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Tripartite Model of Anxiety and Depression: Psychometric Evidence and Taxonomic Implications

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We review psychometric and other evidence relevant to mixed anxiety–depression. Properties of anxiety and depression measures, including the convergent and discriminant validity of self- and clinical ratings, and interrater reliability, are examined in patient and normal samples. Results suggest that anxiety and depression can be reliably and validly assessed; moreover, although these disorders share a substantial component of general affective distress, they can be differentiated on the basis of factors specific to each syndrome. We also review evidence for these specific factors, examining the influence of context and scale content on ratings, factor analytic studies, and the role of low positive affect in depression. With these data, we argue for a tripartite structure consisting of general distress, physiological hyperarousal (specific anxiety), and anhedonia (specific depression), and we propose a diagnosis of mixed anxiety–depression.

The puzzle of the relation between anxiety and depression is as old as the study of the syndromes themselves. In recent times, they have been viewed as: (a) different points along the same continuum, (b) alternative manifestations of a common underlying diathesis, (c) heterogeneous syndromes that are associated because of shared subtypes, (d) separate phenomena, each of which may develop into the other over time, and (e) conceptually and empirically distinct phenomena (L. A. Clark, 1989). Whereas each of these viewpoints is supported by some research, the current nomenclature, the *Diagnostic and Statistical Manual of Mental Disorders* (rev. 3rd ed.; *DSM–III–R*; American Psychiatric Association, 1987) primarily reflects the categorical view (e), although certain aspects are also compatible with views (c) and (d). However, many researchers today feel that the evidence supporting the more dimensional views (a) and (b) is sufficiently strong that the inclusion of one or more mixed anxiety–depression diagnoses in the nomenclature must be considered. Some investigators have been most concerned with mild levels of mixed affective symptomatology—which are especially common in general medical populations (e.g., Katon & Roy-Byrne, 1989; Klerman, 1989)—whereas others have been concerned with the overlap at severe levels of psychopathology (e. g., Akiskal, 1990; Blazer et al., 1988; Blazer et al., 1989; Leckman, Merikangas, Pauls, Prusoff, & Weissman, 1983). Those espousing view (b), in particular, have noted that these disorders show longitudinal as well as cross-sectional comorbidity. That is, some patients exhibit both an anxious and a depressive syndrome but at different points in time, and various hypotheses have been offered to explain this phenomenon (e.g., Breier, Charney, & Heninger, 1984; Maser & Cloninger, 1990).

Therefore, we ask: To what extent do empirical research findings support the existence of one or more mixed mood disorders for inclusion in *DSM–IV*? We began by reviewing the psychometric data relevant to this issue, focusing on important properties of measures of anxiety and depression in both patient and nonpatient samples, including the convergent and discriminant validity of self- and clinical ratings and the interrater reliability of clinical ratings. Although most of the available rating data were static in nature (i.e., anxious and depressive phenomena were assessed at a single point in time), we considered longitudinal phenomena when possible. This review led us, in turn, to analyses of how context and scale content influence ratings, to factor-analytic data, and to an examination of the role of (low) positive affect (PA) in depression.

Gradually, it became clear that the data were best captured by a tripartite structure of a general distress factor and specific factors for anxiety and depression, respectively. Jointly these factors provide a framework for the development of a more satisfactory diagnostic scheme for the anxiety and depressive disorders and suggest the need for a new diagnosis of *mixed anxiety–depression*. Furthermore, the structure helps to explain why the various views of anxiety and depression mentioned earlier have developed and represents a framework for their synthesis. That is, studies that have focused on the shared general distress factor have tended to view anxiety and depression as points on a continuum or as having a common diathesis (views a and b), whereas those that have focused on the specific factors have concluded that they are distinct phenomena (views d and e). Obviously, if both general and specific factors exist, then a complete characterization of anxiety and depression must incorporate each of these views; it will also subsume view (c), with the substitution of "a common component" for "shared subtypes."

In this article we present the results of our review of the psychometric and related literatures, the conclusions—including a description of the tripartite structure—that we derived from this review, and some implications we see for the diagnosis of anxiety and depressive disorders.

The views expressed in this article are those of the authors and do not represent the official positions of the *DSM–IV* Task Force of the American Psychiatric Association.

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General Considerations

One factor that contributes to the confusion in the vast literature on anxiety and depression is the multiple ways in which the terms are used. The several differentiable meanings of anxiety and depression include: normal mood states that shade into more intense or prolonged pathological mood states (e.g., panic or anhedonia), syndromes that involve covarying nonmood symptoms (e.g., autonomic arousal or vegetative signs), and specific diagnostic entities (e.g., panic disorder or melancholia; Klerman, 1980). Despite widespread awareness of these distinctions, multiple levels of meaning are often intermixed within a single report. Such terminological imprecision is problematic, because the conclusions that can be drawn about the relation between anxiety and depression are not necessarily the same across all of these levels of meaning. Our review focuses on the assessment of anxiety and depression on two levels—first, mood and, second, symptom cluster or syndrome—although we also examine the implications of these results for specific diagnostic entities.

Anxious and depressed moods represent the defining cores of their corresponding disorders, and a number of measures focus on these affects per se. Most common, however, are broader measures that also assess symptoms associated with anxious and depressed mood. These measures have diverse origins and intents that range from rationally derived scales that are intended to assess defined clinical syndromes to psychometrically developed scales designed to assess empirically derived clusters of symptoms. Regardless of origin, however—and despite the fact that they assess a diverse range of symptoms—these measures all tend to be homogeneous (internal consistency reliability coefficients are typically .80 or higher), and their scores are continuously distributed. Because of these properties, these scales are typically scored dimensionally. Nevertheless, cutoff scores on these measures are sometimes used to delineate the mere presence or absence of anxiety or depressive syndromes. Fortunately, this questionable practice has waned since the advent of the *DSM–III* (American Psychiatric Association, 1980) with its specific diagnostic criteria and because various writers have pointed out the pitfalls of such usage (e.g., Beck, Steer, & Garbin, 1988; Kendall, Hollon, Beck, Hammen, & Ingram, 1987). Therefore, our review will be limited to reports that have used dimensional scoring.

In determining whether anxiety and depression represent different aspects of one continuum or instead exist as discrete phenomena, evaluation of their discriminant validity is obviously indispensable. However, discriminant (i.e., between-affects) comparisons cannot be interpreted meaningfully outside the context of the convergent (i.e., within-affects) validity of measures of each affect or syndrome separately, which, in the case of clinical ratings, must also include evidence of interrater reliability. Therefore, our review encompasses all of these basic properties. We examine self-report and clinical ratings both separately and in relation to each other; similarly, mood and syndrome measures are examined both separately and in relation to one another. We focus on the most widely used measures, but other measures are referenced when appropriate. Finally, results are reported separately for patient and nonpatient samples whenever possible.[1]

Properties of Commonly Used Measures of Anxiety and Depression

Self-Report

Mood Measures

The most commonly used measures of anxious and depressed mood are scales from the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971) and the Multiple Affect Adjective Check List (MAACL; Zuckerman & Lubin, 1965) or its recent revision (Zuckerman & Lubin, 1985; we will use MAACL to refer to both the original and revised forms). On the basis of extensive factor analyses, we recently developed the Positive and Negative Affect Schedule–Expanded Form (PANAS-X; Watson & Clark, 1990), which contains specific affect scales for fear (anxiety) and sadness (depression), and we report data on these scales also.

Validity. The convergent and discriminant validity correlations between the respective POMS and MAACL scales are shown in Table 1. Although the convergence in three nonpatient samples was moderately high, it was unacceptably low in the one patient sample available (Zuckerman & Lubin, 1985). Moreover, for both types of subjects, the discriminant coefficients within each measure were higher than the convergent coefficients across the measures (significantly so in the patient sample). These results obviously do not form acceptable convergent and discriminant validity patterns; the data for anxiety are especially problematic. Thus, these data demonstrate that the MAACL and POMS are not measuring two distinct affects in the same way.

This discouraging pattern is at least partially due to important differences in their rating formats (checklist vs. 5-point rating scale). This hypothesis is supported by the fact that using the same rating format and time frame, we have found a more acceptable convergent and discriminant validity pattern (.85 vs. .66) between the POMS and PANAS-X scales in a sample of 563 college students (Watson & Clark, 1990), although it must also be noted that these two instruments have some terms in common. Given that these two types of measures do not converge well, which provides the more trustworthy data?

Several lines of evidence suggest that the rating scales yield somewhat more valid results than the MAACL. First, there are

[1] Nearly 400 articles, books, or book chapters—including 17 that were unpublished, under review, or in press—were reviewed. Sources included reference lists of major articles and prior reviews, a PsycLIT computer search of relevant articles published since 1983, and a solicitation from researchers active in the area. The large number of studies reviewed generally prohibits the listing of data sources in the summary tables to follow; however, the number of contributing studies and subjects are provided.

In combining correlations from multiple studies, whenever possible, r-to-z transformations were made; samples were weighted by the appropriate degrees of freedom (i.e., $N - 3$) before they were averaged. The results were then transformed back to simple correlations. In those cases in which this was not possible (e.g., combining the results of previous meta-analyses in which sample sizes were unknown), median correlations are reported. Similarly, r-to-z transformations (and a p value of less than .05, two-tailed) were used in determining the statistical significance of differences between correlations.

Table 1
Convergent and Discriminant Validity Correlations for Two Measures of Self-Rated Depressed and Anxious Mood in Patient and Nonpatient Samples

Measure and affect	1	2	3	4
1. MAACL Depression	—	*.78*	**.32**	.26
2. MAACL Anxiety	*.62*	—	.00	**.08**
3. POMS Depression	**.65**	.47	—	*.77*
4. POMS Anxiety	.44	**.52**	*.67*	—

Note. MAACL = Multiple Affect Adjective Check List; and POMS = Profile of Mood States. Correlations in nonpatient samples are shown in the lower half of the correlation matrix, and those in patient samples, in the upper half. Sample sizes for convergent (across-instruments) correlations, shown in boldface, are 270 and 123 in nonpatient and patient samples, respectively. Sample sizes for discriminant (within-instruments) correlations, shown in italics, range from 90 to 2,524 (*Mdn* = 933).

serious psychometric problems associated with the use of a checklist format (Fogel, Curtis, Kordasz, & Smith, 1966; Herron, 1969). Second, in a combined patient sample (Fogel et al., 1966; Zuckerman & Lubin, 1985), the convergent and discriminant validity pattern of the MAACL scales with single-item self-ratings of anxious and depressed mood was also relatively poor (.51 vs. .45 for the average convergent and discriminant validity correlations, respectively). Third, the convergent and discriminant validity patterns with syndromal measures of anxiety and depression (shown in Table 2) are somewhat better for the rating scales than for the MAACL in both nonpatient and patient samples. Specifically, the average convergent correlation for the MAACL (r = .55) is significantly lower than that for the POMS (r = .77) and the PANAS-X (r = .67). Moreover, whereas the POMS also has a significantly higher average discriminant correlation than the MAACL (rs = .68 vs. .49, respectively), the PANAS-X does not (r = .52). Thus, in terms of the squared multiple correlation difference between the average convergent and discriminant correlations, the PANAS-X showed the greatest difference (.18), followed by the POMS (.15 in patient and .06 in nonpatient samples) and then by the MAACL (.12 in patient and .04 in nonpatient samples). It must be noted, however, that although the PANAS-X scales appear to have promise as measures of anxious and depressed mood, they have not yet been tested in patient samples.

Summary and conclusions. We draw a number of conclusions from these data. First, the MAACL scales do not yield discriminable measures of depressed and anxious mood and are probably not the best available measures for assessing these specific affects. In contrast, scales with a Likert rating format (POMS, PANAS-X) have acceptable convergent validity, both with each other and with syndromal measures of depression and anxiety. Although the level of convergence is not so high as to suggest that these scales could substitute for syndromal measures, they likely yield valid assessments of their core mood states. However, even with valid factor-analytically derived scales, the overlap between anxious and depressed mood is substantial, which indicates that these basic affects are at best only partially differentiable. This overlap is somewhat stronger in patient than nonpatient samples, probably, in part, because of the infrequent occurrence of intense negative moods in normal subjects.

In seeking to explain this overlap, some may argue that it reflects a simple, probabilistic co-occurrence between etiologically independent moods. However, accumulating data suggest that it instead represents a shared general negative affect (NA) component that is an inherent and important aspect of each mood state (Watson & Clark, 1991). In this regard, it is important to emphasize that this shared variance remains strong even in ratings of current, momentary (i.e., state) mood (Mayer & Gaschke, 1988; Watson, 1988b; Watson & Tellegen, 1985). Moreover, this nonspecific NA encompasses not only anxiety and depression, but other negative mood states as well, so that simi-

Table 2
Convergent and Discriminant Validity Correlations Between Self-Rated Depressed and Anxious Mood and Syndromes in Patient and Nonpatient Samples

	Nonpatients				Patients			
			Syndrome				Syndrome	
Mood measure	No. studies	*Ns*	Depression	Anxiety	No. studies	*Ns*	Depression	Anxiety
Multiple Affect Adjective Check List	4–6	839–1,115			4–6	482–576		
Depression			**.55**	.55			**.53**	.43
Anxiety			.49	**.56**			.39	**.55**
Profile of Mood States	1	385			1–2	1,000–2,000		
Depression			**.73**	.65			**.84**	.70
Anxiety			.59	**.59**			.70	**.76**
Positive and Negative Affect Schedule–Expanded form	1	195						
Sadness			**.68**	.48			—	—
Fear			.56	**.66**			—	—

Note. Convergent correlations are shown in boldface. The Sadness and Fear scales of the Positive and Negative Affect Schedule–Expanded form measure depression and anxiety, respectively.

lar data can be compiled for other negative emotions, such as anger and guilt (Gotlib, 1984; Watson & Clark, 1984, 1991; Watson & Tellegen, 1985). To be sure, affect-specific variance can also be identified (Watson & Clark, 1990, 1991, in press-a), but the general component in negative mood scales is invariably substantial.

We believe that explicit recognition of the fact that negative moods are only partially discriminable will increase the validity of anxiety and depressive diagnostic criteria. In later sections we discuss aspects of anxiety and depressive syndromes—and alternative strategies for mood and symptom assessment—that enhance their differentiation.

Symptom and Syndrome Measures

The most widely used self-report measures of anxious and depressive symptomatology include: the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988); the Symptom Checklist-90 (SCL-90; Derogatis, Lipman, & Covi, 1973) Depression and Anxiety scales; scales scored from the item pool of the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943), such as the Taylor Manifest Anxiety Scale (Taylor, 1953) for anxiety and the MMPI Scale 2 for depression; the Self-Rating Depression Scale (SDS) and the Self-Rating Anxiety Scale (SAS; Zung, 1965, 1971); Costello-Comrey Anxiety Scale and Costello-Comrey Depression Scale (CC-A and CC-D; Costello & Comrey, 1967); State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970); Institute for Personality and Ability Testing Anxiety Scale Questionnaire (Krug, Scheier, & Cattell, 1976); and the Center for Epidemiological Studies Depression Scale (Radloff, 1977). The Inventory to Diagnose Depression (Zimmerman & Coryell, 1987) and Inventory for Depressive Symptomatology, which is available in both self- and clinician-rated formats (Rush et al., 1986), have appeared more recently.

It is important to note that these scales (and their clinician-rated counterparts) typically assess what may be called *modal* anxiety and depressive symptomatology as they focus on the core aspects of each syndrome type rather than on all possible variants. Depression scales primarily target symptoms of nonpsychotic, nonmelancholic depression; melancholic symptoms (e.g., diurnal variation) are sometimes included, but more severe psychotic symptoms (e.g., delusions of guilt) are rarely assessed. Similarly, anxiety symptom scales typically target generalized anxiety and panic attacks and rarely include more than a few items to target obsessive–compulsive disorder, social or simple phobias, or posttraumatic stress disorder (although specific scales have been developed to assess some of these disorders). We use the terms *syndromal anxiety* and *syndromal depression* in this article to describe this modal scale content, but it must be recognized that item content varies even among the most widely used scales; this content heterogeneity is an issue we discuss later.

Validity. A large number of studies have examined the convergent and discriminant validity patterns of self-report measures of syndromal anxiety and depression. These data are summarized in the first two columns in Table 3. The average convergent correlation among five measures of depressive symptomatology (BDI, MMPI Scale 2, SCL-90 Depression scale, CC-D, and SDS) is in the low .70s, with no difference due to sample type. Three figures are given for measures of anxious symptomatology, the median convergent coefficient from nine scales examined in Watson and Clark's (1984) review (which did not distinguish between sample types), and two average values—calculated separately for nonpatient and patient samples—from subsequently published studies that covered five measures of anxiety (SAS, CC-A, Taylor Manifest Anxiety Scale, STAI-Trait, and the Institute for Personality and Ability Testing Anxiety Scale Questionnaire). On the whole it appears that self-report measures of anxiety may show somewhat greater convergence than those for depression, especially in patient samples, but clearly the convergent validity of both syndromes is well-established.[2] This high degree of convergence indicates, in part, that the various scales are targeting the same construct; indeed, scales for each syndrome contain many common items (e.g.,

Table 3
Convergent and Discriminant Validities for Syndromal Measures of Depression and Anxiety by Self- and Clinical Raters in Patient and Nonpatient Samples

Measure	Self-ratings		Patients' clinical ratings
	Nonpatients	Patients	
Convergent validity			
Depression	.71	.73	.83
No. studies	12	17	5
N	3,816	1,950	583
Anxiety	.71 / .80[a]	.80[a] / .84	.74
No. studies	4	1	3
N	787	73	268
Discriminant validity			
Within instruments	.70[b]	.66	.39 / .43[c]
No. studies	7	9	4
N	3,339	1,684	498
Across instruments	.62	.64	—
No. studies	8	4	
N	2,379	787	
Depression as low positive affect	—	.11	.11
No. studies		2	2
N		181	129

[a] From Watson and Clark (1984). This is median of 9 anxiety–negative affect measures, which were not subdivided by sample type. [b] This does not include Minnesota Multiphasic Personality Inventory data on 50,000 medical patients (r = .61; Swenson, Pearson, & Osborne, 1973); see text for further information. [c] From Eaton and Ritter (1988; n = 2,768 community adults).

[2] Due to the very large sample sizes in this meta-analysis, correlational differences as small as |.05| are statistically significant in some comparisons. Therefore, we emphasize psychologically meaningful differences in this section.

Gotlib & Cane, 1989; Kavan, Pace, Ponterotto, & Barone, 1990).

Turning to the issue of discriminant validity, however, one again finds disturbingly high correlations. When paired anxiety and depression scales (i.e., two scales from a single instrument, such as the SCL-90, the Beck, Zung, or Costello-Comrey scales, or the MMPI) are compared, the overall correlations between them are .66 and .70 in patient and nonpatient samples, respectively. When scales from different instruments are compared, the values are only slightly lower (r = .64 and .62, respectively). This pattern is quite similar to that observed with the pure mood scales: Whereas diverse self-report measures of anxiety and depression yield strongly convergent assessments of their respective syndromes, there is little specificity in their measurement, especially in nonpatient samples. Rather, the data suggest the presence of a large nonspecific component that is shared by both syndromes.

Scale-level analyses. One concern with summary correlations is that they may mask significant differences among measures. That is, some measures may show strong convergent and discriminant validity patterns that are overwhelmed by data from less well-constructed scales. Therefore, we examined the correlational patterns for each of the well-established measures separately. The results are shown in Table 4, and several aspects of the table deserve comment. First, most of the correlations are based on only one or two studies and, therefore, are not definitive. Second, broadly speaking, measures with higher convergent validity typically have higher discriminant coefficients as well. This covariation suggests that some measures are more highly loaded with the nonspecific distress factor than others. Such measures provide a highly valid assessment of generalized distress but are not particularly useful for discriminating anxious from depressive syndromes.

Third, the Beck inventories and the Costello-Comrey scales —both of which used factor-analytic techniques in the development of one or both scales—appear to offer the best convergent and discriminant validity patterns, although cautionary notes are warranted in both cases. The BAI is new and has not yet been studied much by researchers other than its creators. Similarly, data for the CC-A and CC-D are sparse. Finally, although the convergent and discriminant validity patterns are the best for these scales, it still must be acknowledged that their discriminant correlations average approximately .56. As was discussed earlier with regard to mood, it has been argued that this overlap simply reflects the co-occurrence of etiologically distinct syndromes. Again however, a more compelling explanation is that a nonspecific distress factor forms an inherent core component of both syndromes. This nonspecific distress factor has been identified repeatedly by many researchers and has been given many labels (e.g., *neuroticism, general maladjustment,* or *negative emotionality*). We have chosen to call it *negative affectivity* or *trait NA* (Watson & Clark, 1984) because of its close association with the general, higher order mood dimension. At this point, a brief digression into the nature of PA and NA is necessary.

Positive and negative affect. Recent research has produced strong evidence that PA and NA are the dominant dimensions in self-reported mood, both in the United States and in other cultures (Diener, Larsen, Levine, & Emmons, 1985; Stone,

Table 4
Convergent and Discriminant Validities for Self-Rated Anxiety and Depression Measures in Patient and Nonpatient Samples

	Nonpatients					Patients				
			Correlation					Correlation		
Measures	No. studies	N	Convergent	Discriminant	R^2 difference	No. studies	N	Convergent	Discriminant	R^2 difference
Discriminant validity within instruments										
Beck	1	243	.68	.61	.09	1	357	.76	.49	.34*
Costello-Comrey	2	743	.68	.54	.17*	2	215	.70	.53	.21*
MMPI[a]	1	50,000	.74	.61	.18*	2	473	.81	.62	.27*
SDS–SAS	2	581	.69	.73	−.06	1	48	.75	.53	.28
SCL-90	3	1,962	.76	.75	.02	3	555	.76	.79	−.05
Discriminant validity across instruments										
Beck	6	2,263	.68	.61	.09*	2	173	.76	.61	.21*
Costello-Comrey	1	190	.68	.57	.14	1	100	.70	.47	.27*
STAI-Trait	4	1,673	.75	.65	.14*	2	281	.80	.67	.19*
TMAS[b]	1	391	.76	.67	.13*	1	73	.81	.71	.15
MMPI–Depression	1	443	.69	.63	.08	3	381	.67	.61	.08
SDS–SAS	2	581	.69	.69	.00	1	100	.75	.53	.28*
SCL-90	0	0	.76	—	—	2	519	.76	.67	.13*

Note. The numbers of studies and subjects (N) may not apply to every figure in a row; sample sizes for convergent validity are typically higher than for discriminant validity. Beck = Beck Depression Inventory and Anxiety Inventory; Costello-Comrey = Costello-Comrey Depression Scale and Anxiety Scale; MMPI = Minnesota Multiphasic Personality Inventory; SDS–SAS = Self-Rating Depression Scale and Self-Rating Anxiety Scale; SCL-90 = Symptom Check List-90 Depression and Anxiety scales; STAI = State-Trait Anxiety Inventory; TMAS = Taylor Manifest Anxiety Scale (an MMPI-based scale).

[a] TMAS and MMPI–Depression. [b] In addition to data from Watson & Clark (1984).

* $p < .05$, two-tailed.

1981; Tellegen, 1985; Watson, Clark, & Tellegen, 1984; Watson & Tellegen, 1985; Zevon & Tellegen, 1982). Briefly, NA represents the extent to which a person is feeling upset or unpleasantly engaged rather than peaceful and encompasses various aversive states including *upset, angry, guilty, afraid, sad, scornful, disgusted,* and *worried;* such states as *calm* and *relaxed* best represent the lack of NA. In contrast, PA reflects the extent to which a person feels a zest for life and is most clearly defined by such expressions of energy and pleasurable engagement as *active, delighted, interested, enthusiastic,* and *proud;* the absence of PA is best captured by terms that reflect fatigue and languor (e.g., *tired* or *sluggish*).

Despite their opposite-sounding labels, these two mood dimensions are largely independent of one another, and they have distinctive correlational patterns with other variables. Briefly, only PA is related to diverse measures of social activity, exercise, and reports of pleasant events, whereas NA alone is correlated with health complaints, perceived stress, and unpleasant events (L. A. Clark & Watson, 1988, 1989; Watson, 1988a; Watson & Pennebaker, 1989). Furthermore, PA (and depressive phenomena)—but not NA (or anxiety)—has been linked to the body's circadian cycle (L. A. Clark, Watson, & Leeka, 1989; Healy & Williams, 1988; Thayer, 1987) and to seasonal variations (Kasper & Rosenthal, 1989; Smith, 1979). Finally, the two mood dimensions are differentially related to two major personality traits: As mentioned earlier, state NA is associated with measures of trait NA or neuroticism (Costa & McCrae, 1980; Eysenck & Eysenck, 1968, 1975; Tellegen, 1985; Watson & Clark, 1984), whereas state PA is correlated with measures of positive affectivity (trait PA; Tellegen, 1985) or extraversion (Costa & McCrae, 1980; Eysenck & Eysenck, 1968, 1975). Persons high in trait PA are cheerful, enthusiastic, and vigorous; but in addition to this core mood component, they also tend to be socially masterful, to be forceful leaders who enjoy being the center of attention, and to be achievement oriented (Tellegen, 1985; Watson & Clark, in press-b).

Although investigation of the shared factor in anxiety and depression—that is, general NA—will increase our understanding of important aspects of these syndromes, their differentiation will depend on the identification of distinctive (i.e., specific) factors that they do not have in common. Several converging lines of evidence suggest that an important specific factor that marks depression is the absence of PA. For example, Tellegen (1985) factor analyzed self-report measures of NA, PA, anxiety, and depression. The resulting two-factor solution indicated that anxiety was more highly associated with the NA factor, whereas depression was a better marker of low PA.

Similarly, and apparently without knowledge of Tellegen's (1985) work, a team of British researchers developed the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), in which the depressive items primarily assess positive affectivity (e.g., "I look forward with enjoyment to things"), whereas the anxiety items are typical of self-reported anxiety symptom scales (e.g., "I feel tense or wound up"). As shown in Table 3 (last correlation, second column), the average correlation between the HADS scales across two patient samples (Aylard, Gooding, McKenna, & Snaith, 1987; Bramley, Easton, Morley, & Snaith, 1988) was .11. This clearly represents better discriminant validity than is typically seen and lends support to the notion that low PA plays an important role in distinguishing depression from anxiety. Later we discuss other evidence in regard to the specific role of low PA in depression and also identify a specific anxiety factor. Before doing so, however, we summarize the self-report findings and examine whether the patterns observed with self-report measures can also be seen in clinical ratings.

Summary and conclusions. Self-report symptom measures of anxious and depressive symptomatology show substantial convergent validity. Depression measures show little, if any, difference in the level of convergence between patient and nonpatient samples. Anxiety measures may display somewhat greater convergence in patient samples, but further data are needed to establish this effect firmly.

For discriminant validity, however, the data are less encouraging, with average discriminant correlations in the range from .62 to .70 (see Table 3). Nevertheless, the squared multiple correlation difference between convergent and discriminant coefficients averaged approximately .13 and .17 in nonpatient and patient samples, respectively (cf. the .15–.18 squared multiple correlation difference reported for mood rating scales). Moreover, two scale pairs—the Beck inventories and the Costello-Comrey scales—showed better convergent and discriminant validity patterns than did other sets of measures. However, the discriminant correlations are still substantial, and each can benefit from more research.

As with the mood data, these results suggest that a strong nonspecific distress factor—which we interpret as state NA in mood ratings and as trait NA syndromally—dominates self-ratings of anxious and depressive symptomatology and may account for most of their overlap. Again, we believe that this substantial nonspecific component is an important and inseparable part of these syndromes and ought to be explicitly acknowledged in the official diagnostic system. Finally, theoretical and empirical advances in mood and personality suggest the importance of a second major factor, namely, PA, in differentiating depression and anxiety. Specifically, depression—but not anxiety—is associated with low PA, and inclusion of PA-related items in depression scales may enhance their discriminant validity.

Clinical Ratings

Mood Measures

Interrater reliability. Clinical ratings of mood are typically based on 1–3 items embedded in broader syndrome rating scales (rather than existing as independent measures) and are therefore rarely reported separately. However, we located six studies that reported the interrater reliability of clinically rated mood, and their results suggest that the conditions under which mood is assessed are critically important. Specifically, five studies used either joint interviews or separate structured interviews with heterogeneous patient samples, and their average interrater reliabilities were .67 for both depressed and anxious mood. In contrast, poor reliability was obtained for both depressed (r = .37) and anxious (r = .19) mood in one study that used independent, unstructured clinical interviews with a homogeneous sample (Cicchetti & Prusoff, 1983). That these poor

reliabilities were not simply a function of inadequate measures or ill-trained raters is supported by the fact that the reliability coefficients rose to .72 and .40, respectively, when the study population evidenced a greater range of moods after 16 weeks of treatment.

We know of only one study in which the interrater reliability of others' ratings of mood in normal subjects has been investigated (Watson & Clark, 1991). Ratings were made on scales from the PANAS-X (Watson & Clark, 1990) by nonprofessional peers solely on the basis of acquaintance, without benefit of interview or training. As in Cicchetti and Prusoff's (1983) study, the pairwise correlation between any two judges was fairly low (r = .19 to .37). However, when the data of 4 raters were aggregated, moderate (.49 and .58 for the Sadness, or depression, and Fear, or anxiety, scales, respectively) to high (.70 for PA) reliabilities were obtained.[3]

Together, these data suggest that mood can be reliably rated under appropriate conditions (i.e., adequate range of subject moods, use of joint or standardized interviews, or use of aggregated multiple ratings). However, we found no data to indicate whether the relatively small mood variations seen among highly distressed patients (e.g., at intake) can be rated reliably.

Validity. We found no studies that used more than one clinical measure to assess patients' moods, but several have reported convergent correlations between mood and global ratings or syndrome measures. First, Maier, Buller, Philipp, and Heuser (1988) found a convergent correlation of .65 between ratings of anxious mood and global ratings of anxious symptomatology (on the Covi Anxiety scale; Lipman, 1982) in two patient samples. Unfortunately, discriminant validity was not examined. Correlations between single-item ratings of depressed and anxious mood with total scale score on the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960) have also been reported in heterogeneous patient populations (Hamilton, 1967; Mowbray, 1972). The (part–whole) convergent correlations (i.e., depressed mood with total HRSD score) were .59 and .78, respectively, whereas the discriminant correlations (anxious mood with total HRSD score) were .25 and .60. Although there is a clear level difference in both types of coefficients across the two studies, it is interesting to note that the squared multiple correlation difference between the convergent and discriminant correlations was virtually the same (.29 vs. .25). This similarity suggests that Mowbray's (1972) ratings contained a larger (and more typical) nonspecific component than did Hamilton's (1967) ratings but that the pattern of correlations was otherwise comparable.

Corroborating this hypothesis, the discriminant coefficients for depressed and anxious mood per se were strikingly different in the two studies: Hamilton (1967) found no relation between depressed and anxious mood (r = .01; N = 272), whereas Mowbray (1972) reported a more typical correlation of .43 (N = 347). We cannot explain this discrepancy except to say that it is our impression that scales' creators typically find better discrimination than do others. However, it is not clear if this enhanced discrimination results because the authors are capable of using their scales more sensitively than others or if it is somehow artifactual. As the Hamilton scales are widely used, it will be possible to investigate the discriminant validity of clinical mood ratings in larger samples.

Correlations among peer ratings of mood in normal subjects also suggest the presence of a strong general factor (Watson & Clark, 1991). Whereas the discriminant correlations between PA and the negative moods of Sadness (depression) and Fear (anxiety) were appropriately low (rs = −.33 and −.22, respectively), ratings of these two negative moods were strongly correlated (r = .65). Taken as a whole, the data suggest that clinical raters generally agree with regard to the presence or absence of anxious and depressed moods. As with self-ratings, however, these data also show evidence of a strong general distress factor.

Symptom or Syndrome Measures

The most widely used clinician-based symptom or syndrome measures of anxiety and depression include: the aforementioned HRSD and its counterpart, the Hamilton Rating Scale for Anxiety (HRSA; Hamilton, 1959), for which alternative scoring methods have recently been developed (Riskind, Beck, Brown, & Steer, 1987); the anxiety and depression subscales of the Schedule for Affective Disorder and Schizophrenia (Endicott & Spitzer, 1978); and the Covi Anxiety and Raskin Depression scales (Lipman, 1982). In addition, the Clinical Anxiety Scale (a modification of the HRSA; Snaith, Baugh, Clayden, Husain, & Sipple, 1982) and the Montgomery-Asberg Depression Rating Scale (Montgomery & Asberg, 1979) have been used in a number of British studies. Finally, as mentioned earlier, the clinician-rated Inventory for Depressive Symptomatology (Rush et al., 1986) was recently developed.

Interrater reliability. As with clinical mood ratings, the interrater reliability of clinical symptom ratings appears to be strongly influenced by the conditions of data collection. Higher reliabilities have been found

> when ratings are made on heterogeneous populations by highly trained interviewers with similar backgrounds, and are based on exactly the same information (joint interviews, live observation, videotapes, and audiotapes . . .). If any of these conditions are altered, reliabilities suffer predictably. (L. A. Clark, 1989, p. 90)

Reliabilities in one study in which none of these conditions were met (Cicchetti & Prusoff, 1983) ranged down to .46. Interestingly, sample type appears to be less important than the range of symptomatology in the sample (i.e., higher reliability is obtained with greater range). Furthermore, specific depression symptom measures (e.g., HRSD) are slightly more reliable than global measures of depression (interrater rs = .85 vs. .78), but both are affected by the same parameters. Unfortunately, sufficient data do not exist to examine this issue for anxiety ratings nor to determine whether other structured depression ratings also show consistently higher reliabilities than do global ratings.

L. A. Clark's (1989) review also revealed greater variability in the reliability of anxiety symptom ratings. In eight studies (N = 538) that examined the reliability of clinical ratings of anxious symptomatology, coefficients ranged from .26 to .95, with a mean of .76. On closer inspection, however, it appears that this

[3] These figures represent the Spearman-Brown reliability estimates based on the average interrater correlation; they were computed with intraclass correlations, given that the order of raters was random (see Watson & Clark, 1991, for details).

variability reflects the fact that studies of anxious symptomatology have been performed under widely varying conditions. Specifically, the average reliability of five studies that used joint interviews and well-defined criteria was .84, whereas that of four that used either separate interviews, no specific criteria, or both was .47.[4] Thus, under optimal conditions, ratings of anxious and depressive symptomatology show similarly high reliabilities, whereas under less favorable circumstances, the same low reliabilities are seen.

Convergent validity. In contrast to the large number of studies that have reported correlations among self-reported symptom measures, relatively few studies have examined the convergent validity of clinical rating scales, and none have used nonpatient samples. Available data are summarized in the last column of Table 3. Convergence among clinical ratings of depressive symptomatology was uniformly high (average correlation of .83). Most of the studies compared the HRSD to other measures, but good convergence was also found among other scales in one study (Deluty, Deluty, & Carver, 1986). Further research needs to be undertaken to confirm this finding with other scales and also with the new scoring system for the HRSD developed by Riskind et al. (1987).

Only a few studies have investigated the convergent validity of anxiety symptom rating scales, but they have yielded an average convergence correlation of .74. Although this is an acceptably high level of convergence, it is nevertheless significantly lower than that obtained for depressive symptoms. A brief content analysis of commonly used anxiety symptom scales indicates that this lower convergence may occur because the various measures have somewhat different foci. That is, as mentioned earlier, the relative assessment weight assigned to the various facets of anxiety (e.g., general anxious mood, cognitive worry, physical tension, symptoms of autonomic hyperarousal, other somatic symptoms, and even specific fears) varies considerably across scales. Therefore, more precise information about anxiety symptom ratings might be obtained if specific scales were developed for each of these facets. It is noteworthy, however, that patients' self-ratings of anxious symptomatology—which are similarly varied in content—are significantly more convergent than the clinical ratings. Thus, clinicians may be more sensitive to the heterogeneous nature of anxiety symptoms than are patients and, accordingly, make more differentiated ratings than do patients, who may instead generalize their overall level of subjective distress across a wide range of specific symptoms. We make a similar point with regard to depressive ratings later.

Discriminant validity. Several studies have examined the discriminant validity of depressive and anxious symptom rating scales (again, see Table 3, last column). In three studies that used the original Hamilton scales ($N = 191$), the average discriminant correlation was quite high ($r = .77$), in part, because of item overlap. In contrast, an average discriminant correlation of .39 was obtained either with the revised Hamilton scales or with other clinician-rated anxiety and depressive symptom measures. This figure is quite close to that ($r = .43$) found between anxiety and depression rating scales developed from the Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981) for use in a large ($N = 2,768$) community sample (Eaton & Ritter, 1988). Thus, a discriminant coefficient of approximately .40–.45 appears to represent a reasonable estimate of the correlation between clinical ratings of anxious and depressive symptomatology in both patient and nonpatient samples. Although this still represents substantial overlap, it is clearly a more acceptable level of discriminant validity than has been obtained with self-ratings.

We noted before, however, that when self-report depression measures contained items that reflected low PA, the discrimination between anxiety and depression was even sharper, and it is noteworthy that this phenomenon is replicated in clinical ratings (mean $r = .11$; see Table 3, last row of correlations). In two studies (Aylard et al., 1987; Bramley et al., 1988), the Clinical Anxiety Scale and the Montgomery-Asberg Depression Rating Scale have been used. In a third study Vye (1986) used global measures of depressive and anxious symptoms, but it is clear from Vye's description that low PA (especially the lack of interest or pleasure) played a major role in the conceptualization of depression. It is important to note that with the exception of the Montgomery-Asberg Depression Rating Scale, the clinical rating scales used in these studies were not themselves atypical. Recall also that the British research apparently was conceived independently of Tellegen's (1985) model. Thus, the lower discriminant correlations resulted not so much from using unusual scales as from the distinctive way in which these clinicians interpreted the scale items. We examine the validity of this alternative conceptualization later, but first we summarize the findings for clinical ratings of anxious and depressive symptomatology.

Summary and conclusions. Clinical ratings of syndromal anxiety and depression have good interrater reliability and are highly convergent within affect when (a) the raters are similarly and adequately trained, (b) the rating criteria are clearly specified, (c) the ratings are based on the same information, and (d) there is adequate within-sample variability. Clinical ratings of mood are affected by similar considerations; they are somewhat less reliable than syndromal ratings because mood is typically measured with only 1–3 items. Sample type per se does not appear to affect the reliability of ratings, but data that pertains to possible effects on convergent validity are lacking.

The reliability of anxiety and depressive symptom ratings are similar, and the convergent validity coefficients for both are acceptable, but clinical ratings of anxiety symptoms are somewhat less convergent than those for depression (*r*s = .83 vs. .74, respectively). Although further studies, especially ones that examine the various facets of anxiety, are needed to establish the validity of anxiety syndrome scales definitively, the data so far obtained suggest that good convergence can be expected.

Whereas clinical ratings of the two moods or syndromes overlap substantially, a greater level of discrimination, in comparison with self-ratings, is clear nevertheless. This enhanced discrimination suggests that when clinicians make ratings, they give more weight to specific factors that distinguish anxiety from depression than do patients. However, although clinical ratings are typically used as a standard against which to judge self-reports, the relative validity (e.g., the clinical utility) of the

[4] One study used both joint and separate interviews and so is included twice.

two types of judgments has not been systematically compared. Thus, it must not be assumed a priori that increased differentiation is necessarily valid or desirable. Greater clinical differentiation may stem from the fact that clinicians are prepared to see (if not force) differences, perhaps by virtue of their training. If a revised diagnostic system were to recognize the existence of mixed anxiety–depression, it would not be surprising if clinicians subsequently viewed these symptoms more similarly to the way patients now report them.[5]

As in self-reports, positive and negative mood states are relatively independent in peer ratings. In addition, it appears that if clinicians conceptualize depression as having a substantial component of low PA (even if they do not explicitly use this terminology), they rate it as clearly distinctive from anxiety. Again, however, the validity of this approach requires further examination. We discuss both of these validity issues, but first we examine the convergent and discriminant validity of self-reports versus clinical ratings.

Self-Report Versus Clinical Rating Scales

Mood Measures

Validity. Data relevant to the convergence between self- and clinically rated anxious and depressed mood exist widely; unfortunately, however, they are usually embedded in broader syndromal measures and are, therefore, seldom reported. Available data are summarized in the top half of Table 5. With one exception (Fogel et al., 1966, who used the MAACL, the validity of which, as we have shown, is questionable), the convergent and discriminant correlations covaried, both across studies and during retesting within the same study. That is, replicating the pattern observed within self-report measures, higher convergent correlations were generally accompanied by higher discriminant correlations (cf. Table 4). As we have also seen before, the distribution of these correlations was bimodal: In three studies with patient samples, moderately high convergence was accompanied by correspondingly high discriminant coefficients (these are labeled *good convergence* in Table 5), whereas three others reported both poor convergence and low discriminant correlations (*poor convergence* in Table 5). Remarkably, however, the squared multiple correlation difference between the convergent and discriminant coefficients was virtually identical in both instances.

As before, the studies that obtained poor convergence used homogeneous samples, questionable measures, or both. One of the studies that obtained poor convergence used items from the SDS, in which the frequency of symptoms rather than their severity is rated, as the source of the mood self-ratings and used the Hamilton scales for the clinical ratings (Carroll, Fielding, & Blashki, 1973). This format difference may have led to poor convergence. Unfortunately, discriminant validity was not reported in this study. In contrast, the studies with good convergence used reliable measures, standardized rating systems, and heterogeneous patient samples.

Correlations between self- and others' ratings of mood have also been reported in nonpatient samples, for which peers or spouses rather than clinicians served as judges (Costa & McCrae, 1988; Watson & Clark, 1991; Zuckerman & Lubin, 1985). The average convergent correlation for anxiety in these studies (Table 5, line 3) was virtually the same as that obtained in the good convergence patient samples (Table 5, line 1). In contrast, the convergent coefficient for depression and the discriminant correlation were both somewhat lower. This pattern probably results, in part, from the relatively low mean levels of these affects (especially depression) in nonpatient samples. Nonetheless, the squared multiple correlation difference between the convergent and discriminant correlations (.10) was twice as great as that found in the patient samples.

Finally, two studies—one with patient (Vye, 1986) and one with nonpatient subjects (Watson & Clark, 1991)—examined the convergent and discriminant validity patterns of ratings of PA and NA. The nonpatients were rated by three or more untrained peers with whom they were well acquainted, whereas the patients were rated by a single clinician. The results are shown in the bottom half of Table 5 and demonstrate clear convergent and discriminant validity patterns in both cases. Compared with ratings of anxiety and depression, the squared multiple correlation differences were notably larger in both studies, although it is impossible to compare the studies to each other because of their many methodological differences. These data again suggest that the discrimination between anxiety and depression will be greatly enhanced if the link between low PA and depression can be firmly established.

Summary and conclusions. These data have many parallels to those discussed earlier: (a) Moderate to good convergent validity is obtained when adequate and comparable scales are used in heterogeneous samples, and (b) the convergent and discriminant correlations covary, which suggests that a general distress factor underlies both types of mood ratings to a considerable extent. Convergent and discriminant correlations will both be higher when this nonspecific factor is rated reliably (e.g., through the use of multiple raters and well-constructed scales) than when it is not.

Furthermore, NA and PA show clear convergent and discriminant validity patterns across self- and clinical ratings. Given that anxiety and depression both involve NA, whereas only (low) PA is related to depression, strengthening the PA component of depression measures will improve the discrimination between these syndromes.

Symptom and Syndrome Measures

Validity. A remarkable number of studies have examined the convergence of self- and clinically rated depression. Notably fewer have examined comparable data for anxiety, and we found only three studies in which the discriminant validity of these ratings was investigated. These data are summarized in Table 6. Convergence between self- and clinical raters is highest ($r = .71$) for specific, multi-item measures of depression (e.g., the HRSD). Indeed, it seems that the level of convergence is as high as the reliabilities of these scales permit. Moreover, there is no indication that the results differ systematically between patient and nonpatient samples (Beck et al., 1988), so they have been combined for presentation in Table 6. Convergence between

[5] We are grateful to an anonymous reviewer for raising this point.

Table 5
Convergent and Discriminant Validities for Mood Measures: Self- Versus Clinical Raters in Patient and Nonpatient Samples

Sample	No. studies	N	Convergent validity: Anxiety or NA	Convergent validity: Depression or PA	M	Discriminant validity	R^2 difference
			Anxiety–depression				
Patients (good convergence)	3	340[a]	.57	.69	.63	.59	.05
Patients (poor convergence)[b]	3	287	.30	.25	.28	.15	.06
Nonpatients	3	502	.55	.48	.52	.41	.10*
			Negative and positive affect				
Patients	1	32	.57	.77	.68	−.15	.44*
Nonpatients	1	89	.40	.49	.45	−.13	.19*

Note. NA = negative affect; and PA = positive affect.
[a] For anxiety, $n = 244$. [b] For discriminant validity, no. of studies = 2 and $n = 220$.
* $p < .05$.

global ratings of depressive symptomatology and self-report measures is somewhat lower, and a clear level difference can be seen between patient and nonpatient samples (.66 vs. .51).[6] Thus, the lower reliability of global clinical ratings is paralleled in their lower convergent validity with self-ratings.

Correlations between self- and clinical ratings of anxiety are more variable, and it is clearly important to distinguish between studies that have used reliable versus unreliable measures (or rating conditions). However, even with reliable measures or conditions, convergence is slightly lower than for specific depression measures ($r = .64$ vs. .71), perhaps because of the greater sensitivity of clinicians to the heterogeneity of anxiety symptoms. When the clinical ratings are of poor or unknown reliability, correlations with self-reported anxious symptomatology are unacceptably low ($r = .37$). All studies in which the convergent validity of anxiety ratings has been examined have used patient samples, so the level of convergence in nonpatient samples is unknown.

Three studies presented a multitrait (anxiety vs. depression), multimethod (self- vs. clinician rating) matrix for syndromal measures (Bramley et al., 1988; D. A. Clark, Beck, & Brown, 1989; Vye, 1986). All of them used different measures, but the results were remarkably similar nonetheless and yielded an overall heterotrait–heteromethod correlation of .34. In each study there was evidence that these correlations were not symmetrical in both directions (i.e., the correlation of clinician-rated depression with self-rated anxiety differed from that of clinician-rated anxiety with self-rated depression), but the differences were not systematic across studies and are probably measure specific. It is noteworthy that two of the three studies were cited earlier because they emphasized the low PA aspect of depression, yet the convergent and discriminant validity pattern was the same in third study, which used the revised Hamilton scales and the Beck inventories.

Summary and conclusions. The convergent validity between well-established self-report and clinical measures of depression is high—nearly as high as the reliabilities and convergent validity estimates within each type of rating (see Tables 3–5). The convergent validity between reliable self- and clinical measures of anxiety is slightly lower, although it is certainly still acceptable. Greater sensitivity of clinicians to the heterogeneous content of anxiety measures (wherein patients respond more on the basis of their general affective distress level) may contribute to this lower convergence. Because both affect and rater type are varied in these analyses, the discriminant correlations are (not surprisingly) somewhat lower than the within-methods discriminant validities, which were in the .60's for self-report and approximately .40–.45 for clinical ratings. There was good agreement across studies, however, so the overall figure of .34 likely represents an accurate lower bound estimate of the true correlation between syndromal measures of anxiety and depression.

Summary and Conclusions for the Correlational Data

We have presented a great deal of evidence that examines the convergent and discriminant validity patterns of measures of anxiety and depression. First, a large number of studies provide consistent evidence that under optimal conditions the convergence among reliable syndromal depression ratings averages in the low .80s for clinical ratings and approximately .70 both within self-report and for self- versus clinical ratings. Optimal conditions include trained raters, access to the same information, well-defined criteria, and an adequate range of symptomatology. There are no systematic differences between patient and nonpatient samples per se for either type of rating.

The data for syndromal anxiety are fewer and suggest somewhat less consistency in clinical ratings as compared with those for depression. The convergence among self-report measures of syndromal anxiety is comparable to that of depression, with some evidence that it may be higher in patient samples. Convergence between self- and clinical ratings of syndromal anxiety is slightly lower than between those for depression, presumably because of the greater variability across the clinical ratings,

[6] As with the data in Table 3, because of the large sample sizes in this meta-analysis, we focus on psychologically meaningful (rather than statistically significant) differences between correlations in this section.

Table 6
Convergent and Discriminant Validities for Syndrome Measures: Self- Versus Clinical Raters in Patient and Nonpatient Samples

Clinical measure or rating condition	Sample	Validity	No. studies	*N*	Coefficient
		Depression			
Specific measures	Patients and nonpatients	Convergent	29	3,507	.71
Global ratings	Patients	Convergent	24	3,405	.66
Global ratings	Nonpatients	Convergent	2	3,950	.51
		Anxiety			
Reliable	Patients	Convergent	8	1,055	.64
Unreliable	Patients	Convergent	5	509	.37
		Depression–anxiety			
All available studies	Patients	Discriminant	3	437	.34

which itself may stem from clinical sensitivity to the greater heterogeneity of the anxiety disorders as compared with the depressive disorders.

Levels of discriminant validity are affected by several parameters. First, there is only modest discriminant validity between self-report measures of anxious and depressive symptomatology in nonpatient samples, for which a large general NA factor accounts for most of the reliable score variation. In contrast, a moderate degree of differentiation can be found in patient samples. This increased differentiation in patient samples is consistent with the results of Hiller, Zaudig, and von Bose (1989) who found that the overlap between depressive and anxious symptoms decreased as severity of psychopathology increased. Nevertheless, it is important to recognize that even in patient samples, self-ratings of anxiety and depression typically provide more information about the overall level of subjective distress than about the relative salience of depressive versus anxious symptomatology. Second, instruments do vary in their convergent and discriminant validity patterns. Two sets of paired measures—the Beck inventories and the Costello-Comrey scales—apparently provide a more differentiated correlational pattern in both patient and nonpatient samples, but more data are needed on each set of scales to establish this finding conclusively.

The convergent and discriminant validity of clinical ratings ranges from very poor (with the original Hamilton scales) to very good (in several studies in which the researchers conceptualized depression largely in terms of a lack of pleasure or interest, i.e., low PA). It is noteworthy that in the latter studies, the convergent and discriminant validity pattern was improved by lowering the discriminant coefficients without simultaneously lowering the convergent correlations also (which is the more typical pattern). Some data (to be discussed subsequently) support the validity of this conceptualization, but it has yet to be tested widely.

In the majority of studies, discriminant coefficients are in the low .40s, a level of correlation that suggests both significant overlap and substantial differentiability between the two syndromes. These data indicate that anxiety and depressive syndromes share a significant nonspecific component of generalized affective distress but that they can also be meaningfully differentiated on the basis of one or more distinctive factors. Thus, two or more constructs are needed to explain the correlational data for anxiety and depressive phenomena, both at the mood and syndromal level: a general nonspecific (NA) factor that is common to the moods or syndromes and one or more specific factors that distinguish them. We turn now to an examination of these specific factors.

Specific Factors in Depression and Anxiety

Several important points have not yet been established by these data. First, we need to go beyond these correlational results to determine the number and nature of the specific factors involved in the differentiation of anxiety and depressive syndromes. The second issue concerns the distress level at which self-report measures begin to provide a notable degree of discrimination. It has been observed that general medical samples typically score higher than nonpatient samples, but lower than psychiatric patients, on various measures of both depression and anxiety (Klerman, 1989) and that mixed affective symptoms are especially common in this population (Katon & Roy-Byrne, 1989, 1991). Do these patients more closely resemble psychiatric patients or nonpatients in the degree of specificity obtainable from their self-reports? Third, we cannot determine from these data the patterning of the general and specific factors within individual persons. For instance, it may be that every anxious or depressed patient shows an elevated level of the general factor and an additional elevation on one and only one specific factor. If so, then anxiety and depression are best viewed as distinct disorders that share some symptoms.

Alternatively, some patients may have only a general factor elevation, whereas others may show significant elevations on all of the factors. This situation would indicate a more complicated relation between anxious and depressive phenomena and would necessitate, in turn, a more complex diagnostic system. Patients with only general factor elevations might receive a diagnosis of *generalized affective disorder*, a designation that might find particular use in general medical populations (Katon & Roy-Byrne, 1989). On the other hand, those with elevations on

all factors would receive either two diagnoses (e.g., major depression and an anxiety disorder such as generalized anxiety disorder [GAD] or panic, depending on other features of the symptom picture) or a specific diagnosis of mixed affective disorder, which would be warranted if such patients were shown to be clinically distinct from those with only one type of disorder (e.g., see Akiskal, 1990; Tyrer, 1984; Van Valkenburg, Akiskal, Puzantian, & Rosenthal, 1984).

There are three types of evidence for specific factors that differentiate anxiety and depression: (1) the effect of content and context in assessing depression and anxiety; (2) factor-analytic data that indicate the presence of specific factors; and (3) recent work in the structure of mood that suggests that PA is an important, specific component of depression.

Effects of Content and Context on Anxiety and Depression Ratings

Self-Report Measures

Content analyses. We noted earlier that the Beck inventories and Costello-Comrey scales exhibited somewhat better convergent and discriminant validity patterns than other measures. A content analysis of these scales, to contrast them with those that showed poorer discriminant validity, may suggest reasons for their preferred pattern and offer insight into factors that differentiate the syndromes. The BDI taps a broad range of items generally considered diagnostic of major depressive disorder (e.g., sadness or unhappiness, loss of interest, guilt, suicidal tendencies, and appetite disturbance). It also includes items that indicate general life dissatisfaction, hopelessness, or low self-esteem, factors that one may also see in such other *DSM–III–R* diagnoses as dysthymia, adjustment reactions, overanxious disorder, personality disorder, and so on. Finally, it assesses symptoms that are common to several depressive and anxiety disorders (e.g., irritability, poor concentration or indecisiveness, insomnia, and fatigue). In contrast, the BAI focuses specifically on the physiological aspects of anxiety. Three of the 20 items are anxious mood terms, and 3 others assess specific fears, whereas the remaining 14 items all assess the symptoms of autonomic hyperactivity and motor tension associated with GAD (and panic disorder as well, if the appropriate temporal features are present). This analysis suggests that the discriminant validity of the Beck inventories stems largely from the content specificity of the BAI. Indeed, in patient samples, the BDI is more highly correlated with other anxiety inventories than it is with the BAI (rs = .61 and .49, respectively; see Table 4); however, no difference is found in nonpatient samples (r = .61 in both cases), perhaps because of the infrequent occurrence of significant physiological symptomatology in these subjects.

The CC-D scale focuses more narrowly on the symptoms of depressed mood, loss of interest or pleasure, and worthlessness. It does not assess physiological or vegetative changes, fatigue, or suicidal ideation. However, its strength may lie in the fact that it assesses the loss of interest or pleasure particularly well by including a number of (reverse-keyed) positively worded items (e.g., "Living is a wonderful adventure for me"). Similarly to the BAI, the nine items of the CC-A focus on the anxious mood, motor tension, and vigilance components of GAD. Thus, the increased discriminative power of the Costello-Comrey scales appears to reflect the fact that in addition to nonspecific distress, they assess symptomatology specific to both depression (i.e., lack of PA) and anxiety (i.e., motor tension and vigilance).

In contrast to this clear content differentiation, the MMPI scales, STAI, SDS, and SAS each contain symptoms that are common to the two syndromes (e.g., restlessness and fatigue). Moreover, each assesses symptoms more characteristic of the other syndrome. For example, the SDS scale includes tachycardia, whereas the STAI measures blue mood, crying, and unhappiness. The MMPI scales are quite heterogeneous in content; both the depression and anxiety scales contain many items similar to those in the BDI, plus others that are more generally related to anxiety (e.g., worry, obsessiveness and brooding, and hypersensitivity).

However, content considerations alone are not sufficient to explain the better convergent and discriminant validity patterns of the Beck and Costello-Comrey scales. The content assessed in the SCL-90 scales is quite similar to that of the Beck inventories, and yet their discriminative power is substantially less. One possible explanation for this difference in discriminant validity is that the SCL-90 items are intermixed in a single inventory with a single response format, whereas the Beck scales have different formats and are administered as separate measures. If this explanation is correct, then the enhanced discriminative power of the Beck versus the SCL-90 may be partially due to method variance. In this regard, it is noteworthy that the Costello-Comrey scales are combined in a single inventory with no difference in format between the two scales. Because the discriminative power of the Costello-Comrey scales cannot be attributed to method variance, their content deserves especially close attention.

Factors that influence reported symptom levels. In general, patients tend to rate their symptoms as more severe than do clinicians (Katon & Roy-Byrne, 1989). Furthermore, for depressive symptomatology, level of severity (whether self- or clinician-rated) is negatively correlated with self–clinician discrepancy scores (Rush, Hiser, & Giles, 1987; Tondo, Burrai, Scamonatti, Weissenburger, & Rush, 1988; Zimmerman, Coryell, Wilson, & Corenthal, 1986). That is, whereas self- and clinical ratings are highly similar for severely depressed patients, these ratings show substantial discrepancy at lower levels of disturbance. This finding needs replication with anxious patients.

Taken together, these data suggest that, as compared with patients' self-ratings, clinicians' judgments more strongly reflect specific, clinically prominent symptoms (e.g., marked anhedonia and psychomotor retardation) and are less influenced by the patients' general level of affective distress. Moreover, they further suggest that the responses of less disturbed patients primarily reflect their standing on the general distress factor, whereas severely disturbed patients focus additionally on their specific symptoms. In this regard, it is noteworthy that clinically diagnosed depressed patients tend to rate themselves as having more severe symptoms of both types than do anxiety patients of equal (clinician-rated) severity (L. A. Clark, 1989), which indicates that depressed patients may experience higher levels of general distress than do anxious patients. In this context, it is also useful to recall a suggestion made earlier with regard to anxious symptomatology, namely, that patients' self-

ratings may be more convergent than clinical ratings because clinicians focus more on specific scale content, whereas patients emphasize their general distress level.

Clinical Ratings

Analyses of the Hamilton scales. Ten studies have compared HRSD and HRSA scores in different diagnostic groups or in relation to treatment. Because the revised Hamilton scales show much clearer convergent and discriminant validity patterns, studies with the original scoring will be reviewed briefly and then compared to the results of two studies with the revised scales. Finally, a content comparison of the original and revised scoring systems suggests why the revised system yields more discriminating results.

Four studies compared (original) Hamilton scale levels in panic disorder patients, without or without an additional depressive disorder (Breier et al., 1984; Buller, Maier, & Benkert, 1986; Ganellen & Zola, 1989; Lesser et al., 1988). Without exception, patients with secondary depression scored significantly higher on both Hamilton scales as compared with those without. DiNardo and Barlow (1990) found similar patterns on both scales in eight diagnostic groups. Specifically, dysthymics scored highest and phobics, lowest on both Hamilton scales. Patients with other anxiety disorders (panic, GAD, and agoraphobia) and major depression had intermediate scores on both scales.

Similarly, four treatment studies with depressed, anxious, or mixed patient groups with diverse interventions all found that scores on both Hamilton scales were reduced after treatment (Borkovec & Mathews, 1988; Borkovec et al., 1987; Lesser et al., 1988; Widlocher, Lecrubier, & Le Goc, 1983). A fifth study (Grunhaus, Rabin, & Greden, 1986) found that pure depressed patients had lower HRSD scores after treatment than did patients with an additional panic disorder, who scored higher than the depressed patients on both anxious and depressed mood. Taken together, these data are congruent with the earlier correlational findings in demonstrating the influence of a strong nonspecific factor in the original Hamilton scales.

DiNardo and Barlow (1990) compared the same eight diagnostic groups with the revised Hamilton scoring system and obtained notably different results. On the revised HRSA, patients with agoraphobia, obsessive–compulsive disorder, panic, and mixed anxiety–depression diagnoses all scored higher than did those with GAD, dysthymia, major depression, or phobias. In contrast, patients with major depression and dysthymia scored higher on the revised HRSD than did those with obsessive–compulsive disorder, agoraphobia, or mixed diagnoses, who in turn scored higher than did those with GAD, panic disorder, or phobias. Thus, on the revised Hamilton scales, the ordering of the diagnostic groups conformed much more closely to the theoretically expected pattern.

How were the Hamilton scales rescored to yield these improved results? The most systematic change involved physiological items: Specifically, two physiological items were dropped from the depression scale entirely, and four were reassigned from depression to anxiety. Benshoof, Moras, DiNardo, and Barlow (1989) provide item data that support the validity of this revised scoring scheme. They compared depressed patients with three anxiety groups on each of the Hamilton items. Although none of the 15 revised HRSA items differentiated the depressed patients from all anxiety groups, this was largely because the GAD group tended to overlap with the depressed patients. Importantly, the items that showed the clearest differentiation between the depressive patients and the panic and agoraphobic patients were physiological in nature, that is, cardiovascular, autonomic, and respiratory symptoms. Thus, these data again suggest the importance of physiological signs for differentiating anxiety from depression.

Symptom rating studies. L. A. Clark (1989) found that only a small subset of anxiety-related symptoms, panic attacks (including the associated autonomic symptoms) and agoraphobic avoidance, reliably differentiated anxious from depressed patients. Similarly, the most differentiating depression symptoms were those generally associated with the melancholic subsyndrome (e.g., profound loss of pleasure and early morning awakening). However, most symptoms (e.g., irritability, anxious mood, and disturbances of sleep and appetite) failed to discriminate the two types of patients, primarily because they were highly prevalent in both groups. These findings are consistent with demonstrations that self-reports of NA, and of anxiety in particular, are correlated with other types of complaints, especially those of physical health (indigestion, sore throat, itchiness, joint pain, etc.; Watson & Clark, in press-a; Watson & Pennebaker, 1989). In fact, Watson and Pennebaker (1989) proposed that the concept of NA be expanded further into an extremely broad dimension of somatopsychic distress; such a dimension would encompass the nonspecific component common to both depressive and anxious disorders. In contrast, those symptoms that differ in frequency between the two types of patients reflect the unique aspects of these syndromes.

L. A. Clark (1989) presented evidence to indicate that rating context also influences clinical judgments of anxiety and depressive symptoms. Specifically, when ratings were made as part of the clinical diagnostic process, greater differentiation was found between anxiety and depression symptom ratings than when the ratings were made independently of diagnosis. Thus, the correlational data showing that clinicians (more than patients) focus on the distinctive features of these disorders may stem, at least in part, from the necessity of assigning diagnoses. If this explanation is correct, it further suggests that if a nonspecific affective disorder diagnosis were available to clinicians, clinical ratings might subsequently show less differentiation than they do currently, because of a decreased need to distinguish between the two types of syndromes.

Clinical ratings may also be influenced by the setting in which the data are collected. For example, studies of anxiety clinic patients typically report a lower frequency of depressive diagnoses than do studies with samples from other sites. Across 13 studies (11 were reviewed by L. A. Clark, 1989; the others were carried out by Buller et al., 1986, and Maier et al., 1988) that examined the prevalence of depression in patients with agoraphobia, panic disorder, or both (N = 682), 64% (range, 41%–92%) were found to have a depressive disorder. In contrast, five studies with corresponding patients from anxiety clinics found an average depression prevalence of only 21.5% (range, 10%–39%; Barlow, DiNardo, Vermilyea, Vermilyea, & Blanchard, 1986; Benshoof et al., 1989; de Ruiter, Rijken, Barssen,

van Schaik, & Kraaimaat, 1989; DiNardo & Barlow, 1990; Sanderson, DiNardo, Rapee, & Barlow, 1990). It is not clear from these data whether the observed prevalence differences (a) are veridical and reflect systematic variations in health care seeking, (b) stem from a diagnostic bias against finding cross-affect disorders in specific-affect clinics, or (c) result from self-perception differences in patients that affect their symptom reporting during interviews. Of course, all of these factors could be operating simultaneously. Furthermore, it must be noted that four of the five anxiety clinic studies were done at a single site, and all five used the Anxiety Disorder Interview Schedule (DiNardo, O'Brien, Barlow, Waddell, & Blanchard, 1983) for diagnostic purposes. Thus, these findings clearly need to be replicated in other clinics with other diagnostic procedures.

Summary and Conclusions

In addition to properties of the assessment instruments themselves, a number of factors appear to affect ratings of syndromal anxiety and depression. Patient self-ratings seem to be influenced more strongly by general distress levels than are clinical ratings. Moreover, in depression the importance of general distress—in relation to specific depressive symptoms—may be greater in milder levels of the syndrome. This issue has not been examined for anxiety syndromes, however. The context in which clinical ratings are made is also an important factor: Ratings of syndromal anxiety and depression are more distinctive when they are made as part of the diagnostic process. Thus, the existence of a nonspecific affective diagnosis may increase the observed overlap in clinical ratings because of a decreased need for diagnostic differentiation. Furthermore, various treatment studies have shown significant nonspecific changes in both anxious and depressed patients and thereby suggested that decreased differentiation will not have deleterious treatment effects. Finally, the clinical setting itself may also affect ratings. Secondary depression is reported less frequently in anxiety disorder clinics than in other sites, but additional research is needed to determine the replicability of this finding in additional settings and with other assessment instruments, and if replicable, the extent to which this finding represents true prevalence differences or, rather, reflects perceptual differences on the part of clinicians, patients, or both.

The discriminative power of syndromal scales, whether based on self- or clinical ratings, depends on having clearly defined, nonoverlapping content. For self-report scales, moreover, rating format may also be a factor. The greatest discriminative power for syndromal ratings of anxiety is obtained when physiological symptoms (i.e., autonomic hyperactivity) are emphasized along with tension, fear, and anxious mood. Similarly, measures of depressive symptomatology that emphasize the loss of pleasure (i.e., an absence of PA) and other symptoms of melancholia appear to be more distinctive than those that do not. Furthermore, clinicians who conceptualize depression in terms of loss of pleasure and low PA produce more differentiated ratings even if they use a standard depression rating scale.

Factor-Analytic Studies

In a previous review (L. A. Clark & Watson, 1991b), we factor analyzed the 10 most commonly used anxiety and depression scales (both mood and syndromal). The first factor—most clearly marked by the BDI and MMPI anxiety scales—was very broad and general; it was easily identifiable as general NA, demoralization, or somatopsychic distress. The emergence of this factor reinforces our earlier conclusion that nonspecific distress is inherent in the syndromes of depression and anxiety and is largely responsible for their co-occurrence. In contrast, the second factor was primarily represented by the CC-A scale, which emphasizes fearful mood, anxious vigilance, and motor tension, content that is also found in the BAI (which because of its recent development, lacked sufficient data to be included in the analysis). Thus, these data parallel the content analyses described earlier. However, the absence of a specifically depressive factor raises the question of whether such a factor will emerge if additional items with content peculiar to depression are included in these types of analyses.

Symptom-level analyses. A number of studies (reviewed by L. A. Clark & Watson, 1991b) have directly factor analyzed self- or clinical ratings of general neurotic symptoms and identified separate depression and anxiety factors, or more rarely, a single bipolar factor. Two general patterns can be discerned. First, in many studies the so-called depression factor was quite broad, encompassing many nonspecific symptoms of distress in addition to more distinctively depressive phenomena, whereas the so-called anxiety factor was more narrowly focused on physiological signs of anxiety and shakiness or tension. These data replicate the pattern observed in our content analysis of the Beck inventories and of the scale-level factor analysis. The second pattern—seen particularly in studies with variants of the SCL-90—was a tripartite division of depression and anxiety items into: (a) a general neurotic factor, which includes feelings of inferiority and rejection, oversensitivity to criticism, self-consciousness, social distress, and sometimes also depressed and anxious mood; (b) a specific anxiety factor, which is focused on feelings of tension, nervousness, shakiness, and panic (wherein explicitly somatic items often form yet another factor); and (c) a specific depression factor that includes loss of interest or pleasure, anorexia, and crying spells, and sometimes hopelessness, loneliness, suicidal ideation, and depressed mood as well. This factor seems clearly related to PA and also seems to reflect the lack of energy and zest that characterizes the low end of this dimension.

Beck (1972) obtained similar results in his review of 13 factor-analytic studies of depressive symptoms. He noted three factors that appeared in all studies: One factor, marked by self-deprecation, low self-esteem, sad affect, self-blame, and so on, corresponds to the general distress dimension we have noted repeatedly. A second factor, marked by apathy, emotional withdrawal, fatigue, loss of sexual interest, and lack of social participation, was more specifically depressive and clearly reflects the lack of pleasure and social–interpersonal engagement that is characteristic of low PA. General somatic complaints and difficulties constituted the third invariant factor. Most studies also found a specific anxiety factor, defined by such items as tension and agitation.

A general concern with item-level analyses is that the results are influenced by base rate differences, that is, systematic differences in the frequency of anxiety and depressive symptoms may lead to the identification of spurious specific factors. Fortu-

nately, however, base rate differences do not appear to be a major influence in this area. For example, in a sample of 364 outpatients, Prusoff and Klerman (1974) reported mean self-reported symptom levels that ranged from 1.5 to 3.1 on a 1–4 scale, with no systematic difference in the base rates of specific anxiety and depressive items. Using physicians as raters for the same set of symptoms, Lipman, Rickels, Covi, Derogatis, and Uhlenhuth (1969) found a range of 1.7 to 3.0 in a sample of 837 outpatients. Although there was an overall difference in the mean frequency of depressive (2.2) versus anxious (2.7) symptoms, neither set of symptoms showed a truncation of range sufficient to restrict the interitem correlations greatly. Nevertheless, future researchers in this area must be alert to potential artifacts due to differential endorsement rates.[7]

Summary and conclusions. Consistent with the earlier content analyses, factor analytic studies of symptoms demonstrate that a rather distinctive anxiety factor that focuses on nervous tension and autonomic symptomatology can be found and that a highly general distress factor that encompasses but is not limited to depressive symptoms also frequently appears. Furthermore, these data extend the scale content analyses by demonstrating that a specific depression factor, which represents a more severe depressive syndrome, is also identifiable. Symptoms related to the absence of PA (e.g., loss of interest or pleasure, apathy, hopelessness, extreme fatigue, lethargy, and psychomotor retardation) are common markers of this cluster. This factor may also contain some NA-related items (e.g., depressed mood) but does not include such nonspecific symptoms as low self-esteem, which appear instead on the general factor.

These data thus support and extend the conclusion drawn from the correlational studies that syndromal anxiety and depression share a significant nonspecific component of generalized affective distress but, nevertheless, can be differentiated on the basis of additional distinctive factors. Thus, the marked physiological hyperarousal associated with GAD (and panic attacks, if onset is sudden) appears to be relatively specific to anxiety, whereas the various manifestations of low PA (apathy, behavioral withdrawal, or retardation) are distinctly characteristic of depression, especially its melancholic subsyndrome.

Role of Positive Affect

Extensive theoretical and empirical work is converging on the conclusion that the relative absence of positive mood and pleasurable experiences are critical in distinguishing depression from anxiety. We have introduced some of these data in the course of our review. We briefly summarize other aspects of this research now. For further discussions, see L. A. Clark and Watson (1991b), Depue, Krauss, and Spoont (1987), Kendall and Watson (1989), Tellegen (1985), Watson, Clark, and Carey (1988), and Watson and Clark (in press-b).

Most affective states are rather pure markers of either PA or NA. A few, however, are combinations of the two dimensions. Most notably, terms that reflect depressed mood (e.g., *sad* or *blue*) or interpersonal disengagement (e.g., *lonely* or *alone*) represent a mixture of relatively high NA and moderately low PA (Watson & Clark, 1984; Watson & Tellegen, 1985). These mood data suggest that whereas anxious mood is essentially a state of high NA, depressed mood is a more complex affect that includes a significant secondary component of low PA. Consistent with this idea, many existing measures of general anxious symptomatology are predominantly measures of trait NA, whereas corresponding depression scales, although they are strongly related to trait NA, also have a significant low PA component (Watson & Clark, 1984; Watson & Kendall, 1989).[8] This pattern is consistent with the idea that a core set of symptoms specific to depression and quasi-independent of both general NA and a specific anxiety cluster may be identified.

Data that relates trait NA and PA to symptoms of depression and anxiety support the utility of the PA dimension in differential diagnosis. Watson et al. (1988) found that trait NA was significantly associated with the majority of anxiety symptoms and with 19 of 20 depressive symptoms, whereas trait PA was much more strongly and consistently related to the depressive than to the anxious symptoms. Similarly, trait NA was correlated with the presence of both depressive and anxiety diagnoses, whereas trait PA was consistently related only to the depressive disorders. Thus, NA was nonspecific and reflected the general presence of anxious and depressive symptoms or disorder, whereas PA was specific to depression.

Studies of dysfunctional cognitions have revealed a similar pattern with measures of positive and negative thinking. For example, the Automatic Thoughts Questionnaire (Hollon & Kendall, 1980) was designed to assess the frequency of negative self-referent thoughts in depression. Whereas depressed patients do score higher on the Automatic Thoughts Questionnaire than various psychiatric groups (Hollon, Kendall, & Lumry, 1986), generally anxious subjects obtain similar scores to depressed subjects (Kendall & Ingram, 1989). Recently, however, measures of positive thinking have been developed that are relatively independent of negative cognitions (e.g., Ingram & Wisnicki, 1988) and show evidence of being more specifically related to depression. For example, the addition of 10 positive statements to the Automatic Thoughts Questionnaire significantly increased its ability to differentiate a group of depressed subjects from a heterogeneous group of psychiatric patients, which included some with panic disorder (Kendall, Howard, & Hays, 1989).

Watson and Kendall (1989) summarized extensive data in regard to those factors that anxiety and depression share in contrast to those that differentiate these syndromes. Several

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[7] We are grateful to an anonymous reviewer for raising this point.

[8] It must be noted that these two components emerge clearly in factor analyses only when negative affect (NA) and positive affect (PA) markers are also included. Otherwise, a single large general factor typically emerges, as would be expected from the high internal consistency reliabilities of these scales. This dimension is usually labeled (Un)pleasantness and cuts diagonally across the NA and PA dimensions (see Watson & Clark, 1984; Watson & Tellegen, 1985). It must also be acknowledged that some measures designed to measure anxiety also appear to contain some low PA variance, which contributes to their poor discriminant validity with depression scales. We noted earlier that some anxiety scales (e.g., the STAI) include items to assess blue mood or unhappiness, which have a low PA component. Moreover, Watson and Clark (1984) reported that the State scale of the State–Trait Anxiety Inventory correlated strongly with state PA (−.50) as well as with state NA (.64), whereas PA and NA themselves were uncorrelated (−.03).

specific factors they identified can be conceptualized in terms of low PA. For example, the loss or absence of pleasurable life experiences seen in depressive syndromes is clearly associated with low levels of positive mood. It is noteworthy that this phenomenon is not tied to a particular causal model: Behavioral researchers focus on the insufficiency of environmental reinforcers (e.g., Foa, Rothbaum, & Kozak, 1989; Rehm, 1989), cognitive theorists have suggested that depressive mood states bias against processing of positive self-relevant information, and still others emphasize the inability of depressed persons to enjoy pleasant events for reasons that are either psychological (Costello, 1972) or biological (Klein, 1974; Meehl, 1975) in origin. Similarly, the behavioral deficits seen in depressive syndromes can be interpreted as manifestations of low levels of positive emotional arousal (Safran & Greenberg, 1989). Moreover, PA—but not NA—shows seasonal and diurnal variations, which have also been documented for depression but not for anxiety (e.g., Depue et al., 1987; Kasper & Rosenthal, 1989; Healy & Williams, 1988). Thus, several lines of research suggest that the lack of positive affective experience is specifically associated with depressive symptomatology and differentiates it from anxiety-related phenomena.

Discussion

The conclusions that emerge from the psychometric data are clear and can be stated succinctly: Anxious and depressed syndromes share a significant nonspecific component that encompasses general affective distress and other common symptoms, whereas these syndromes are distinguished by physiological hyperarousal (specific to anxiety) versus the absence of PA (specific to depression). This tripartite view implies that a complete description of the affective domain requires assessing both the common and unique elements of the syndromes: general distress, the physiological tension and hyperarousal of anxiety, and the pervasive anhedonia of depression. Neither general distress nor the syndrome-specific symptom clusters alone can completely describe these syndromes; rather, they jointly define the domain. These psychometric results thus provide a theoretical-empirical framework for interpreting a great deal of clinical and epidemiologic data and for developing a more satisfactory nosology in this area. That is, we believe the problems of diagnostic comorbidity and optimal classification of anxious and depressive disorders can be understood best in terms of this recurring, tripartite division of symptoms.

However, the question of how these factors are combined in persons remains unanswered. Are anxiety and depression entities that are strongly correlated because of their many common symptoms, yet whose specific components differentiate them sufficiently to define them as distinct syndromes? Or have attempts to differentiate anxiety and depression failed in part because there are sizable groups of patients who cannot be meaningfully categorized simply as either anxious or depressed because they either exhibit a wide variety of both types of specific symptoms or else show primarily nonspecific symptoms?

The data suggest that both of these views may be true and highlight the importance of distinguishing between symptom and diagnostic levels. That is, the correlation between ratings of anxious and depressive symptomatology may simply reflect the fact that anxiety and depression share many distress symptoms rather than indicate diagnostic overlap. Certainly it is possible to identify many patients who have a diagnosis of anxiety but not depression or vice versa. For instance, to turn the comorbidity data reported by L. A. Clark (1989) around, one third of patients whose primary diagnosis is panic or agoraphobia do not have a depression diagnosis, whereas over two thirds of those with simple or social phobias do not. Similarly, roughly half of all patients diagnosed with primary depression have no anxiety diagnosis. Thus, patients with depressive disorders may have substantial anxious symptomatology, or vice versa, because of shared symptoms, without showing the full disorder in the other domain.

On the other hand, researchers have amply documented that many affective disorder patients show a mixed anxious–depressed symptom picture that cannot easily be characterized as one type of disorder or the other (Downing & Rickels, 1974; Gersh & Fowles, 1982; Hollister et al., 1967; Paykel, 1971, 1972). Such patients, who may or may not meet criteria for current *DSM–III–R* diagnoses, are frequently identified in general medical samples (Katon & Roy-Byrne, 1991; Klerman, 1989).

Moreover, research on comorbid diagnostic patterns has demonstrated that patients who meet criteria for a diagnosis of both anxiety and depression represent a distinctive group, with significantly poorer treatment response and outcome, more severe clinical presentation of both syndromes, and greater chronicity (Breier et al., 1984; Clancy, Noyes, Hoenk, & Slymen, 1978; Grunhaus, 1987, 1988; Grunhaus et al., 1986; Maser & Cloninger, 1990; Stavrakaki & Vargo, 1986; Van Valkenburg et al., 1984). They also scored significantly higher on a factor-analytic measure of general distress (NA) than did patients with a diagnosis of only anxiety or only depression (L. A. Clark & Watson, 1991b). The synergistic aspect of this comorbidity, which Grunhaus (1988) suggested reflects a "dual diathesis" (p. 1214), is inconsistent with the notion of simple co-occurrence of distinctive syndromes due to shared symptoms.

A Modest Proposal

Although a complete exploration of the implications of this tripartite model for the classification of affective disorders is beyond our scope, a few observations are in order. In general, the data indicate that elevated levels of the nonspecific component will nearly always be evident in anxious or depressed patients; indeed, dysfunctionally high NA essentially signals the presence of these disorders (although lower levels of trait NA may be seen in subjects with highly circumscribed disorders, such as simple phobias). Thus, elevated NA suggests the general relevance of anxiety–depression diagnoses (and perhaps other diagnoses as well) but in and of itself offers little basis for finer discrimination; rather, further differentiation is provided by the two specific factors. Relatively low or high levels on both of these factors together suggests a mixed mood disorder, and we submit that the data support the addition of a diagnosis of mixed anxiety–depression to the current classification system.

It will be important to draw up the criteria for this disorder in such as way as to discourage its use as a "diagnostic landfill." For example, we believe the field has sufficient psychometric sophistication to permit quantification of level of affective dis-

tress, similar to the use of specific IQ levels in the diagnosis of mental retardation. Furthermore, specific numbers of clinically significant symptoms or other criteria can be used to designate mild, moderate, and severe variants of the diagnosis. If developed in this way, the diagnosis will not represent a retreat from the goal of diagnostic specificity.

Patients whose predominant symptoms are nonspecific (distress, demoralization, irritability, mild disturbances of sleep and appetite, distractibility, and vague somatic complaints) and who show low (or moderate) levels of both specific factors—that is, show neither marked psychophysiological symptoms nor anhedonia—will receive a diagnosis of *mixed anxiety–depression, mild* (or *moderate*). This category is essentially the diagnosis that is already recognized in the 10th edition of the *International Classification of Diseases and Related Health Problems* (World Health Organization, 1990) and that is slated for the *DSM–IV* field trials. Patients with this diagnosis are probably most prevalent in general medical populations but are certainly not uncommon in psychiatric settings.

On the other hand, patients who report not only very high levels of general distress but also both anhedonia and psychophysiological hyperarousal will be diagnosed as *mixed anxiety–depression, severe*. This diagnosis may potentially be reserved for patients who fully meet criteria for both an anxiety and a depressive disorder, either simultaneously or longitudinally. Although the two component diagnoses can, of course, be assigned independently, use of the diagnosis *mixed anxiety–depression, severe* recognizes the synergistic quality of the dual diagnosis. Such a diagnosis will represent a lifetime diagnosis, much as bipolar disorder does currently, because episodes of marked anxiety and anhedonic depressive episodes do not necessarily occur simultaneously in these patients (Breier et al., 1984). To follow the bipolar disorder analogy, alternate forms such as *mixed anxiety–depression—depressed* may be used to designate the current episode.

Finally, the consideration of lifetime diagnoses leads us to the issue of the role of chronicity in defining psychiatric syndromes. The shared general distress factor is manifested both as a transient state and as a more stable trait. The relative stability of trait NA is well documented, with 12-year retest correlations of .70 and higher (L. A. Clark & Watson, 1991a). Moreover, genetic studies with diverse methodologies have consistently shown a significant heritability for trait NA (e.g., Carey & Gottesman, 1981; Jardine, Martin, & Henderson, 1984; Kendler, Heath, Martin, & Eaves, 1987; Loehlin, Willerman, & Horn, 1987; Pedersen, Plomin, McClearn, & Friberg, 1988; Rose, 1988; Tellegen et al., 1988; see L. A. Clark & Watson, 1991a, for a review).

These data indicate that the high levels of general distress and nonspecific symptoms reported by many patients are likely to be a manifestation of trait NA, which is rather chronic in nature. Indeed, in Hays's (1964) investigation of modes of illness onset, he described an anxious–depressed group with long-standing neurotic symptoms who later developed depression (see also Gersh & Fowles, 1982). Breslau and Davis (1985) also noted that when the duration requirement for GAD was increased from 1 to 6 months, the lifetime rate of major depressive disorder increased from 23% to 67%. Some of this increase may represent state effects (i.e., some subjects may develop a depressive syndrome in response to persistent anxiety).[9] However, because these were lifetime depression rates, it is also likely that chronicity itself is an important criterion in the diagnosis of mixed anxiety–depression. That is, we have already noted that patients who meet criteria for both an anxious and a depressive disorder are higher on NA and typically show a more chronic course than those with only one type of disorder. Breslau and Davis's (1985) data suggest that the reverse is also true: As subjects with more chronic (i.e., trait) NA are identified, the prevalence of a mixed syndrome also increases. Of course, if mixed anxiety–depression is marked by chronicity, the potential overlap with the Axis II personality disorders must also be considered, a topic that is beyond the scope of this article (see Widiger & Shea, 1991).

In conclusion, the data we have reviewed provide a framework for understanding affective syndromes in terms of their specific and nonspecific components. In particular, we feel they argue strongly for the development of a new diagnostic category that formally recognizes the importance of the pervasive and highly general trait of neuroticism and negative affectivity. This factor emerges as a ubiquitous and inescapable force in psychometric data. Currently, its strong—yet often unrecognized—presence seriously hampers attempts to forge a satisfactory diagnostic taxonomy in this area. By formally recognizing the existence of this important dimension, psychiatric classification will be operating from a position of much greater strength and will have advanced significantly toward its ultimate nosological goal.

[9] We are grateful to an anonymous reviewer for raising this point.

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