature of depressive disorders and symptoms should provide important information about other forms of psychopathology during adolescence.

The purpose of this review is to compare and integrate different approaches to the conceptualization and measurement of adolescent depression. We summarize and evaluate the defini-

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tions, taxonomic systems, and assessment procedures used in research on depression during adolescence as an emotion (depressed mood), as a syndrome, and as a psychiatric disorder.¹ Our goal is to provide a synthesis of these approaches that will reflect a comprehensive model of depressive phenomena during adolescence. We also outline directions for future research that could facilitate further direct comparison and integration of these approaches. Throughout this discussion we emphasize the importance of developmental processes, the relation of depression to other symptoms and disorders, and multiple perspectives on depression provided by adolescents and others in their lives.

What Is Adolescent Depression? Depressed Mood, Depressive Syndromes, and Depressive Disorders

Conceptualizations of adolescent depression are dependent on the paradigms used for the assessment and taxonomy of psychopathology. Broadly, assessment is concerned with the identification of distinguishing features of individual cases, whereas taxonomy is concerned with the grouping of cases according to their distinguishing features (Achenbach, 1985). Assessment and taxonomy are linked to each other in that the grouping of cases in a taxonomic system should be based on clearly defined criteria and procedures for identifying the central features that distinguish cases. Similarly, assessment procedures should reflect certain basic assumptions of the underlying system for classifying the phenomena of interest.

Three approaches to the assessment and taxonomy of adolescent psychopathology have been reflected in the literature on adolescent depression (Angold, 1988; Cantwell & Baker, 1991; Kovacs, 1989). The first approach does not involve a full taxonomic or assessment paradigm but is concerned with depressed mood and affect, as represented by the work of Petersen (e.g., Petersen, Sarigiani, & Kennedy, 1991) and Kandel (e.g., Kandel & Davies, 1982). The study of depressed mood during adolescence has emerged from developmental research in which depressive emotions are studied along with other features of adolescent development. The second approach is concerned with syndromes of behaviors and emotions that reflect depression; depressive syndromes are identified empirically through the reports of adolescents and other informants (e.g., parents and teachers). This strategy involves the use of multivariate statistical methods in the assessment and taxonomy of child and adolescent psychopathology, represented by the multi-axial taxonomy of Achenbach (1985, 1991a). The third approach is based on assumptions of a disease or disorder model of psychopathology and is currently reflected in the categorical diagnostic system of the revised third edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R)* of the American Psychiatric Association (APA; 1987) and the *International Classification of Diseases and Health Related Problems (ICD-10)* of the World Health Organization (1990).

In addition to reflecting different paradigms of assessment and taxonomy, these three approaches to depression are concerned with different levels of analysis. The depressed-mood approach is concerned with depression as a symptom and refers to the presence of sadness, unhappiness, or blue feelings for an unspecified period of time. No assumptions are made regard-

ing the presence or absence of other symptoms (e.g., poor appetite or insomnia). The depressive syndrome approach is concerned with depression as a constellation of behaviors and emotions. Depression refers to a set of emotions and behaviors that have been found statistically to occur together in an identifiable pattern at a rate that exceeds chance, without implying any particular model for the nature or causes of these associated symptoms. Differences between individuals are viewed in terms of quantitative deviations in levels of symptoms. The categorical diagnostic approach views depression as a psychiatric disorder. This approach assumes not only that depression includes the presence of an identifiable syndrome of associated symptoms, but also that these symptoms are associated with significant levels of current distress or disability and with increased risk for impairment in the individual's current functioning (APA, 1987).² Differences between individuals are considered in terms of quantitative and qualitative differences in the pattern, severity, and duration of symptoms. Each of these perspectives on adolescent depression is dependent on the availability of adequate assessment tools to measure and operationalize the central features of depression. As might be expected, each perspective is related to a distinct set of assessment methods (for reviews of measures of child and adolescent depression, see E. J. Costello & Angold, 1988; Kendall, Cantwell, & Kazdin, 1989; Kazdin, 1988; Reynolds, 1990; Rutter, 1988).

With regard to each of these three perspectives, we consider five questions: (a) How is "depression" measured during adolescence? (b) What is the prevalence and gender ratio of "depression" during adolescence? (c) What is the relation of "depression" to other emotions, syndromes, or disorders? (d) What is the clinical significance of "depression" during adolescence? (e) What is unique about "depression" during adolescence?

Depressed Mood

All individuals experience periods of sadness, unhappiness, or dysphoric mood at various points in their lives. These periods of depressed mood may occur in response to a variety of environmental and internal stimuli, last for varying lengths of time, and be associated with either few or many emotional and behavioral correlates. One approach to research on depression during adolescence takes depressed mood as its central focus (e.g., Kandel & Davies, 1982; Petersen, Sarigiani, & Kennedy,

¹ We limit the scope of our review to unipolar depression, to the exclusion of bipolar disorder or suicide, for two reasons. First, research evidence on bipolar disorder during adolescence is much more limited than the extensive and growing literature on unipolar depression in this age period. Second, research on depressed mood and depressive syndromes has not addressed the salient aspects of bipolar disorder. In addition, although adolescent suicide is an important problem that is related to depression, the association between the two is imperfect.

² Some authors (e.g., Cantwell & Baker, 1991) have argued that diagnostic approaches also assume that symptoms are present for a certain minimal duration, result in a specified level of functional impairment, follow a particular course in the absence of treatment, have a characteristic response to certain treatments, and have specific causes or correlates. These assumptions remain controversial, however, and Angold (1988) has pointed out that they have not received empirical support in studies of adolescent depression.

1991). Researchers taking this perspective make no attempt to catalogue the features of a depressive disorder and no assumptions about the underlying etiology of depressed mood. Depressed emotional tone is seen as an important phenomenon in and of itself, independent of other features of a depressive syndrome or disorder.

Assessment of depressed mood: Adolescent self-report scales. Depressed mood has been measured using single items, scales designed specifically to assess depressed mood, and subscales from existing measures. Numerous measures of adolescent psychological distress and psychopathology contain single-item indexes of depressed mood. For example, the measures developed by Achenbach and colleagues (see Depressive Syndromes) all contain an item for "unhappy, sad, or depressed" affect. Two scales that have been used extensively to assess depressed mood in adolescence are the Emotional Tone Scale of the Self-Image Questionnaire for Young Adolescents (SIQYA; Petersen, Schulenberg, Abramowitz, Offer, & Jarcho, 1984) and the Kandel Depression Scale (KDS; Kandel & Davies, 1982). The Emotional Tone Scale is one of nine scales in the SIQYA, a revision of the Offer Self-Image Questionnaire (OSIQ; Offer, Ostrov, & Howard, 1982) that may be used with younger (ages 10–15) as well as older adolescents. The KDS comprises six items modified from a scale developed for college students. In addition, a subscale of the Children's Depression Inventory (CDI; Kovacs, 1980) has also been widely used as an index of depressed mood. Other self-report scales have been used to assess depressed mood along with other symptoms of depression in adolescence, including the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the Reynolds Adolescent Depression Scale (RADS; Reynolds, 1986), the Children's Depression Scale (CDS; Tisher & Lang, 1983), and the Center for Epidemiological Studies of Depression Scale (CES-D; Radloff, 1977).

The various scales used to measure depressed mood have several features in common. They include lists of emotions and symptoms that are thought to reflect the central features of depressive disorders. For most of the measures, these symptoms were drawn from the Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978a, 1978b) for depression, the *DSM-III* (APA, 1980), or measures of adult depression (e.g., the BDI; Beck et al., 1961). An exception is the Emotional Tone scale, which was derived from a measure of adolescent self-image (SIQYA; Petersen et al., 1984). The measures present respondents with either a Likert-type scale to rate the degree to which each symptom applies to them or choices from a series of responses to each item, with the responses reflecting varying levels of the severity of that symptom. With regard to psychometric properties, all of the scales meet at least minimum criteria for internal consistency reliability, test-retest reliability, and stability over moderate periods of time (see Kendall et al., 1989). It is important to recognize, however, that these scales contain items reflective of many symptoms other than depressed mood. Therefore, total scores on these measures are not clean indexes of depressed affect.

The CDI is noteworthy because of its wide use in studies of clinically referred and nonreferred adolescents and because the full scale includes a number of symptoms other than depressed mood. A recent comprehensive factor-analytic study (Weiss et

al., 1991a, 1991b) identified a subset of items reflective of depressed affect through reanalysis of data collected on samples of clinically referred children and adolescents in five previous studies ($N = 768$ adolescents ages 13–16 years). Five factors were identified in the analyses of adolescents' responses, the first of which was labeled Negative Affect With Somatic Concerns. The three items with the largest loadings on the Negative Affect factor were "I feel like crying every day," "I am sad all the time," and "Things bother me all the time." Somatic items also loaded on this factor, including "I worry about aches and pains all the time," "Most days I do not feel like eating," "I have trouble sleeping at night," and "I am tired all the time." Thus, adolescents' responses on the CDI contain a relatively distinct factor that reflects depressed mood along with somatic symptoms. Similar factor analyses have not been reported for other depression scales completed by adolescents. Although a Negative Affect factor was also identified in children's responses, only items concerning frequent sadness, fatigue, and aches and pains were common to both age groups. Frequent crying, being bothered by things, trouble sleeping, and poor appetite were unique to adolescents' responses, whereas not having friends was the only item unique to children's reports. Thus, the structure of the Negative Affect factor appears to change somewhat from childhood to adolescence.

Prevalence and gender ratio of depressed mood during adolescence. The prevalence of depressed mood during adolescence has been documented both on responses to single-item indexes and on total scores on scales. In analyses of a single item reflecting unhappy, sad, or depressed mood, Achenbach (1991c, 1991e) found that 10%–20% of parents of nonreferred adolescent boys and 15%–20% of parents of nonreferred adolescent girls reported that their children had experienced this symptom at least somewhat or sometimes in the previous 6 months. Adolescents' self-reports indicated that 20%–35% of nonreferred boys and 25%–40% of nonreferred girls reported having felt sad or depressed during the prior 6 months. Gender differences were small in both parental and adolescent reports of this symptom, with girls scoring slightly higher than boys.

Recent studies using depressed-mood scales also indicate that substantial numbers of adolescents experience depressed mood or affect. For example, Kandel and Davies (1982) found that 18%–28% of a sample of 8,206 14- to 18-year-olds reported significant elevations of depressed mood on the KDS. The level of depressed mood and the percentage of adolescents who endorse such feelings vary considerably across studies, most likely because of differences in the populations, measures, and cut-offs that are used. The most consistent patterns of findings involve age and gender differences, because depressed mood appears to increase during early adolescence and more adolescent girls than adolescent boys report depressed mood (Petersen et al., 1992). For example, Petersen, Sarigiani, and Kennedy (1991) examined depressed mood with the Emotional Tone Scale in a longitudinal study of 335 individuals from early adolescence through young adulthood. Depressed mood increased during adolescence for girls but remained relatively stable for boys throughout adolescence. These authors also found that reports of significant episodes of depressed mood (lasting 2 weeks or longer) increased from early adolescence (i.e., between 6th and 8th grades) to late adolescence (i.e., between 9th and

12th grades) for both boys and girls, with a more pronounced effect for girls. Girls reported more episodes of depressed mood than boys at all age levels, with this gender difference increasing from early to late adolescence (Petersen, Sarigiani, & Kennedy, 1991). Note, however, that both Kandel and Davies (1982) and Petersen, Sarigiani, and Kennedy based their prevalence rates on the total scores from their respective measures. As a result, these scores reflect symptoms other than just depressed affect.

Depressed mood and other emotions. Numerous studies have shown that during adolescence, as in adulthood, depressed mood is closely related to other negative emotions. First, monomethod studies (i.e., studies relying on a single method, such as adolescents' self-reports) have failed to distinguish depressed mood (and other symptoms of depression) from other negative emotions including anxiety, anger, and hostility. For example, Saylor, Finch, Spirito, and Bennett (1984) found that children and adolescents classified as high and low in depressive symptoms on the CDI also differed significantly on self-reported anxiety. Further, multitrait-multimethod validity studies examining reports from different informants (e.g., adolescents, teachers, and parents) of various negative emotions (depression, anxiety, and anger) have found that strong associations between adolescents' depressed mood and other negative emotions, especially anxiety, are not limited to adolescents' self-reports of emotions. That is, reports of adolescent depressed mood by each informant are correlated more highly with reports of other negative emotions by that same informant than they are with reports of depressed mood obtained by other informants (e.g., Wolfe et al., 1987).

It is noteworthy that parent and teacher reports of adolescents' emotions and behaviors also show considerable covariance in levels of depressed and anxious mood (Finch, Lipovsky, & Casat, 1989). Thus, the association of depressed mood with other elements of the broader construct of negative affectivity is not the result of a simple bias in adolescents' reports about their internal emotional states. Finch et al. (1989) suggested that anxiety and depression are not separable in children and adolescents and that the distinction between these two forms of negative affect should be put to rest.

These findings must be interpreted with a level of caution, however, because there is some degree of item contamination between measures of depressed and anxious mood. For example, Brady and Kendall (1992) identified several items that are included on the CDI and standard self-report scales of anxiety. The extent to which item similarity on these measures accounts for the degree of association between the scales has not been clarified.

Concerns about confounding of measures notwithstanding, these findings can be understood by considering them within the broader framework of theories of emotion (e.g., Watson & Tellegen, 1985). Extensive evidence from studies of the structure of emotions in children, adolescents, college students, and adults indicates that self-rated mood is dominated by two broad factors: Negative Affect, which comprises negative emotions and distress, and Positive Affect, which is made up of positive emotions (King, Ollendick, & Gullone, 1991; Watson, 1988; Watson & Tellegen, 1985). Depressed mood is one component of the broader construct of negative affectivity, whereas positive

emotions are important in distinguishing among subtypes of negative emotion (Watson & Clark, 1984).

Research with adults indicates that although depressed mood is strongly intercorrelated with other negative emotions, it appears to be distinguishable from anxiety, if not from other forms of negative affect, on the basis of its association with positive emotion (e.g., happiness, excitement, pride, and contentment). Specifically, whereas anxiety is uncorrelated with positive affect, depressed mood shows a consistent inverse relationship with positive mood (Watson & Kendall, 1989). Thus, highly anxious individuals may be low, moderate, or high in positive affect, because anxiety and positive emotions can occur simultaneously. In contrast, highly depressed individuals are likely to experience a low level of positive emotion (anhedonia). The relation between positive affect and depressed mood during adolescence warrants further research. In general, research suggests that sad or depressed mood is a phenomenologically distinct emotional state that, although closely related to the experience of other forms of negative affect, is distinguished by its relation to positive emotion (Watson & Clark, 1992).

Clinical significance of depressed mood. What is the role of depressed mood in clinical problems? Evidence for the clinical significance of depressed mood independent of other features of a depressive disorder or syndrome has been provided by item analyses of data obtained on the Child Behavior Checklist (CBCL; Achenbach, 1991c; Achenbach & Edelbrock, 1983), the Youth Self-Report (YSR; Achenbach, 1991e; Achenbach & Edelbrock, 1987), and the Teacher's Report Form (TRF; Achenbach, 1991d; Achenbach & Edelbrock, 1986). Analyses performed to identify the symptoms that best distinguish clinically referred and nonreferred children and adolescents have shown reports of sad or depressed mood consistently to be the single best indicator of referral status. Parents' responses to the CBCL item "Unhappy, sad, or depressed" showed the largest difference between referred and nonreferred children and adolescents, with referral status accounting for 20% of the variance in scores on this item (Achenbach, 1991b). Referral status also accounted for the most variance (10%) in adolescents' reports of this item on the YSR (Achenbach, 1991e) and was one of the items most strongly affected by referral status on the basis of teacher reports on the TRF (Achenbach, 1991d). The robust nature of depressed affect as a marker of referral status is underscored by the fact that this same item was found to be the best discriminator between samples of referred and nonreferred children and adolescents 10 years earlier (Achenbach & Edelbrock, 1981). Thus, although depressed mood or affect appears to be part of a larger construct of negative affectivity, it also carries considerable clinical significance as a marker of distress when reported by adolescents and observed in adolescents by others.

Unique features of depressed mood during adolescence. Several studies have documented that early to middle adolescence is a period in development marked by increases in depressed mood. For example, in the Isle of Wight general population study, Rutter and his colleagues found that 13% of the sample reported recent depressed mood at age 10–11 years, whereas in a follow-up at ages 14–15 years, more than 40% of this sample reported recent depressed mood (Rutter, Graham,

Chadwick, & Yule, 1976; Rutter, Tizard, & Whitmore, 1970). Sad or depressed affect also appears to increase during the course of adolescence, although these increases may be more pronounced in a subgroup of adolescent girls who are referred for treatment. For example, the percentage of clinically referred girls who reported recent depressed mood increased from approximately 60% at ages 11–12 years to approximately 80% at ages 17–18 (Achenbach, 1991e). Age changes were not as pronounced in referred boys or in nonreferred girls or boys.

In addition to changes in the prevalence of depressed mood at different stages of adolescence, it also appears that the correlates of depressed affect may change from childhood to adolescence. For example, as noted earlier, Weiss et al. (1991a, 1991b) found that the items loading on the Negative Affect factor of the CDI differed for children and adolescents. Specifically, vegetative symptoms (e.g., sleep and appetite problems) loaded with negative affect in adolescence but not in childhood. Further analyses with this sample indicated that externalizing behavior problems and guilt were more strongly related to the total score on the CDI in the preadolescent sample, whereas affective symptoms and concerns about the future were more strongly related to the total score among the adolescents (Weiss et al., 1991b). Thus, depressed mood may change in frequency and in its correlates with the onset of adolescence.

Summary. Depressed mood can be measured as a distinct emotional state through self-reports of adolescents and the reports of significant others in their lives. Although it appears to be phenomenologically distinct, it is closely associated with other negative emotions, most notably anxiety. Depressed mood has considerable clinical significance on its own, because referral status accounts for substantial portions of the variance in adolescents' depressed affect. Furthermore, levels of depressed mood increase at adolescence and may be associated with a set of symptoms different from that seen during childhood. However, evidence suggests that greater care must be taken in the use of depression scales as indexes of depressed mood per se. Although total scores on the CDI, the KDS, and the BDI have been used as indexes of depressed mood, these scales contain a number of nonmood items (e.g., sleep difficulties and appetite problems). Thus, it is problematic to interpret total scores on these measures as reflective of depressed mood as opposed to other symptoms typically considered characteristic of depressive disorders.

Depressive Syndromes

A second approach to the assessment and taxonomy of child and adolescent psychopathology focuses on depressive phenomena as they relate to a wider range of other adolescent problem behaviors and emotions (e.g., social withdrawal, attentional problems, and aggression). Like the study of depressed mood, this approach does not a priori assume the presence of an underlying structure of psychological disorders in childhood and adolescence. Rather it is assumed that the pattern of symptoms and disorders is best understood from data obtained from the most relevant informants on adolescent behavior. In this sense, the identification of depressive syndromes is based on a deductive method, moving from the general (data on large samples) to the specific (the defining characteristics of an individual case).

The three primary sources of information on adolescent behavior that have been used most frequently are parents, teachers, and adolescents themselves.

Researchers taking this approach are faced with the task of aggregating and organizing the responses of large samples of respondents concerning the frequency and intensity of a range of adolescent behaviors and emotions. It is assumed that if a disorder involves a syndrome of behaviors and emotions, it will be reflected in the statistical associations (intercorrelations) among problems that are reported as occurring together in samples of individuals. Specifically, if there is a syndrome of depression in adolescence, it will appear as a set of recognizable problems that co-occur in reports by parents, teachers, and adolescents.

Assessment of depressive syndromes: Parent, teacher and adolescent checklists. A variety of broadly focused parent, teacher, and self-report measures have been used to obtain reports of behaviors and emotions pertinent to the construct of adolescent depression. Parent report measures have included the Quay-Peterson Revised Behavior Problem Checklist (Quay & Peterson, 1983), the Conners Parent Questionnaire (Conners, 1973), and the CBCL (Achenbach, 1991c; Achenbach & Edelbrock, 1983). Teacher checklists include the Conners Teacher Questionnaire (Conners, 1973), the Louisville Behavior Checklist (L. C. Miller, 1984), and the TRF (Achenbach, 1991d; Achenbach & Edelbrock, 1986). Multivariate measures of a wide range of behavioral and emotional problems that obtain adolescents' self-reports have been more limited, with the only extensive analyses of adolescent self-reports involving the YSR (Achenbach, 1991e; Achenbach & Edelbrock, 1987) and the Minnesota Multiphasic Personality Inventory (e.g., Archer, Pancoast, & Klinefelter, 1989; Williams & Butcher, 1989a, 1989b). These instruments differ from scales of depressed mood in that they are designed to assess a wide range of internalizing and externalizing problems in addition to depression. Self-report measures of depressive syndromes have not been used with preadolescent children, on the assumption that young children's limited cognitive abilities and reading skills preclude the use of self-report measures with this age group (Achenbach, 1991e). Thus, the use of self-report measures of depressive syndromes distinguishes adolescence from childhood.

Depressive syndromes have been derived from factor analyses or principal components analyses of the responses of large samples of clinically referred children and adolescents. The most extensive empirically based multivariate approach to the classification of child and adolescent psychopathology is represented by the ongoing work of Achenbach and his colleagues. We use this system as the basis for the present discussion because (a) it is the only approach to date that involves the empirical integration of data from parents, teachers, and adolescents; (b) it is the only attempt we know of to generate an empirically based taxonomy of adolescent (and child) psychopathology; and (c) one of the measures (the CBCL) has been examined in a larger study of the Achenbach, Conners, and Quay Behavior Checklist (ACQ; Achenbach, Howell, Quay, & Conners, 1991) in which items from other multivariate measures were also included (Achenbach, Howell, Quay, & Conners, 1991). The use of the CBCL (Achenbach, 1991c), TRF (Achenbach, 1991d),

and YSR (Achenbach, 1991e) to generate a taxonomy of child and adolescent psychopathology is now in its second iteration. In both phases of the development of this taxonomy, principal components analyses of checklist responses by parents, teachers, and adolescents have been used to identify sets of behaviors and emotions that co-occur in the reports of these informants. The most pertinent question is whether a syndrome of behaviors and emotions has been identified that reflects depression. The CBCL, TRF, and YSR have acceptable internal consistency reliability and test-retest reliability and are based on adequate norms from a nationally representative sample of nonreferred children and adolescents (Achenbach, 1991c, 1991d, 1991e).

In the first stage of work on this taxonomy, data were analyzed separately as a function of the age and sex of the target child or adolescent and as a function of the source of information (Achenbach & Edelbrock, 1981, 1983, 1986, 1987). Separate principal components analyses were conducted with parents' reports on boys and girls ages 4-5, 6-11, and 12-16 years; teachers' reports on boys and girls ages 6-11 and 12-16 years; and the self-reports of male and female adolescents ages 11-18 years. Principal components analyses revealed syndromes that reflected the core characteristics of depression in many but not all of these sets of responses. A depressive syndrome was discernable in adolescence, but the specificity and features of this syndrome varied with the sex of the adolescent and the source of information. Evidence for a depressive syndrome was found for girls in the reports of parents, teachers, and adolescents. In contrast, a distinct depressive syndrome was found only in boys' self-reports.

In spite of the potential importance of variations as a function of developmental level, sex, and informant, the use of different syndromes for different age groups, for boys and girls, and for different measures has proved to be cumbersome in both research and practice. In the second generation of research on this system, steps have been taken to integrate data from multiple sources and to identify core syndromes and cross-informant syndromes across age, sex, and source of information (Achenbach, 1991a, 1991b). Through principal components analyses of CBCL, TRF, and YSR responses with samples of clinically referred children and adolescents, eight syndromes were found to be common across age, sex, and informant and were labeled cross-informant constructs. These cross-informant constructs were Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. Most pertinent for the present purposes is the Anxious/Depressed construct, which contained the following items common to all three measures: "lonely," "cries," "fears doing bad things," "needs to be perfect," "unloved," "feels others are out to get him/her," "worthless," "nervous," "fearful," "guilty," "self-conscious," "suspicious," "sad," "worries." In addition, two items from the YSR ("harms self" and "thinks about suicide") and four items from the TRF that are not on the CBCL and YSR ("overconforms," "hurt when criticized," "anxious to please," and "afraid of mistakes") loaded on this syndrome. A similar syndrome was identified in parents' reports from the larger item pool used in the ACQ (Achenbach et al., 1991).

Thus, the characteristics of this syndrome do not appear to be limited to only the items on the CBCL, YSR, and TRF.

Correlations among different informants have been low in previous research, typically in the range of .20-.30 (Achenbach, McConaughy, & Howell, 1987). More recent research examining parent, teacher, and adolescent reports on the Anxious/Depressed construct has shown somewhat stronger correspondence among these reports than has been found on earlier syndrome scores (Achenbach, 1991b). In analyses of data for referred and nonreferred adolescents, the mean cross-informant correlations (between mother and father, parent and teacher, parent and adolescent, and teacher and adolescent) were .42 for both boys and girls. These correlations ranged from a low of .22 between boys' reports on the YSR and teachers' reports on the TRF to highs of .66 and .70 between mothers and fathers of girls and boys on the CBCL, respectively. Girls' reports on the Anxious/Depressed construct correlated with their parents' reports ($r = .44$) at a significantly higher level than boys' reports correlated with their parents' reports ($r = .32$). Thus, moderate agreement was found across different informants. Although the scores generated from the most recent versions of the profiles for the CBCL, YSR, and TRF are moderately related to one another, they remain relatively distinct measures of anxious and depressed symptoms in adolescents. It appears best to continue to consider these as distinct perspectives on depressive syndromes in adolescence.

Prevalence and gender ratio of depressive syndromes during adolescence. The prevalence of depressive syndromes can be determined by examining the proportion of adolescents who exceed a criterion for significant levels of symptoms that comprise the syndrome. Criteria for the CBCL, TRF, and YSR have been set to maximize the sensitivity and specificity of these scales in discriminating between clinically referred and nonreferred samples of adolescents. For each scale, a borderline clinical cutoff has been set at the 95th percentile, resulting in 5% of adolescents' scoring in the clinical range on the Anxious/Depressed syndrome (Achenbach, 1991c, 1991d, 1991e). Because this approach is empirically based, it is recognized that any criterion used to establish prevalence is to some degree arbitrary. However, use of the 95th percentile yielded better discrimination between referred and nonreferred samples than did T scores of 68, 69, 70, or 71 (Achenbach, 1991b).

There is evidence for an increase in Anxious/Depressed syndrome scores in nonreferred samples from childhood to adolescence but little change in these scores during adolescence. For example, age was not related to Anxious/Depressed syndrome scores on the YSR for adolescent boys and accounted for only 1% of the variance in scores for girls (Achenbach, 1991e). On the CBCL, increases with age accounted for 2% of the variance in scores for 4- to 11-year-old boys and 3% of the variance for 4- to 11-year-old girls, but age was not significantly related to scores for boys or girls ages 12-18 (Achenbach, 1991b). Similarly, there was a small but significant increase on the Anxious/Depressed scale on the ACQ (Achenbach et al., 1991). Gender differences have not been reported for the total score on the Anxious/Depressed syndrome on the CBCL, but analyses of the items that comprise the scale indicate consistent but small sex differ-

ences, with girls scoring higher than boys on a majority of items in parent and adolescent reports.

Depressive syndromes and other syndromes. The intercorrelations of the Anxious/Depressed core syndrome with the other core syndromes indicate substantial covariation. These correlations have been reported separately for the CBCL, TRF, and YSR for clinically referred and nonreferred adolescent boys and girls (Achenbach, 1991a) and are presented in Table 1. Although these correlations vary substantially, ranging from an *r* of .27 (with Delinquent on the YSR for referred boys) to an *r* of .80 (with Self-Destructive on the YSR for referred boys), the overall mean correlation of the Anxious/Depressed syndrome with the other core syndromes is .51, indicating substantial covariation. Furthermore, the Anxious/Depressed syndrome correlated highly with both internalizing syndromes (Withdrawn and Somatic Complaints) and externalizing syndromes (Aggressive Behavior and Attention Problems). Thus, the degree of covariation of the Anxious/Depressed syndrome with other syndromes is substantial. Further research is needed to understand the implications of this high degree of covariation for the etiology, course, treatment, and prevention of depressive syndromes (Compas & Hammen, in press).

Clinical significance of depressive syndromes. Comparisons of the Anxious/Depressed syndrome scores of referred and nonreferred adolescents have been made to determine these scores' clinical significance. Referred youths scored significantly higher than nonreferred adolescents on the Anxious/Depressed scale on all three instruments. Referral status ac-

counted for 20% of the variance in Anxious/Depressed scores for adolescent boys and 22% of the variance for adolescent girls on the CBCL. The differences were smaller on the YSR, with referral status accounting for 8% and 13% of the variance in Anxious/Depressed scores for boys and girls, respectively.

As noted earlier, although multivariate approaches treat symptoms within a given syndrome on a continuum, Achenbach has taken steps to generate categorical distinctions. Thirty-four percent of the referred sample, compared with only 5% of the nonreferred sample, scored above the cutoff on the CBCL Anxious/Depressed scale (Achenbach, 1991c). This translates to a relative odds ratio of 10:1 (i.e., the odds of being above the cutoff were 10 times greater for referred than nonreferred youth). On the YSR, 23% of the referred sample and 6% of the non-referred sample scored in the clinical-range, a relative odds ratio of 4.8:1 (Achenbach, 1991e).

Unique features of depressive syndromes during adolescence. Is there a set of behaviors and emotions that constitutes a depressive syndrome unique to adolescence? Achenbach's work to develop an empirically based taxonomy has provided two somewhat different answers to this question. As noted earlier, the structure of depressive syndromes during adolescence has changed from the original to the most recent iterations of the CBCL, YSR, and TRF. Whereas in earlier analyses there was evidence that the structure of depressive syndromes varied as a function of age, gender, and informant (Achenbach & Edelbrock, 1983, 1986, 1987), more recent analyses have identified a syndrome comprised of a common set of items across these variables (Achenbach, 1991b). However, the identification of a core Anxious/Depressed syndrome that is consistent across age, gender, and informants does not mean that there are not important variations in the frequency of specific symptoms as a function of these factors. Analyses of the items that make up the Anxious/Depressed syndrome indicate that there are some age-related changes in some of them. For example, parents' reports of crying decrease with children's age, whereas their reports of children's feelings of worthlessness and sadness, unhappiness, and depressed affect increase with children's age (Achenbach, 1991c).

Similar to data on depressed mood, it appears that total scores on depressive syndromes increase from childhood to adolescence and, for some subgroups, during adolescence as well. For example, mean item scores on the Anxious/Depressed syndrome on the YSR increase for clinically referred girls from ages 11–12 years to ages 17–18, whereas they do not change for referred boys or nonreferred girls or boys (Achenbach, 1991e). Parent reports present a somewhat different picture. Analyses of the ACQ indicate that scores on the Anxious/Depressed syndrome accounted for none of the variance between referred and nonreferred boys ages 4–5, less than 1% for boys ages 6–11, but 13% of the variance for boys ages 12–16. In contrast, scores on the ACQ Anxious/Depressed syndrome accounted for none of the variance in referral status for 4- to 5-year-old girls, 10% of the variance for 6- to 11-year-old girls, and only 2% of the variance for 12- to 16-year-old girls (Achenbach et al., 1991). Note that scores on the Withdrawn syndrome of the ACQ accounted for 15% of the variance in referral status for 12- to 16-year-old girls. This suggests that the manifestation of depressive-like

Table 1
Correlations Between Anxious/Depressed Syndrome and Other Syndromes on the Youth Self-Report and Child Behavior Checklist for Clinically Referred and Nonreferred Boys and Girls

Syndrome	Boys		Girls	
	Nonreferred	Referred	Nonreferred	Referred
Youth Self-Report				
Withdrawn	.62	.61	.62	.61
Somatic Complaints	.47	.49	.57	.51
Social Problems	.45	.54	.47	.52
Thought Problems	.35	.46	.50	.40
Attention Problems	.61	.66	.63	.60
Delinquent	.39	.27	.45	.31
Aggressive	.49	.49	.56	.51
Self-Destructive	.75	.80	—	—
<i>M</i>	.52	.54	.54	.49
Child Behavior Checklist				
Withdrawn	.58	.61	.65	.65
Somatic Complaints	.28	.45	.43	.48
Social Problems	.50	.42	.51	.41
Thought Problems	.49	.53	.54	.54
Attention Problems	.60	.54	.55	.54
Delinquent	.41	.25	.44	.30
Aggressive	.59	.47	.63	.51
Self-Destructive	.59	.47	.63	.51
<i>M</i>	.49	.47	.54	.49

Note. Data are from Achenbach (1991c, 1991e).

symptoms, at least as observed by parents, changes developmentally for girls.

Summary: Research by Achenbach and his colleagues on an empirically based taxonomy of child and adolescent psychopathology has provided the most extensive evidence on depressive syndromes. Recent analyses of multivariate data from parents, teachers, and adolescents have identified a depressive syndrome across these three groups of informants, more so than in previous analyses of depression-related syndromes on the Child Behavior Profile (Achenbach & Edelbrock, 1983). The presence of both anxious and depressive symptoms on this core syndrome, Anxious/Depressed, is consistent with research that indicates the presence of a general construct of negative affectivity. These data underscore the fact that this association is not a method effect due to biases in self-report; the association between anxiety and depression was consistent across reports by parents, teachers, and adolescents. Furthermore, there is substantial covariation between symptom scores on the Anxious/Depressed syndrome and other syndromes for both clinically referred and nonreferred adolescent boys and girls. Note, however, that checklist data do not provide detailed information about the onset, severity, duration, and course of adolescents' depressive symptoms. The use of more detailed diagnostic criteria has been the primary focus of psychiatric nosologies.

Categorical Diagnostic Approach

The two dominant categorical diagnostic models are the *DSM-III-R* (APA, 1987) and the *ICD-10* (World Health Organization, 1990). We focus our attention on the *DSM-III-R*, because it is the most widely used diagnostic system in the United States and worldwide (Maser, Klaeber, & Weise, 1991). As a hierarchical multiaxial system, the *DSM-III-R* emphasizes diagnosis of disorders through a review of the presence, duration, and severity of sets of symptoms. The *DSM-III-R* is based more on the clinical literature of the symptomatology of disorders than on the empirical literature of the covariation of symptoms and syndromes. As such, it reflects an inductive approach in which clinical information on specific cases is used to develop diagnostic decision rules that can be generalized to the larger population.

With only a few exceptions, adolescent depression is diagnosed under the same *DSM-III-R* classification system as adult depression. Depressive disorders are classified under the broad category mood disorders and, to a less extent, the category adjustment disorders. A key exclusionary criterion is that a diagnosis of mood disorder is not made if the symptoms are due to an established organic factor; are the reaction to the death of a loved one (uncomplicated bereavement); or occur in conjunction with psychotic disorders such as schizophrenia, delusional disorder, schizophreniform disorder, or psychotic disorder not otherwise specified. Within the mood disorders, depression is divided into two categories: bipolar disorders and depressive disorders. Bipolar is distinguished from depressive disorder by the presence of manic or hypomanic symptoms that may alternate with depression. Our focus being on depressive disorders without manic or hypomanic episodes, the reader is referred to the *DSM-III-R* for more information regarding

bipolar disorders. Under depressive disorders, adolescents may be diagnosed as experiencing major depressive disorder (MDD) and/or dysthymic disorder (DY).

To meet the criteria for MDD, the adolescent must have experienced five or more of the following symptoms for at least a 2-week period at a level that differs from prior functioning: (a) depressed mood or irritable mood most of the day, (b) decreased interest in pleasurable activities, (c) changes in weight or perhaps failure to make necessary weight gains in adolescence, (d) sleep problems, (e) psychomotor agitation or retardation, (f) fatigue or loss of energy, (g) feelings of worthlessness or abnormal amounts of guilt, (h) reduced concentration and decision-making ability, and (i) repeated suicidal ideation or attempts at or plans for suicide. Irritable mood may be observed in lieu of depressed mood in adolescents and is believed to be more common in this age group than in adults. Diagnosis of MDD in adolescents is further differentiated by the severity and chronicity of the symptoms. A range of mild, moderate, and severe diagnoses with or without psychotic features is applied.

The criteria for diagnosis of DY in adolescence are that for at least a period of 1 year (compared with 2 years for adults), an individual must have displayed depressed or irritable mood daily without more than 2 months symptom free. In addition, DY is classified by the presence of at least two of the following symptoms: (a) eating problems, (b) sleeping problems, (c) lack of energy, (d) low self-esteem, (e) reduced concentration or decision-making ability, and (f) feelings of hopelessness. Finally, there must be no evidence of an episode of MDD during the first year of DY. Dysthymia is further classified into primary or secondary type and by age of onset. Primary type is defined as unrelated to premorbid, chronic, nonmood Axis I and III disorders such as eating disorders, substance abuse disorders, and anxiety disorders. Secondary type is defined as related to premorbid, chronic, nonmood Axis I or III disorders. Occurrence of the disorder prior to 21 years of age is designated as early onset.

Although a diagnosis of MDD takes precedence over a diagnosis of DY, adolescents may be diagnosed with DY for 1 year and subsequent MDD if the more severe depression follows. These cases of MDD juxtaposed with the history of more chronic and less severe DY are often referred to as "double depression." An additional diagnostic category of depressive disorder not otherwise specified may be used to classify adolescents with symptoms unlike the MDD, DY, or adjustment disorder with depressed mood. As an example, the *DSM-III-R* cites recurrent mild depression that is not severe enough to meet DY criteria.

Diagnoses of depressive disorders are also included under the category adjustment disorder with depressed mood. Adjustment disorders must occur within 3 months of a known psychosocial stressor and remit within 6 months. For adolescents, typical stressors are identified as family or school difficulties. Under this categorization, symptoms of less than 6 months' duration usually involve feelings of hopelessness, depressed mood, and crying. The reaction to the stressor is either greater than normally expected or interferes with the adolescent's ability to function appropriately in school or social settings.

Assessment of DSM-III-R depressive disorders: Structured

and semi-structured clinical interviews. The categorical diagnostic approach to the assessment of adolescent depression is best represented by structured or semistructured diagnostic interviews. The most extensively researched and widely used of these interviews are the Schedule for Affective Disorders and Schizophrenia for School-Aged Children (K-SADS; Chambers et al., 1985), the Child Assessment Schedule (CAS; Hodges, Kline, Stern, Cytryn, & McKnew, 1982), and the Diagnostic Interview Schedule for Children (DISC; A. J. Costello, Edelbrock, Dulcan, Kalas, & Klaric, 1984). These interviews are used to determine whether an adolescent's (or child's) symptoms meet *DSM-III-R* diagnostic criteria (Kazdin, 1988).

The K-SADS was developed for youth 6 to 17 years old and was based on the adult SADS (Endicott & Spitzer, 1978). Although the SADS and K-SADS used the RDC for major depressive disorders as a foundation, *DSM-III-R* criteria may also be applied. The K-SADS is designed to be administered by a trained clinician to determine the onset, duration, and severity of current and past episodes of affective, anxiety, conduct, and psychotic disorders. Several versions of the K-SADS are available to assess a current episode, the most severe episode in the past, or a combination of the two. Twelve summary scales including one for depressive disorder are generated and may be translated into diagnoses by the interviewer. Specifically, major and minor depressive disorder, anxiety disorder, and conduct disorder may be diagnosed. More recently, the K-SADS has been used to generate diagnoses of DY and adjustment disorder with depressed mood. The decision to convert scales and individual items into a diagnostic category is based on the clinician's judgment rather than a computer algorithm (Edelbrock & Costello, 1988b). In addition, when parent and adolescent accounts differ, interviewers may meet with both parties to attempt to resolve the differences or judge which information to use in making a diagnosis (Chambers et al., 1985). The reliability of the K-SADS has been found to be adequate (Chambers et al., 1985), and the validity of the K-SADS has been established on the basis of its ability to detect the prespecified diagnostic criteria and treatment effects (Edelbrock & Costello, 1988b).

Unlike the K-SADS, the CAS was developed from a traditional child clinical interview (Hodges & Cools, 1990). It is thematically organized around 11 topic areas, including school, friends, activities, family, fears, worries and anxieties, self-image, mood (especially sadness), physical complaints, anger, and reality testing. Responses are scored on symptom scales and can be used to generate *DSM-III* or *DSM-III-R* diagnoses. Detailed scoring instructions have been developed for the generation of *DSM-III* or *DSM-III-R* diagnoses. Originally developed for use with children, the CAS has been successfully extended to adolescents (e.g., Kashani, Reid, & Rosenberg, 1989). Most pertinent to the present discussion are the Mood Content scale and the diagnostic scales for MDD and DY. The reliability of the CAS is well established (e.g., Hodges, Cools, & McKnew, 1989; Hodges, Saunders, Kashani, Hamlett, & Thompson, 1990). The validity of the CAS has been established on the basis of the association of child/adolescent and parent responses, the association of the CAS with other clinical interviews, and the association of the CAS with self-report

questionnaires (Hodges, 1990; Hodges & Craighead, 1990; Hodges, Gordon, & Lennon, 1990).

In contrast to the K-SADS and CAS, the structured format of the DISC (A. J. Costello et al., 1984) is designed for administration by clinicians or lay interviewers. The DISC was developed as a youth version of the Diagnostic Interview Schedule for adults (Robins, Helzer, Croughan, & Ratcliff, 1981). Intended as a research tool for use in epidemiological studies of psychopathology, the DISC is a comprehensive approach to detecting the presence, severity, onset, and duration of a broad range of symptoms in 6- to 18-year-olds. The DISC consists of separate interviews with the parents (DISC-P) and adolescents (DISC-C) for approximately 60–70 min and 40–60 min, respectively. The results may be presented in two ways: (a) as the number and severity of symptoms or (b) as scored *DSM-III* diagnoses. *DSM-III* diagnoses are developed from a set of operational rules on the level of symptoms needed to meet stringent criteria. The criteria are considered stringent because more than the minimum number of symptoms required to meet *DSM-III* criteria must be present in order for the child to be assigned a diagnosis from the DISC (E. J. Costello, Edelbrock, & Costello, 1985). Diagnoses are generated from computer algorithms of the DISC items, and computer profiles are usually interpreted by trained clinicians. Hence the instrument is capable of presenting symptoms and clinical disorders on the basis of a set of stringent diagnostic rules. Interrater reliability and 2-week test-retest reliability of the symptoms scores are adequate (Edelbrock, Costello, Dulcan, Kalas, & Conover, 1985). The validity of the DISC has been established on the basis of its ability to discriminate between pediatrically and psychiatrically referred youths and its correlation with parent and teacher ratings of total behavior problems on the CBCL and TRF, respectively (E. J. Costello et al., 1985).

Overall, the use of structured interviews that yield specific diagnoses has several potential benefits. First, in a clinical setting such as a psychiatric inpatient unit, psychological and pharmacological treatments are often keyed to a specific diagnosis. Second, Hodges (1990) and others have argued that symptom questionnaires are often unable to differentiate between different disorders within a clinical sample. For example, the CDI failed to differentiate between depressive-disordered adolescents and nondepressive-disordered adolescents in a psychiatric sample (Lipovsky, Finch, & Belter, 1989). It is noteworthy, however, that the diagnoses of the adolescents that were being compared with the CDI results were drawn from diagnostic interviews. Third, structured interviews have shown promise as measures of change due to treatment (e.g., Puig-Antich, Perel, et al., 1979).

Nonetheless, there are a couple of concerns with all diagnostic interviews. First, the use of clinical judgment to make diagnoses based on discrepant information from the parent and youth is often problematic (Hodges & Cools, 1990). For example, Poznanski, Mokros, Grossman, and Freeman (1985) noted that diagnostic decisions based on discrepant data frequently represent more of a "battle of the wills" than a "meeting of the minds" among clinicians. Rigorous criteria for making these decisions are needed to improve the validity of the instruments (Hodges & Cools, 1990). Second, none of the interviews pro-

vides epidemiological data as a basis for norms and clinical cutpoints.

Prevalence and gender ratio of depressive disorders during adolescence. There is now substantial documentation that adolescents who meet *DSM-III-R* criteria for MDD and DY can be reliably identified in community samples (e.g., Fleming & Offord, 1990). Ten studies of MDD in community samples of adolescents reported lifetime prevalence rates ranging from 0 to 31%, with a mean of 11% (Petersen et al., 1992). Prevalence is greater among high-risk groups, most notably adolescents whose parents are depressed (e.g., Weissman, et al., 1987). Point prevalence estimates have been provided by Lewinsohn and his colleagues from a large community sample of adolescents (Lewinsohn, Rohde, Seeley, & Hops, 1991; Rohde, Lewinsohn, & Seeley, 1991). On the basis of K-SADS interviews, 2.9% of a sample of 1,710 adolescents received a current diagnosis of MDD, DY, or comorbid MDD and DY (Lewinsohn et al., 1991). Lifetime prevalence of depressive disorders was 20% in this sample, a finding that is within the range of lifetime prevalence rates in the earlier studies reviewed by Fleming and Offord (1990). Furthermore, longitudinal data have been reported on the course of depressive disorders during adolescence (Garber, Kriss, Koch, & Lindholm, 1988; Kovacs, Feinberg, Crouse-Novak, Paulauskas, & Finkelstein, 1984; Kovacs, Feinberg, Crouse-Novak, Paulauskas, Pollock, & Finkelstein, 1984; Kovacs, Paulauskas, Gatsonis, & Richards, 1988). These findings are typically accepted as evidence that adult criteria are appropriate for use with adolescents.

Depressive disorders and other disorders. The comorbidity of adolescent depressive disorders with other psychiatric diagnoses has been examined in epidemiological studies of nonreferred samples of adolescents in the community. Community samples rather than clinical samples are necessary to determine true rates of comorbidity, because a number of factors cause rates of comorbidity in clinical samples to be disproportionately high (Caron & Rutter, 1991).

Comorbidity appears to be the rule for adolescent depression (for reviews, see Brady & Kendall, 1992; Compas & Hammen, in press). The recent community studies by Lewinsohn and his colleagues described earlier are illustrative in this regard (Lewinsohn et al., 1991; Rohde et al., 1991). The current comorbidity rate for MDD and DY was 20 times greater than that expected by chance, and the lifetime comorbidity rate was three times greater than chance (Lewinsohn et al., 1991). Levels of comorbidity with nonmood disorders were also high—43% of adolescents with a depressive disorder received at least one additional diagnosis, a rate that was 9.5 times greater than chance (Rohde et al., 1991). Current comorbidity was highest for anxiety disorders (18%), substance abuse disorders (14%), and disruptive behavior disorders (8%).

A preliminary report by the Child Psychiatry Work Group of the American Psychiatric Association Task Force on *DSM-IV* provides further comment on the importance of comorbidity. The report indicates that few changes are expected in the diagnostic criteria for MDD or DY in adolescence (Shaffer et al., 1989). However, note that the work group stated,

Symptoms of depression that are of sufficient magnitude to meet RDC/DSM-III criteria occur almost entirely in association with other disorders (comorbidity). . . . Although it could be argued

that the absence of discrete depressive disorders in children is indicative that it is not a "real" disorder, the advisory group believes that family history data, prospective and follow-back longitudinal data, and biological data substantiate the presence of the disorder in children and that the text should reflect this. One of the reasons for the high prevalence of comorbid depression may be that current criteria are too easily met by children. That problem could be addressed by incorporating a measure of impairment among the criteria. Secondary data analyses will be undertaken to examine the impact on comorbidity of varying threshold levels. (Shaffer et al., 1989, p. 834)

Clearly, the comorbidity of child and adolescent depressive disorders with other disorders is a primary concern in the development of the *DSM-IV*. The steps that will be taken to address this issue remain to be seen.

Clinical significance of depressive disorders. Depressive disorders appear in a substantial proportion of adolescents who are referred for clinical services (Petersen et al., 1992). It is difficult to establish prevalence rates for clinical populations, however, because of variations on referral patterns, service availability, and sampling methods. In spite of variation as a function of these factors, estimates from several studies indicate that up to half of adolescents referred for clinical services meet diagnostic criteria for a depressive disorder (e.g., Garber et al., 1988; Kovacs et al., 1984; Weinstein, Noam, Grimes, Stone, & Schwab-Stone, 1990). Longitudinal studies on the course of depression during adolescence reflect a pattern of recurrent episodes of the disorder during adolescence and into adulthood. For example, Kovacs et al. (1984) and Harrington et al. (1990) found that child or adolescent onset of depressive disorders predicts a worse course of disorder and an increased probability of a depressive diagnosis in adulthood. Thus, data indicate that depressive disorders are a substantial clinical concern during adolescence, in terms of their implications for both current functioning and future adjustment.

Unique features of depressive disorders during adolescence. Considerable evidence indicates that the rate of depressive disorders increases in adolescence compared with childhood. An increased rate of depressive disorders has been found for both community samples of adolescents (e.g., Kashani et al., 1987; Kashani, Rosenberg, & Reid, 1989; Rutter, 1986) and samples of clinically referred adolescents (e.g., Angold & Rutter, 1992). Moreover, it appears that adolescents and children diagnosed for major depression may differ in the symptoms they manifest. For example, in a comparison of 95 children and 92 adolescents who met diagnostic criteria for MDD, Ryan et al. (1987) found that children were rated higher on somatic complaints, psychomotor agitation, and symptoms of phobic and separation anxiety. In contrast, adolescents were rated higher on anhedonia, hypersomnia, weight loss and gain, hopelessness, and lethality of suicide attempts. The two groups did not differ on a number of symptoms, including depressed mood, guilt, fatigue, and negative self-image. Similarly, Angold, Weissman, John, Wickramaratne, and Prusoff (1991) found higher levels of vegetative symptoms (weight loss or gain, insomnia, or hypersomnia) reported by adolescent girls than by preadolescent girls (no differences were found for boys). Thus, both the rate and characteristics of depressive disorders may change at adolescence, more so for girls than for boys.

Summary. Diagnostic criteria for MDD and DY have been

used with adolescents, and a small but substantial portion of the adolescent population has been found to meet criteria for these disorders. Structured diagnostic interviews for adolescents and parents are useful tools for assessing depressive disorders in this age group. Furthermore, adolescent depression represents a significant clinical concern in terms of the high rate of depressive disorders among adolescents who are referred for treatment, the high rate of comorbidity with other disorders, and the long-term course of depressive disorders that first develop during adolescence.

Integration of Depressed Mood, Syndromes, and Disorders

Research concerned with adolescent depression has been guided by three different definitions of depression, based on three different taxonomic frameworks, and operationalized with different types of measures. Given this rather disparate state of affairs, can research on depressed mood, depressive syndromes, and diagnostic categories of MDD and DY be integrated? At first glance, these approaches may seem at odds with one another, because depression is conceptualized and operationalized at a different level within each approach. However, several common themes characterize these three levels of conceptualization. In this section, we first consider the overlap in the core features of depressed mood, depressive syndromes, and diagnoses of depressive disorders. Second, we describe empirical studies of the correspondence between the syndromal and categorical diagnostic approaches. Third, we propose a model for the integration of these approaches as three levels of depressive phenomena within a sequential and hierarchical model.

Comparison of Features of Depressed Mood, Syndromes, and Disorders

As a first step in comparing the core features of these three approaches to adolescent depression, we have summarized the items from one measure of depressed mood, the Emotional Tone scale (Petersen et al., 1984); items from the Anxious/Depressed syndrome derived from the CBCL, YSR, and TRF (Achenbach, 1991a); and the symptoms of MDD from *DSM-III-R* in Table 2. Comparison of these items indicates moderate overlap among the central features of these approaches. Only two symptoms, sad or depressed mood and low self-esteem or feelings of worthlessness, are common to all three approaches. However, six other symptoms appear in two of the three approaches.

The differences among the three approaches center on the inclusion or exclusion of anxiety and somatic symptoms. The Emotional Tone Scale and the Anxious/Depressed syndrome both share symptoms of nervousness and anxiety as central features, whereas anxious mood is absent from the *DSM-III-R* criteria for MDD. In contrast, whereas four of the criteria for MDD involve somatic or vegetative problems, including sleep and appetite problems, psychomotor problems, and fatigue, somatic problems do not appear in the Emotional Tone Scale and were not included in the initial item pool from which the Emotional Tone Scale was derived. Somatic problems also did not

Table 2

Comparison of Items From the Emotional Tone Scale; the Core Syndrome of Anxious/Depressed on the Child Behavior Checklist, Youth Self-Report, and Teacher Report Form; and DSM-III-R Criteria for Major Depressive Disorder

Emotional Tone Scale	Anxious/Depressed syndrome	DSM-III-R criteria major depressive disorder
*I frequently feel sad	*Unhappy, sad, depressed	*Depressed or irritable mood
*I feel I am not as good as most people	*Feels worthless	*Feelings of worthlessness
*I feel so very lonely	*Lonely	—
*Feelings are easily hurt	*Hurt when criticized (Teacher Report Form only)	—
—	*Feels too guilty	*Feelings of guilt
I am not the person I would like to be	—	—
I feel relaxed (—)	—	—
I feel emotionally upset	—	—
I enjoy life (—)	—	—
*Thinks about suicide	—	*Recurrent thoughts about death, suicidal ideation
—	Cries a lot	—
—	Fears own impulses	—
—	Needs to be perfect	—
—	Feels unloved	—
—	Feels persecuted	—
—	Fearful, anxious	—
—	Self-conscious	—
—	Suspicious	—
—	Worries	—
—	—	Diminished interest or pleasure
—	—	Weight loss or gain
—	—	Insomnia or hypersomnia
—	—	Psychomotor retardation or agitation
—	—	Fatigue or loss of energy
—	—	Diminished ability to think or concentrate

Note. Asterisk indicates that item is included in at least two of the measures. Dash indicates the absence of a corresponding item. *DSM-III-R* = revised third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1987).

load on the Anxious/Depressed syndrome, although they are included as items on the CBCL, YSR, and TRF. Somatic difficulties loaded on other syndromes in cross-informant analyses of the CBCL, YSR, and TRF. For example, “overtired” loaded on the Somatic Complaints syndrome, “underactive” loaded on the Withdrawn syndrome, “can’t concentrate” loaded on the Attention Problems syndrome, and several other symptoms from *DSM-III-R* did not load on any of the core syndromes (“doesn’t eat well,” “overeating,” “sleeps less than others,” and “sleeps more than others”).

From the limited overlap in depressive symptoms in these

various approaches, one would expect little correspondence in the identification of depressive problems when these approaches are applied to individual cases. We now turn to empirical studies of the correspondence among some of these approaches.

Empirical Studies of the Correspondence Among Depressed Mood, Syndromes, and Disorders

Researchers have examined the correspondence among depressed mood, depressive syndromes, and categorical diagnoses of adolescent depression by using diagnostic interviews to assign *DSM-III-R* diagnoses and collecting depressed-mood or syndromal data on the same sample of individuals. This method has been applied in two studies of community samples using inventories of depressive symptoms (including depressed mood) and diagnostic interviews (Garrison, Addy, Jackson, McKeown, & Waller, 1991; Roberts, Lewinsohn, & Seeley, 1991) and in three studies with clinical samples of adolescents in which depressive syndromes and disorders were examined (Edelbrock & Costello, 1988a; Rey & Morris-Yates, 1991, 1992; Weinstein et al., 1990). Each study provides some evidence for the convergence of *DSM-III*-based diagnoses with depressed mood and depressive syndromes on the basis of data obtained from parents or adolescents.

Both Roberts et al. (1991) and Garrison et al. (1991) examined the relation between self-report inventories of depressive symptoms and diagnoses of depressive disorders based on clinical interviews in large community samples of adolescents. Garrison et al. examined the CES-D and the K-SADS; Roberts et al. examined both the CES-D and the BDI along with the K-SADS. Both groups of researchers found that these scales were useful screening instruments for diagnoses of MDD and DY but that both the BDI and the CES-D produced substantial rates of false-positive diagnoses. That is, most adolescents who received a diagnosis of MDD or DY also reported elevated scores on the CES-D or BDI, but large numbers of individuals with elevated scores on the symptom measures were not judged to be clinically depressed on the basis of interview data. It is important to note that these data do not necessarily reflect the degree of correspondence between diagnostic measures and measures of depressed mood per se, because the BDI and CES-D include items reflecting many symptoms other than depressed mood.

Two studies including diagnostic interviews with parents and parent reports on a measure of depressive syndromes (the CBCL) have found considerable correspondence between the two approaches. Edelbrock and Costello (1988a), in a study of clinically referred children and adolescents (ages 6–16 years) found that scores on the Depressed Withdrawal scale of the CBCL for girls ages 12–16 correlated significantly with diagnoses of MDD and DY and that scores on the Uncommunicative scale of the CBCL for boys ages 6–16 correlated with diagnoses of overanxious disorder, MDD, and DY. The broad-band Internalizing Scale and Externalizing Scale were also correlated with diagnoses of MDD ($r = .31, p < .001$, and $r = .14, p < .01$, respectively) and DY ($r = .43$, and $r = .22$, both $ps < .001$, respectively). They also found that scores on the Depression scale for children ages 6–11 were linearly related to the probab-

ity of receiving a diagnosis of either MDD or DY. This finding suggests that there was not a specific threshold score of symptoms on the Depression scale above which children received a depressive diagnosis and below which they did not. It is important to determine whether a similar pattern is found for adolescents.

In a study of 667 clinically referred Australian adolescents, Rey and Morris-Yates (1991) generated *DSM-III* diagnoses on the basis of clinical interviews and calculated scores on a Depression scale of the CBCL identified by Nurcombe et al. (1989). To examine the correspondence between diagnoses and CBCL scale scores, these authors used receiver operating characteristic (ROC) techniques developed in signal detection theory as an overall index of diagnostic accuracy (in terms of sensitivity and specificity) in analyses of continuous scores. Individuals with a diagnosis of MDD ($n = 23$) were compared in separate analyses with individuals with all other diagnoses ($n = 634$), individuals with a diagnosis of DY ($n = 62$), and individuals with a diagnosis of separation anxiety ($n = 57$). Cases with a diagnosis of MDD scored significantly higher on the CBCL Depression scale than each of the other diagnostic groups. Furthermore, ROC analyses indicated that the CBCL Depression scale functioned at a level better than chance in discriminating the MDD group from each of the other three diagnostic groups. Rates of sensitivity (83%) and specificity (55%) were better for the distinguishing of MDD from all other diagnoses than for the distinguishing of MDD from DY or separation anxiety disorder. In additional analyses with this sample, the sensitivity and specificity of six depression scales extracted from the CBCL and the YSR were compared (Rey & Morris-Yates, 1992). All of the scales performed at a level better than chance in ROC analyses discriminating adolescents with an MDD diagnosis from those without MDD.

Using adolescents' self-reports on the YSR and the DISC-C, Weinstein et al. (1990) also found evidence for a significant positive association between *DSM-III* diagnoses of affective disorders and scores on the YSR Depressed scale. However, adolescents who were diagnosed with MDD and/or DY scored higher than those without the diagnosis of an affective disorder on all narrow-band scales on the YSR (Depressed, Unpopular, Somatic Complaints, Aggressive, Delinquent, and Thought Disorder) and on the broader Internalizing and Externalizing scales.

These studies indicate that diagnoses of MDD and DY derived from clinical interviews are related to both scores on self-report inventories of depressive symptoms (including depressed mood) and depressive syndrome scores from multivariate checklists. However, diagnostic interviews identify a subgroup of more severely symptomatic adolescents from a larger group of adolescents who report elevated levels of depressed mood and other symptoms. Furthermore, adolescents who receive depressive diagnoses are also likely to differ from nondepressed adolescents on scales reflecting problems other than depression (e.g., aggression and delinquency). This may indicate that parents' and adolescents' responses on the checklists represent a general negative response set and are therefore not valid indicators of depressive disorders. On the other hand, these findings may indicate that a child or adolescent who is diagnosed as having MDD or DY is likely to display many other clinically

significant problems that are not captured by the criteria for these diagnoses. The high rate of comorbidity of depressive diagnoses with other disorders suggests that the covariance found among depressive and other syndromes is real. This has clear implications for the assessment procedures that are used in research, which we discuss later.

Adolescent Depressive Phenomena: A Hierarchical and Sequential Model

Depressed mood, depressive syndromes, and depressive disorders reflect three different levels of depression during adolescence. We hypothesize that they are related in a hierarchical and sequential manner, as represented in Figure 1. On the basis of point prevalence data, 15%–40% of adolescents have recently experienced significant depressed mood. Estimates of the prevalence of depressed mood vary depending on how depressed mood is measured, the criterion used to define significant mood disturbance on scales such as the CDI or the KDS, the time frame during which symptoms are assessed, and the gender of the adolescent. With regard to depressive syndromes, data obtained on the CBCL, YSR, and TRF indicate a point prevalence rate of 5%–6% of adolescents in the clinical range on the Anxious/Depressed syndrome during the prior 6 months. Thus, a smaller group of adolescents are identified as elevated on a depressive syndrome than on depressed mood alone. As noted earlier, however, the 5%–6% estimates for depressive syndrome scores are empirically derived in that they were selected to achieve the maximum sensitivity and specificity in distin-

guishing between clinically referred and nonreferred adolescents on these scales. Finally, approximately 1%–3% of adolescents are likely to receive a current diagnosis of MDD or DY based on diagnostic interviews concerning symptoms at any given point in time.

The point prevalence data reflect more than simply the use of increasingly more stringent diagnostic criteria at each successive level. That is, these levels are not based on progressively higher cutoffs regarding the same symptoms (e.g., progressively higher levels of depressed mood). Rather, the three levels are represented by different constellations of symptoms. The depressive syndrome includes symptoms of anxiety that are not part of purely depressed or sad mood. The depressive disorder includes somatic and vegetative symptoms that are not included in the mood or syndrome, but it does not explicitly include symptoms of anxiety (although symptoms of anxiety are likely to accompany a diagnosis of depression).

The research summarized in the preceding section in which measures have been obtained on more than one of these levels of depression indicates that virtually all adolescents who receive a diagnosis of a depressive disorder are also in the clinical range for a depressive syndrome, whereas a sizable group who are in the clinical range for the syndrome do not meet criteria for a diagnosis (e.g., Rey & Morris-Yates, 1991). This suggests that adolescents with depressive disorders represent a subgroup of those who are in the clinical range on measures of depressive syndromes. Similarly, virtually all adolescents who meet diagnostic criteria for a disorder and the majority of those in the clinical range on syndromal measures will have recently experi-

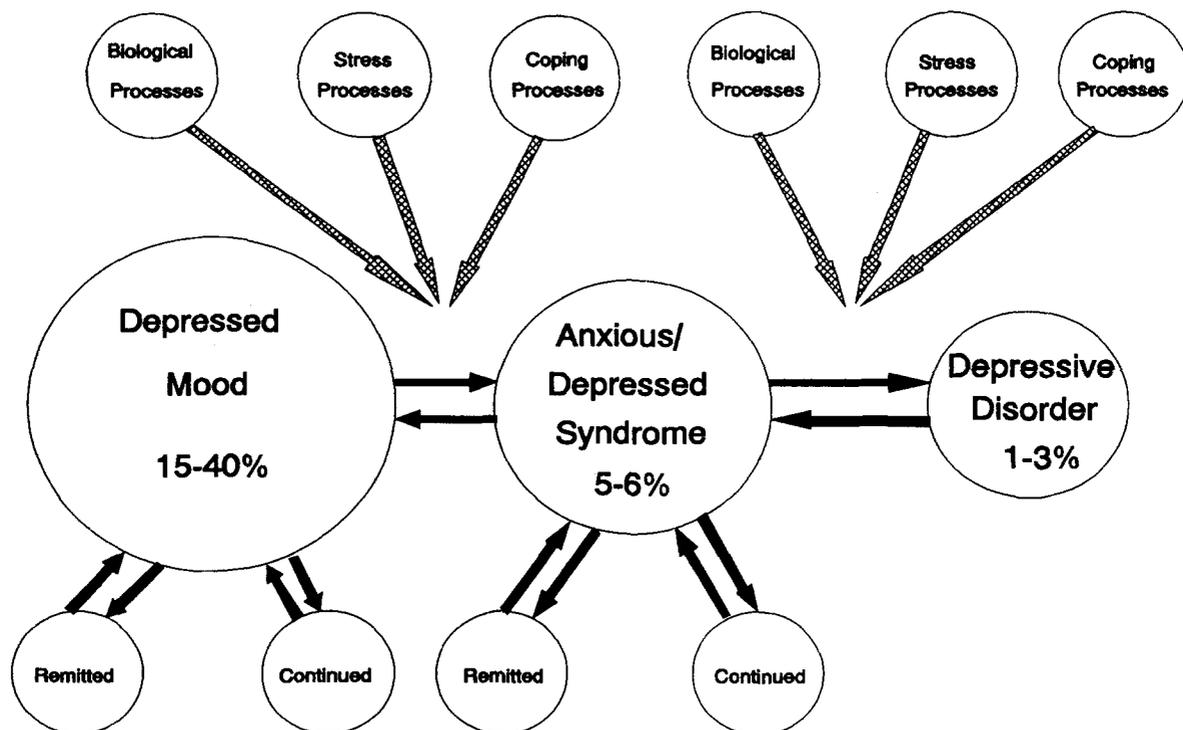


Figure 1. Sequential and hierarchical model of depressive mood, syndromes, and disorders during adolescence. (Point prevalence estimates are indicated for each.)

enced significant depressed mood, whereas a large portion of those with depressed mood will not meet the criteria for either a depressive syndrome or a depressive disorder. Thus, the syndrome and disorder groups are subgroups of the larger population of adolescents who experience depressed mood. The three levels of depression are hierarchical in that the depressive syndrome is a subset of depressed mood, and depressive disorders represent a subgroup of each of the first two levels together.

A core of negative affect is common to all three levels of depression. It appears that depressed mood is closely related to anxious mood in adolescents when both types of emotions are measured (Finch et al., 1989). Achenbach's (1991b) recent principal components analyses of the CBCL, YSR, and TRF also reflect the central feature of negative affectivity in the strong intercorrelation of anxious and depressed emotions that loaded on the Anxious/Depressed syndrome. Although anxious mood is not listed as a criterion for MDD or DY, the presence of depressed mood in both of these disorders indicates that there is a high likelihood that adolescents who receive either of these diagnoses are also experiencing substantial levels of anxiety as well as sad and depressed mood. This is corroborated by the high rates of comorbidity of depression and anxiety disorders in adolescents (Kovacs, 1990). We hypothesize that the overlap among scores on scales of depressed mood, depression-related syndromes from multivariate checklists, and *DSM-III* diagnoses of MDD and DY found in several studies (e.g., Edelbrock & Costello, 1988a; Garrison et al., 1991) is the result of the shared features of negative affectivity. Depressive disorders are distinct from the other two levels of depressive phenomena in that they involve dysregulation of somatic functioning as well. Although researchers and practitioners must be clear in their use of these terms, all three levels appear to have relevance for research and intervention in adolescent depression.

We propose that these three levels of depressive phenomena further reflect the progression of depressive phenomena in adolescents. Many adolescents, perhaps as many as 40% of youth at any given time (e.g., Kandel & Davies, 1982), experience transient elevations of depressed mood that result from a variety of factors including daily stress, normal hormonal fluctuations, and interpersonal interactions. For many, this depressed mood simply remits, but for others the depressed mood continues for short periods in the absence of other depressive symptoms. For a subgroup of those adolescents with elevated depressed mood, approximately 5%–6% of the population in any given time period (e.g., Achenbach, 1991c, 1991d, 1991e), depressed mood is exacerbated and develops into a depressive syndrome of significant magnitude. This syndrome includes symptoms other than just sad or unhappy mood, most notably substantial levels of anxiety. We hypothesize, based on research summarized in the following section, that the transition from depressed mood to a depressive syndrome is mediated by dysregulation or dysfunction in biological, stress, and/or coping processes. Of the 5%–6% of adolescents who experience depression at the syndromal level, a smaller group, approximately 1%–3% of the population, develop a depressive disorder (e.g., Rohde et al., 1991). The development of MDD or DY involves, in addition to pervasive depressed mood, dysregulation in sleep, appetite, and/or concentration. The hypothesis that the Anxious/Depressed syndrome precedes the onset of a depressive disorder is consistent with

data indicating that anxiety disorders more often precede than follow depression during childhood and adolescence (e.g., Kovacs, Gatsonis, Paulauskas, & Richards, 1989). Similar to the transition from depressed mood to depressive syndrome, we hypothesize that the emergence of a depressive disorder is also moderated by dysregulation or dysfunction in biological, stress, and/or coping processes. Thus, these three levels of depressive phenomena are sequential in that elevations in depressed mood are likely to precede significant elevations of depressive syndromes, and a significant level of a depressive syndrome is likely to precede a depressive disorder.

Further research is needed to determine whether this sequential and hierarchical model is unique to adolescence or is characteristic of depressive phenomena throughout the life span. For example, there is some evidence to suggest that levels of depressive phenomena are continuous during childhood and adolescence but may be more discontinuous in adulthood.³ Edelbrock and Costello (1988a) found that depressive syndromes and disorders were linearly related in children, suggesting that these levels of depression were best represented by an underlying continuum. That is, the probability of receiving a diagnosis of depression increased continuously as depressive syndrome scores increased, indicating that there was not a specific threshold above which depressive disorders were more likely. In contrast, most conceptualizations of adult depression reflect the assumption that depressive symptoms and depressive disorders are qualitatively distinct and are not linearly related (e.g., Coyne & Downey, 1991; Gotlib & Hammen, 1992). For example, adult depressive disorders may be distinguished from an elevated level of depressed mood by a prior history of depression, a different set of correlates or risk factors, disruption of functioning, and impairment in adult social roles (e.g., Lewinsohn, Hoberman, & Rosenbaum, 1988). Further research is needed to determine whether the continuity of depressive phenomena changes with development.

Moderators of Adolescent Depressed Mood, Syndrome, and Disorder

Regardless of whether the depressed mood, syndromes, and disorders are related in a continuous or discontinuous manner, it is important to consider the factors that may account for the relations among these three levels. Research on the role of biological, stress, and coping processes as moderators of the levels of depressive phenomena is in its early stages but has provided some strong initial evidence in support of each of these factors.

Biological moderators. Current evidence points to the central role of neuroendocrine functioning in depression (Brooks-Gunn, Petersen, & Compas, in press; Shelton, Hollon, Purdon, & Loosen, 1991). The vegetative symptoms of depression (e.g., sleep and appetite disturbances), as well as mood disturbances, are believed to be associated with dysregulation of the limbic system. The limbic system, involved in the regulation of drive, instinct, and emotions, has been studied through two key pathways: the hypothalamic–pituitary–adrenal (HPA) axis and the

³ We are grateful to William Beardslee for this suggestion.

hypothalamic-pituitary-thyroid (HPT) axis. Attempts to identify biological correlates of depressive disorders through the measurement of neuroendocrine functioning on these two axes have been made with adults and adolescents. In addition, research has also implicated biological rhythms, such as sleep.

Much of the adult and adolescent research on biological correlates of depression has focused on the HPA axis. Functioning of this axis can be monitored by measurement of cortisol levels released in response to a known suppressor of cortisol, dexamethasone. Cortisol, a substance released by the adrenal glands in response to hormones released by the hypothalamus and pituitary, is described as preparing the organs for physical action. With the dexamethasone suppression test (DST), abnormally high levels of cortisol in the presence of dexamethasone are hypothesized to be an indication of psychological disturbance (e.g., affective disorders).

In spite of the potential significance of HPA functions in depression, measurement of HPA processes has proven difficult. Results from numerous DST studies with adults diagnosed with depressive disorders and other nonaffective disorders have been inconclusive (see reviews by Arana, Baldessarini, & Ornstein, 1985; Coryell, 1990). Despite initial excitement about the DST as a potential assessment tool for the identification of depressive disorders, the test has not shown adequate sensitivity or specificity for depression (Arana et al., 1985). For example, responses on the DST were found to correlate with a specific set of behaviors (e.g., insomnia, weight loss, loss of sexual interest, and agitation) but not with depressed mood in a sample of 95 adult inpatients who met *DSM-III* criteria for MDD (K. B. Miller & Nelson, 1987).

Sensitivity and specificity of responses on the DST have been even lower in adolescents with diagnoses of MDD (Hughes & Preskorn, 1989; Kutcher et al., 1991). For example, in one study of adolescents, only 40% of subjects with MDD and 69% of normal subjects were identified correctly (Kutcher et al., 1991). Researchers have concluded that the DST has not been shown to be a reliable or valid diagnostic tool for adolescents. The contrast between depressive adolescents' cortisol responses on the DST and depressive adults' responses may be due to possible maturational differences of the neuroendocrine systems. Additional possible explanations of age differences on the DST are that (a) there are possible age differences in the effects of chronic stress responses on cortisol patterns in adolescents, (b) adult depression may have had longer to affect the central nervous system, and (c) a history of adult antidepressive medication may affect adult neuroendocrine responsivity (Kutcher et al., 1991).

The other neuroendocrine pathway studied in relation to depression, the HPT axis, involves measurement of levels of thyrotropin-releasing hormone (TRH). TRH, believed to be associated with increased sense of relaxation, activity, and positive mood (Garcia et al., 1991), stimulates the production of thyrotropin-stimulating hormone (TSH) in the pituitary gland. In depressed adults, administration of TRH causes "blunted or decreased" (Garcia et al., 1991) production and release of TSH. Comparisons of depressed adolescents with age- and sex-matched controls have failed to yield consistent significant differences in TSH levels in response to TRH (Garcia et al., 1991; Kutcher et al., 1991).

Neuroendocrine system functioning in depressed adolescents has been further examined by measuring growth hormone. Whereas the evidence for hypersecretion of growth hormone in depressed adults remains conflicted, Kutcher et al. (1991) found nocturnal secretions of growth hormone to be significantly higher in clinical samples of adolescents who met *DSM-III* criteria for MDD. The measurement of nocturnal growth hormone showed 99% sensitivity and 93% specificity with respect to the identification of depressed adolescents. Nonetheless, Kutcher et al. suggested that more study is required of 24-hr variations in growth hormone levels in depressed adolescents because of the complexity of growth hormone secretion. More recently, Dahl et al. (1992) reported that 24-hr growth hormone measures failed to distinguish adolescents with MDD from normal controls. Significant blunting of sleep growth hormone was noted only in a subgroup of adolescents diagnosed with MDD who also reported significant suicidality.

Finally, researchers have studied disruptions of biological rhythms by monitoring sleep patterns. Research on depressive adults has indicated that there are sleep continuity disturbances, reduced delta (slow-wave) sleep, high REM density, and shortened REM latency (onset of REM after sleep begins; Emslie, Rush, Weinberg, Rintelmann, & Roffwarg, 1990). Whereas Emslie et al. (1990) cited evidence of some sleep disruptions among depressed adolescents (e.g., shortened REM latency, lower REM density, and sleep continuity problems), they concluded that the findings are still too conflicting to use sleep disturbance as an indicator of adolescent depression.

Is there evidence for biological processes that are unique to adolescent depression? The data on this issue are mixed. Indirect evidence for unique biological processes comes from two sources. First, research has failed to demonstrate that antidepressant medications are more effective than placebo in treating depression during adolescence (Jensen, Prien, & Ryan, in press). Because of the limited amount of research with adolescent populations, it is premature to conclude that pharmacological treatments for depression are ineffective with this age group. Researchers have speculated, however, that the initial negative findings may be the result of developmental differences in the underlying biology of adolescent depression (Jensen et al., in press). Second, research with nonhuman primates has identified behavioral and biological characteristics of depressive reactions that are distinct to adolescents as compared with infants, juveniles, and adults (Suomi, 1991). Specifically, a subgroup of adolescent rhesus monkeys responded to stress with elevated levels of the serotonin metabolite 5-hydroxyindoleacetic acid (Higley, Suomi, & Linnoila, 1990). This response was unique to adolescence and more pronounced among females than males (Suomi, 1991). In contrast, the overall evidence from human research for distinct biological dysregulation involving cortisol, growth hormone, and sleep mechanisms in adolescent depression remains unclear (Dahl et al., 1992).

In summary, neuroendocrine dysfunction and disruption in biological rhythms may be biological moderators of depressive syndromes and disorders in adolescence. Adolescents who manifest depressive syndromes or disorders may be vulnerable to biological dysregulation. Once initial levels of depressed af-

fect are experienced, individuals with such biological vulnerability may be predisposed to develop more pervasive syndromes or disorders. However, measurement of these biological processes in adolescence has proved problematic. The evidence to date does not support the use of the DST as a diagnostic measure with adolescents. Differences in growth hormone levels and sleep patterns show some promise for distinguishing depressed adolescents from their peers, although these effects may be limited to a subgroup of more severely impaired youth. It is unclear whether these biological parameters also distinguish between depressed adolescents and other psychiatric groups (e.g., between depressed and conduct-disordered adolescents).

Stress processes. A sizable body of research has established an association between stress and depressive phenomena in adolescence (for a review, see Compas, Grant, & Ey, in press). This research has followed two distinct methods, one relying on the investigation of single, typically traumatic events and the other investigating the cumulative effects of multiple major and minor stressful events.

Depressed mood, syndromes, and disorders have been examined in association with a variety of discrete events, including natural disasters; human-made disasters; childhood illness and hospitalization; parental illness or hospitalization; and parental victimization, death, or injury. These studies have typically used cross-sectional designs to examine self-reports and parental reports of a variety of symptoms, including depressed mood, in children and adolescents near the time of their exposure to a traumatic event. Some support has been found for an association between these types of discrete events and all three levels of depressive phenomena (Compas, Grant, & Ey, in press).

More than 40 recent studies have established that there is a cross-sectional association between stressful events in adolescence (or childhood) and depressed mood, depressive syndromes, and depressive disorders (Compas, Grant, & Ey, in press). This relation has been found when stress has been measured as the accumulation of major life events (e.g., Cohen, Burt, & Bjork, 1987) as well as daily events or hassles (e.g., Compas, Howell, Phares, Williams, & Ledoux, 1989; Kanner & Feldman, 1991; Rowlison & Felner, 1988). These correlations have ranged from modest to moderate in magnitude, with correlations for major life events typically lower than those for minor events or hassles.

In prospective longitudinal studies, an association has been found between stress and depressive phenomena at follow-up assessment, even after controlling for initial depression. In other words, concurrent stress predicted an increase in depressive symptoms, syndromes, and disorders over the time between the two data collections (e.g., Allgood-Merten, Lewinsohn, & Hops, 1990; Cohen et al., 1987; Compas, Howell, Phares, Williams, & Giunta, 1989; Hammen, Burge, & Adrian, 1991; Stanger, McConaughy, & Achenbach, 1992). Thus, recent stressful events are associated with observable increases in depressive phenomena over and above the initial levels of depression reported by children and adolescents.

Support has been more mixed for a longitudinal relation in which initial stress is used to predict depression at follow-up after initial levels of depression are controlled. Several groups of researchers have examined this relation and failed to find a

significant association between initial stress and subsequent depressed mood once initial depressed mood was controlled (Cohen et al., 1987; Glyshaw, Cohen, & Towbes, 1989; Roosa, Beals, Sandler, & Pillow, 1990). In two studies in which depressive syndromes were examined as dependent variables, a significant longitudinal relation was found between initial stress and subsequent depressive syndrome scores after initial depression was controlled for (Compas, Howell, Phares, Williams, & Giunta, 1989; Stanger et al., 1992). Similarly, Hammen (1988; Hammen et al., 1991) found that initial stress predicted subsequent depressive diagnoses.

Continued exposure to chronic stress or increases in psychosocial stress appear to contribute to prolonging depressed mood, syndromes, and disorders. Furthermore, stress processes may exacerbate depressive phenomena such that levels of dysfunction increase and become more pervasive (e.g., Compas, Howell, Phares, Williams, & Giunta, 1989; Hammen et al., 1991; Stanger et al., 1992). Exposure to chronic stress may be especially high for adolescents raised in a family in which a parent is depressed, because stress processes in families of depressed parents have been found to play a central role in the increased risk for depression in offspring of depressed parents (e.g., Hammen et al., 1991).

Individual differences in exposure to and appraisals of certain types of stress may also contribute to individual differences in vulnerability to depressive phenomena. Specifically, gender differences with respect to interpersonal stress have been hypothesized to contribute to the gender differences in depression that emerge during adolescence. More adolescent girls than boys report that they experience interpersonal stressful events, appraise these events as negative, and may be prone to respond to interpersonal stress with depressive symptoms (e.g., Aseltine, Gore, & Colton, 1992; Petersen, Kennedy, & Sullivan, 1991). Furthermore, cognitive appraisals of the stressfulness of events (e.g., Wagner & Compas, 1990) and dysfunctional attributions about the causes of events (e.g., Quiggle, Garber, Panak, & Dodge, 1992) may contribute to individual differences in depressive outcomes.

Do stress processes change in either quantity or quality at adolescence? Developmental differences in stress during childhood, adolescence, and adulthood have received relatively little attention. However, the limited evidence that is available does suggest that adolescence involves exposure to unique stressors and that the nature of stress may change during adolescence. For example, Petersen, Sarigiani, and Kennedy (1991) found that the synchrony of the onset of puberty, school changes, and family changes during early adolescence was predictive of changes in depressed affect from the 6th to the 12th grade. Wagner and Compas (1990) found differences in the numbers of stressful events and in the degree to which events were perceived as stressful from early to middle to late adolescence. Moreover, psychological symptoms (including depressive symptoms) were related to different subtypes of stress during these three periods of adolescence (Wagner & Compas, 1990). Finally, animal studies indicate that there are patterns of changes and stressors that are normative to adolescence for different species (Suomi, 1991).

Coping processes. Developmental studies of coping during childhood and adolescence have established that the use of

emotion-focused coping (i.e., efforts to palliate or regulate emotions in response to stress) increases significantly from childhood to adolescence (Compas, Banez, Malcarne, & Worsham, 1991). However, these studies have not delineated the specific types of emotion-focused coping that increase during the adolescent years. Furthermore, research on the relation between different types of emotion-focused coping by adolescents and the development of depressive syndromes and disorders is in its early stages. Rutter (1991) noted that older children's and adolescents' understanding of their emotions and of the possibility for control and regulation of emotions increases. He further commented, however, that this increased understanding of the potential for emotional regulation may carry a price in that adolescents may experience an increased sense of responsibility for managing their emotions that may complicate the coping process. Thus, developmental changes in the use of emotion-focused coping strategies may not be inherently beneficial.

Research on gender differences in coping and depression in adults may possibly shed some light on such differences in adolescents. Recent research by Nolen-Hoeksema and her colleagues suggests that coping processes may play a critical role in the maintenance and perhaps exacerbation of depressed mood. Specifically, Nolen-Hoeksema (1987, 1991) has proposed that women are more prone than men to depression because of their "response set" to depressive moods. In response to depressive emotions, women engage in thoughts and behaviors that focus attention on the depressive symptoms as well as on the cause of the mood and its implication, a process that Nolen-Hoeksema has labeled *ruminative*. Rumination allows a depressive mood to affect thinking and can activate negative memories that increase the current depressive mood. This focus on negative emotional states can also increase negative self-evaluation and depressing explanations for failures and increase helplessness on future tasks. Furthermore, rumination interferes with concentration and initiation of instrumental behaviors that might increase chances for controlling the environment and getting positive reinforcement. Men, on the other hand, may be protected from depression by their prototypic response set of purposely turning their attention away from the depressive mood to more pleasant or neutral activities. This shift in focus and initiation of instrumental behaviors may relieve the negative mood as well as increase chances for obtaining positive reinforcement and a sense of control over the environment. Evidence has supported this theory in that ruminative tasks maintained a depressed mood whereas distracting tasks relieved a depressed mood, and individuals with more ruminative coping styles experienced longer periods of depressed mood (e.g., Morrow & Nolen-Hoeksema, 1990).

Ruminative coping may be a third mechanism that contributes to the development of depressive syndromes and disorders from initial experiences of depressed mood (Compas, Orosan, & Grant, in press; Petersen, Sarigiani, & Kennedy, 1991). Responding to depressed affect with ruminative coping strategies may not only prolong depressed mood, but also interfere with effective problem solving, decrease concentration, and disrupt daily functioning. Gender differences in ruminative coping may also contribute to the emergence of gender differences in depression during adolescence (Compas, Orosan, & Grant, in press). Moreover, ruminative coping processes may be represen-

tative of other dysfunctional cognitive styles in coping with stress that contribute to depressive outcomes in adolescence (e.g., Hammen, 1990).

Summary of Moderating Processes

Biological, social, and psychological processes are all candidates as important moderators of the relations among depressive mood, syndromes, and disorders. These processes may be interrelated in adolescence, and, furthermore, all three processes may undergo important changes during adolescence.⁴ For example, the HPA axis is involved in stress responses and may be linked to both depressive and anxious symptoms associated with stress (e.g., Butler & Nemeroff, 1990). Thus, biological and stress processes may be related to increases in symptoms of the Anxious/Depressed syndrome during adolescence. Moreover, changes in all three processes may make adolescence a time of increased vulnerability to all three levels of depression. For example, Petersen, Sarigiani, and Kennedy (1991) found that the interaction of a biological risk factor (early pubertal timing) and a social stressor (transition to middle school) predicted higher levels of depressed mood in adolescent girls. It is likely that all three of these processes are involved and that interactions among them play a cumulative effect in the progression from one level of depression to the next.

Implications for Assessment

Given the possible relations, as well as differences, among levels of depressive phenomena, how can researchers select a method for assessing adolescent depression from among the myriad of possibilities? More specifically, how is one to decide among measures of depressed mood, depressive syndromes, or depressive disorders? Future research that uses measures reflecting all three approaches is important in furthering our understanding of the relations among depressed mood, syndromes, and disorders.

Measures should be selected to reflect a specific taxonomic framework. That is, researchers must readily acknowledge the taxonomic paradigm that is guiding their work and select measures that are commensurate with that paradigm. It is evident, for example, that self-report measures such as the Emotional Tone Scale or the Negative Affect subscale of the CDI are adequate measures of negative affect but do not provide information on the severity and duration of the full complement of depressive symptoms needed to make a diagnosis of depressive disorders. Furthermore, these measures may be especially useful in studies of nonclinical samples in which rates of depressive disorders are likely to be very low, although high levels of depressed mood are not highly specific to depressive disorders.

The use of a "multiple gating" procedure in research, as suggested by several investigators (e.g., Roberts, Lewinsohn, & Seeley, 1991), offers an integrative approach to the assessment of multiple levels of depression. However, because of the need to attend to the high rates of covariation between depressive symptoms and other symptoms and the comorbidity of depressive syndromes and disorders with other disorders, we suggest a

⁴ We are grateful to an anonymous reviewer for this suggestion.

set of procedures that are slightly different than those outlined by others. As a first step, broadband checklists should be used to assess a wide range of symptoms and problems, including but not limited to depressive symptoms. These checklists should include the perspectives of adolescents, parents, and teachers as the primary interested parties in identifying adolescent depression. The YSR, CBCL, and TRF (Achenbach, 1991b, 1991c, 1991d, and 1991e) offer the most integrated set of measures to accomplish this goal. Along with these broadband measures, a more focused measure of depressed mood (e.g., the Emotional Tone Scale; Petersen et al., 1984) should be used to obtain a more detailed assessment of depressed mood. Individuals who exceed the clinical cutoff on the mood scales or the Anxious/Depressed Syndrome on one or more of the checklists should be further assessed in a diagnostic interview to determine the presence of diagnosable depressive disorders. A long-term goal would be the identification of distinct subgroups of individuals who warrant different intervention procedures.

Recommendations for Future Research

The investigation of depressed mood, depressive syndromes, and depressive disorders during adolescence is a burgeoning area of research (Petersen et al., 1992; Petersen et al., 1993). All three of these conceptualizations of depression are legitimate foci for research concerned with developmental and clinical processes during adolescence. Important progress has been made in the conceptualization and measurement of these three levels of depressive phenomena as a part of adolescent development and psychopathology. Five directions for future research seem paramount at this time.

First, further research is needed to develop a clean index of depressed mood or affect. The use of scales such as the CDI as measures of depressed mood is misleading, because they contain items reflecting many symptoms other than depressed affect. The use of single items, additional factor analytic studies of existing scales, or the development of new measures are all possible avenues in this regard.

Second, continued examination of the association of depressed mood, syndromes, and disorders in cross-sectional research is needed. Studies in which measures of at least two of these three levels of depression were examined have been useful in establishing the hierarchical pattern of relations among mood, syndrome, and disorder (e.g., Edelbrock & Costello, 1988a; Roberts et al., 1991). To date, however, no researchers have reported on an assessment battery that included measures of all three levels of depressive phenomena in a single sample. Data on mood, syndrome, and disorder are essential for closer examination of the status of subgroups identified at each of these levels. Cross-sectional comparisons of this type will further test the hierarchical nature of these three levels of depressive phenomena. Specifically, measures of depressed mood should identify high rates of false positives but few false negatives in relation to measures of depressive syndromes or disorders. A similar pattern should emerge for measures of depressive syndromes in relation to depressive disorders.

Third, longitudinal data are needed to examine possible sequential relations among the three levels of depression. We hypothesize that elevated depressed mood may be a marker of risk

for subsequent depressive syndromes and an elevated depressive syndrome may be a risk for a depressive disorder. Longitudinal data on the three levels of depression are needed to examine temporal patterns such as these. Large community samples of adolescents are needed to identify an original sample of adolescents who are experiencing significant levels of depressed mood but do not meet criteria for depressive syndromes or disorders as well as a comparison sample who are not experiencing depressed mood. These samples would then be followed through adolescence to determine the proportion of adolescents in each group who develop syndromal or disorder levels of depressive phenomena. Similarly, adolescents with elevated levels of depressive syndrome and those who are not in the clinical range on this syndrome at one point in time need to be followed longitudinally to determine whether high depressive syndrome scores increase the risk for subsequent depressive disorders.

Fourth, closer examination of biological, stress, and coping processes as moderators of the relations among depressive phenomena is needed. Cross-sectional data would provide a useful first step in determining the degree to which, for example, adolescents who evidence only depressed mood differ from adolescents who are in the clinical range on a depressive syndrome. If one or more of the moderators are useful in distinguishing between groups in this way, longitudinal studies would follow in which the moderators are examined as predictors of changes in levels of depression over time. For example, high levels of stress would be expected to distinguish adolescents who initially have a high depressive syndrome score and develop a depressive disorder from those who initially have a high syndrome score but do not develop a disorder.

Fifth, it is important to clarify further the significance of other symptoms, syndromes, and disorders that co-occur with depressive phenomena during adolescence. The covariation of other negative emotions and syndromes may play a role in the development of depressive syndromes and disorders. Problems that accompany depression during adolescence may be correlated outcomes of the biological, stress, and coping processes that we hypothesize to be moderators of depressed mood, syndromes, and disorders. Alternatively, the presence of other problems may serve as an additional source of risk for the development of more serious and pervasive depressive problems (Compas & Hammen, in press). These possibilities warrant attention in future research.

In summary, the investigation of depressed mood, depressive syndromes, and depressive disorders during adolescence has contributed greatly to our understanding of psychopathology during this developmental period. Future research can build on these efforts by increasing our understanding of the ways in which these phenomena unfold during adolescence and relate to functioning during childhood and adulthood.

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