

## Using Self-Report Measures to Corroborate Theories of Depression: The Specificity Problem

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Depression scales tend to correlate highly with measures of anxiety and other negative emotional states. If the same is true of scales measuring constructs from depression theories such as negative cognitions and anaclitic depression, it brings into question the specificity of these models to depression. The overlap has been attributed to the common role of negative affect in depression and anxiety. Using a sample of college students, our study investigated the relationships among measures of depression, anxiety, positive and negative affect, and theory-relevant constructs. Theory-relevant scales related no more strongly to depression than anxiety measures. Furthermore, they related strongly either with negative or positive affect but usually not with both. These findings bring into question the specificity of depression models corroborated through the available self-report measures.

A number of studies have demonstrated that measures of depression correlate highly with measures of anxiety and other emotional states. For example, Gotlib (1984) found a single factor accounted for 50.8% of the total variability of 17 scales measuring variables such as depression, anxiety, assertiveness, and hostility in a sample of college students. Similar findings have been reported in a number of studies (reviewed in Kendall & Watson, 1989; Maser & Cloninger, 1990).

If the phenomenon were limited to self-report measures, it could be ascribed to method factors, such as the tendency towards low scores across measures because of social desirability responding or the absence of pathology. However, the overlap

between indicators of depression and other pathological mood states, particularly anxiety, is also evident in clinicians' and teachers' ratings of symptomatology (see Finch, Lipovsky, & Casat, 1989, for a review) and in diagnostic categories. For example, Regier, Burke, and Burke (1990) suggested that a person with a 1-month major depressive episode is between 9 and 19 times more likely to demonstrate a simultaneous 1-month anxiety disorder than a member of the general population. Over the course of their lifetime 43% of patients with affective disorders and 25% of those with anxiety disorders are at some point comorbid.

At the same time there is evidence supporting the traditional distinction between depression and anxiety. More than half of patients with an affective or anxiety disorder are never comorbid. Unique physiological markers have been associated with each disorder, including differences in REM latency (Reynolds, Shaw, Newton, Coble, & Kupfer, 1982) and specificity in medication response (Deakin, 1988). There is also evidence of specificity in the types of self-reported cognitions associated with anxiety and depression, both as mood states and as diagnostic categories (Greenberg & Beck, 1989; Kendall & Ingram, 1989; Mitchell & Campbell, 1988; Riskind, Castellon, & Beck, 1989). On the basis of the evidence it seems appropriate to consider anxiety and depression as conceptually distinct but strongly correlated constructs (see also D. A. Clark, Beck, & Stewart, 1990; L. A. Clark, 1989). Several factors have been posited as contributing to the correlation between depression and anxiety, including shared symptoms, commonalities in affective tone, and similarities in etiology (Watson & Kendall, 1989).

This conclusion has important implications for research on models of depression. To illustrate the point, Blatt (1974) has proposed a psychoanalytic model of depression involving two subtypes: Anaclitic depression is characterized by strong feelings of dependency, introjective depression by a tendency towards self-criticism. Blatt, D'Afflitti, and Quinlan (1976) developed the Depressive Experiences Questionnaire (DEQ), a list of experiences that commonly accompany episodes of depression. A factor analysis based on a college student sample suggested three components, which they termed Dependency, Self-Criticism, and Efficacy. The first two were interpreted as markers for the two subtypes identified in Blatt's model and presented as support for the two-factor model.

It can be argued that such studies do not demonstrate the specificity of these models to depression as opposed to other negative emotional states. Self-report scales measuring key constructs from theories of depression are also likely to exhibit the discriminant validity problems noted in self-report depression inventories. For example, A. M. Nezu, C. M. Nezu, and V. A. Nezu (1986) found a strong general distress component in the Attributional Style Questionnaire (ASQ; Abramson, Seligman, & Teasdale, 1978), a measure of causal attributions associated with the reformulated learned helplessness model. Because depressed affect is so strongly related to other negative affective states, it is unclear whether the findings of these studies are specific to depression or are generally applicable to individuals suffering emotional distress.

Recent research on the structure of mood suggests the basis for an affective distinction between depression and anxiety. A two-factor model has emerged

consistently across studies of self-reported mood (Watson & Tellegen, 1985), descriptions of nonverbal or verbal emotional expressions by others (Russell, 1980), longitudinal studies (L. A. Clark & Watson, 1988; Larson, 1987; Watson, 1988a, 1988b), and cross-cultural research (Almagor & Ben-Porath, 1989; Russell, 1983; Watson, L. A. Clark, & Tellegen, 1984). These two factors have been labeled *Positive Affect* and *Negative Affect*, although alternative rotations of the two-factor solution generate dimensions usually referred to as pleasure and arousal (Russell, 1980; Watson & Tellegen, 1985). Positive Affect is characterized by descriptors that suggest the enjoyment of life, such as *active* or *excited*. Negative Affect refers to level of distress and is characterized by descriptors such as *guilty* or *distressed*. According to Watson and Tellegen (1985), the two dimensions of positive affect (PA) and negative affect (NA) seem to account for about one-half to three-quarters of the common variability among mood measures in most studies. Trait versions of PA and NA have also been described, referred to as positive affectivity and negative affectivity.

Watson and L. A. Clark (1984) suggested that the strong relationship between self-reports of anxiety and depression stems from the involvement of NA in all negative emotional states. Reflecting on the role of NA in self-report, Watson and Kendall (1989) suggested "in self-report the discrete conceptual categories break down to a considerable extent, and the basic emotions are not clearly distinguishable from one another; rather, self-rated mood is dominated by the overall hedonic tone of the affective experience" (p. 8). If the experience of depression and other negative emotional states is similar, self-report scales of depression should demonstrate poor discriminant validity when compared with measures of these other states.

Recently, it has been suggested that depression can be distinguished from anxiety on the basis of positive affectivity. Watson, L. A. Clark, and Carey (1988) found that anxiety and depression diagnoses were associated with a high level of negative affectivity. However, depression was associated with low levels of positive affectivity, whereas anxiety was essentially unrelated to positive affectivity. This pattern held for symptoms of depression and anxiety as well as for diagnosis.

Watson and Kendall (1989) found that frequency ratings of mood-descriptive adjectives in a normal population showed a similar pattern. Markers of depressed and anxious mood both correlated positively with the first factor (NA). Markers of depressed mood also correlated negatively with the second factor (PA), whereas markers of anxious mood were unrelated to PA. Blumberg and Izard (1986) and Tellegen (1985) reported similar findings with mood measures (although Tellegen also suggested the existence of a general unpleasantness factor in addition to the other two factors), Bouman and Luteijn (1986) for diagnosis. These results suggest that depression—whether measured as a mood state, diagnostic category, or clinically observed symptom cluster—is a more complicated emotional state than anxiety, involving both a high level of negative affectivity and a low level of positive affectivity, whereas anxiety involves only negative affectivity. This model is consistent with studies that have failed to identify subjects who were high on depression and low on anxiety (Craighead, Hickey, & de Monbreun, 1979; Miller,

Seligman, & Kurlander, 1975), with speculations that anxiety is a precursor to depression (Alloy, Kelly, Mineka, & Clements, 1990; Miller, Rosellini, & Seligman, 1977), and with models of depression that emphasize a withdrawal from pleasurable activities (Lewinsohn, Hoberman, Teri, & Hautzinger, 1985; Schmale & Engel, 1975).

This study served two purposes. First, the studies cited on discriminating depression from anxiety have focused on mood measures, clinical symptoms, and diagnosis. To our knowledge, none have studied the relationship between commonly used self-report measures of anxiety and depression symptoms (e.g., the Beck Depression Inventory, BDI), NA, and PA. This study investigated whether self-report measures of depressive symptoms are related to PA as well as NA and therefore may be considered measures specific to depression.

Second, this study examined the extent to which several self-report measures that have been used to support well-known theories of depression appear specific to depression (are related to both PA and NA), or seem relevant to negative emotional states in general (are related to NA only).

## METHOD

### Subjects

The sample was drawn from undergraduate psychology courses at two private universities. Two hundred sixty-nine students completed the questionnaires. Of this sample, 181 were female, 80 were male (8 unidentified); 227 were White, 24 Black, 8 Asian (10 unidentified). The average age of the sample was 21.5 years ( $SD = 5.5$  years). All subjects completed the 11 questionnaires described below.

### Measures

**Affect scales.** Two measures of positive and negative affectivity were included. The Positive and Negative Affect Schedule (PANAS; Watson, L. A. Clark, & Tellegen, 1988) includes 20 adjectives describing emotional state that are rated on a 5-point scale. An *in general* instructional set was used. The scale is equally divided into two subscales, tapping positive and negative affectivity.

The Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982) is a true-false questionnaire. For this study, only the 11-item Positive Emotionality and the 14-item Negative Emotionality scales were administered, which are comprised of items describing general emotional condition.

**Depression/anxiety scales.** Depression was measured by the 21-item BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the 20-item Zung Depression Scale (ZDS; Zung, 1965). Two measures of anxiety were also included: the 20-item State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene,

1970) Form Y Trait scale and the 20-item Zung Anxiety Scale (ZAS; Zung, 1971). These scales were chosen because they are among the most popular measures of anxiety and depression. They have not demonstrated adequate discriminant validity in previous studies (see Gotlib & Cane, 1989, for a review). However, as noted above, the overlap may be attributable to the loading of NA on all four. No studies have been conducted to establish whether the BDI and ZDS can be distinguished from the STAI and ZAS on the basis of positive affectivity.

*Theory-relevant scales.* The remaining five measures are associated with various theory-specific constructs. An attempt was made to include constructs from both psychoanalytic and cognitive-behavioral theories of depression.

The Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980) is a list of 30 cognitions associated with the experience of depression. The ATQ is associated with Beck's cognitive model of depression (Beck, Rush, Shaw, & Emery, 1979). The 35-item Problem Solving Inventory (PSI; Heppner & Peterson, 1983) has been used to support a model of depression focusing on deficits in social problem-solving ability (A. M. Nezu, 1986; A. M. Nezu & Ronan, 1985). The DEQ was included because of its relationship to Blatt's psychoanalytic theory of depression. The DEQ was scored using the method devised by Welkowitz, Lish, and Bond (1985). This is a commonly used and simpler alternative to the original scoring system. The Dependency scale includes 20 items, the Self-Criticism scale 15 items.

According to the reformulated learned helplessness model (Abramson et al., 1978), depression occurs in humans in response to global, stable, and internal attributions for the cause of uncontrollable aversive events. The ASQ includes scales of these three components of causal attributions. The most recent version of the ASQ (Peterson & Villanova, 1988) was used, which requires making attributions for negative outcomes only. There are 24 items associated with each of the three attributional styles. The 86-item version (referred to as the T Scale) of the Pleasant Events Schedule (PES; MacPhillamy & Lewinsohn, 1976) measures the frequency and enjoyment of positive activities. It was developed because of the central role of a low rate of positive reinforcement in Lewinsohn's model of depression (Lewinsohn et al., 1985).

### Procedure

The PANAS and MPQ each generated a PA and an NA scale. The Dependency and Self-Criticism scales of the DEQ were scored. The ASQ produced three scores, for globality, internality, and stability. Enjoyment and frequency scores were computed for the PES. A single score was computed for all other scales. Only the Trait scale of the STAI was administered, because it is more similar in response set to the other scales used in the study than the State scale. The PANAS and MPQ PA scales and the PES were scored so that higher scores suggested more positive experiences. All others were scored so that higher scores suggested an undesirable state. All analyses were conducted using the SYSTAT statistical package (Wilkinson, 1988).

## RESULTS

### Correlations

The initial correlation matrix, means, standard deviations, and coefficient alphas are provided in Table 1. All correlations were significant ( $p < .05$ ), with several exceptions. ASQ internality scores were unrelated to eight of the scales. The PES scales correlated significantly with the two PA measures and with each other. Enjoyment also correlated with the ZDS and PSI, while frequency also correlated with the ASQ globality score.

### Factor Analysis

The number of factors to be retained was determined via parallel analysis, which Zwick and Velicer (1986) found to superior to alternatives such as the Kaiser method. A principal components analysis was computed without rotation. Based on Lautenschlager's (1989) parallel analysis tables, three factors were retained. These three factors were then estimated using an iterative principal axis factor analysis with varimax rotation. The loadings associated with these factors are provided in Table 2. The three factors accounted for 54.3% of the total variability.

All 17 variables loaded above .30 on the first factor except the ASQ and PES scales, suggesting an interpretation of this factor as negative affectivity is appropriate. Both PA scales also loaded on the first factor in a negative direction. This is consistent with previous studies that have found a strong relationship between measures of PA and NA (Hamid, 1990; Stokes & Levin, 1990). We would conclude on the basis of such findings that, although PA and NA emerge as orthogonal latent factors, the presently available PA measures do not show an adequate level of discriminant validity. At this time, PA is probably best measured by factor scores.

The only loadings above .30 on the second factor were for the three ASQ scales, suggesting that this factor represents method artifact associated with the ASQ. The third dimension was most strongly related to the two PA and the two PES scales, suggesting this factor represents PA. The only other scale loading above .30 on the third factor was the PSI. The direction of the loadings suggested that higher factor scores were associated with less PA.

## DISCUSSION

Previous research has suggested that at the level of self-reported mood, observed symptoms, and diagnosis, depression can be distinguished from anxiety on the basis of its relation to PA. Results of our study suggest that at least for the commonly used self-report measures of depressive symptoms included here, the same is not true. Correlations among the four depression and anxiety measures varied between .64 and .78. The BDI and ZDS both correlated as strongly with

TABLE 1  
Descriptive Statistics: Correlations, Reliabilities, Means, and Standard Deviations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<b>Affect Scales</b>																	
1. MPQ-N	.71																
2. MPQ-P	-.41	.70															
3. PANAS-N	.63	-.39	.80														
4. PANAS-P	-.39	.49	-.23	.81													
<b>Depression/Anxiety Scales</b>																	
5. BDI	.54	-.43	.51	-.36	.82												
6. ZDS	.63	-.51	.58	-.49	.70	.74											
7. STAI	.68	-.59	.65	-.49	.71	.77	.86										
8. ZAS	.60	-.37	.61	-.37	.64	.78	.73	.69									
<b>Theory-Relevant Scales</b>																	
9. ASQ-I	.18	-.07	.11	-.15	.03	.12	.08	.02	.71								
10. ASQ-S	.25	-.16	.20	-.16	.20	.26	.21	.18	.32	.83							
11. ASQ-G	.22	-.13	.13	-.18	.18	.25	.19	.15	.33	.67	.83						
12. ATQ	.52	-.49	.57	-.35	.73	.70	.76	.61	.05	.21	.18	.95					
13. DEQ-D	.48	-.27	.41	-.26	.30	.34	.42	.34	.27	.24	.19	.32	.74				
14. DEQ-S	.61	-.48	.57	-.41	.62	.67	.73	.57	.20	.33	.29	.70	.57	.72			
15. PES-F	.03	.34	.04	.25	.04	-.08	-.02	.03	.04	.08	.13	.01	.09	.01	.80		
16. PES-E	-.06	.29	-.04	.27	.03	-.19	-.10	-.10	.03	-.06	-.03	-.01	.07	-.06	.44	.89	
17. PSI	.42	-.41	.39	-.47	.35	.52	.49	.41	.23	.22	.18	.35	.33	.39	.10	-.23	.85
<i>M</i>	7.8	7.2	22.7	34.5	3.4	54.7	42.6	34.7	105.2	99.7	91.2	55.8	91.9	57.5	76.3	99.0	99.4
<i>SD</i>	3.6	3.1	7.3	6.1	7.8	2.6	1.5	8.1	2.3	22.2	25.1	21.9	16.1	15.0	14.7	21.2	21.2

*Note.* Diagonal values represent reliabilities (coefficient alphas). MPQ-N = Multidimensional Personality Questionnaire Negative Emotionality; MPQ-P = MPQ Positive Emotionality; PANAS-N = Positive and Negative Affect Schedule Negative Affect; PANAS-P = Positive Affect; BDI = Beck Depression Inventory; ZDS = Zung Self-Related Depression Scale; STAI = State-Trait Anxiety Inventory Trait Scale; ZAS = Zung Anxiety Scale; ASQ-I = Attributional Style Questionnaire Internality; ASQ-S = ASQ Stability; ASQ-G = ASQ Globality; ATQ = Automatic Thoughts Questionnaire; DEQ-D = Depressive Experiences Questionnaire Dependency; DEQ-S = DEQ Self-Criticism; PES-F = Pleasant Events Schedule Frequency; PES-E = PES Enjoyment; PSI = Problem-Solving Inventory. Correlations above .11 are significant,  $p < .05$ .

TABLE 2  
Factor Loadings, Eigenvalues, and Percentage of Total Variance  
Accounted for by Each Factor

	<i>Factor</i>		
	<i>1</i>	<i>2</i>	<i>3</i>
STAI	.91	.08	.16
ZDS	.83	.15	.23
ATQ	.81	.07	.04
ZAS	.80	.04	.06
BDI	.78	.06	.01
DEQ-S	.77	.28	.07
MPQ-N	.72	.21	.06
PANAS-N	.72	.10	.00
MPQ-P	-.52	-.09	-.50
DEQ-D	.47	.29	-.04
PSI	.47	.24	.32
PANAS-P	-.43	-.18	-.47
ASQ-S	.16	.75	.01
ASQ-G	.12	.77	-.02
ASQ-I	.07	.46	.02
PES-F	.06	.13	-.68
PES-E	-.01	-.02	-.62
% Variance	35.1	10.2	9.0
Eigenvalues	6.61	1.41	1.20

*Note.* Variables are listed in order of Factor 1 loading. STAI = State-Trait Anxiety Trait Scale; ZDS = Zung Self-Related Depression Scale; ATQ = Automatic Thoughts Questionnaire; ZAS = Zung Anxiety Scale; BDI = Beck Depression Inventory; DEQ-S = Depressive Experiences Questionnaire Self-Criticism; MPQ-N = Multidimensional Personality Questionnaire Negative Emotionality; PANAS-N = Positive and Negative Affect Schedule Negative Affect; MPQ-P = MPQ Positive Emotionality; DEQ-D = DEQ Dependency; PSI = Problem Solving Inventory; PANAS-P = PANAS Positive Affect; ASQ-S = Attributional Style Questionnaire Stability; ASQ-G = ASQ Globality; ASQ-I = ASQ Internality; PES-F = Pleasant Events Schedule Frequency; PES-E = PES Enjoyment.

the STAI as they did with each other, a finding consistent with previous research (Gotlib & Cane, 1989).

Results of the factor analysis suggest the high correlations among the anxiety and depression measures are at least partly attributable to the general negative affectivity factor. All four measures loaded at least .78 on the NA factor. The STAI and ZDS were associated with the highest loadings on this factor. Contrary to expectation, neither of the depression measures loaded above .30 on the PA factor, suggesting that the BDI and ZDS are better measures of general emotional distress than they are of depressive symptomatology in particular. It may be that the BDI and ZDS focus too strongly on the cognitive (distress) component of depression and not enough on the behavioral (withdrawal) component.

The specificity of self-report measures derived from depression theory also was not supported. The ZDS correlated more highly with six of the nine theory-relevant



scales than any of the other anxiety or depression measures. However, the STAI correlated most highly with the other three (the ATQ and the DEQ scales). In only one case (PES frequency) did the BDI correlate more strongly with a theory-relevant variable than the STAI.

Four of nine theory-specific scales loaded above .30 on the negative affectivity factor, three loaded on the second factor, and two on the positive affectivity factor. Only one theory-relevant scale—the PSI—loaded meaningfully on both affective dimensions. Note that a more recent version of the ATQ (Kendall, Howard, & Hays, 1989) has been developed that includes both positive and negative self-referential statements and that may prove a better measure of positive affectivity.

A college student sample was used to insure a large enough sample for the factor analysis, and whether these results are generalizable to true depressives is questionable (Depue & Monroe, 1978; Gotlib, 1984). The range of scores on the pathology measures was also restricted due to the sample, which may have attenuated the strength of the relationships observed. In defense of our strategy, note that many of the studies that have used these measures to corroborate the related model—and have established these measures as operational definitions of the corresponding theoretical constructs—involved college students (e.g., Blatt et al., 1976; Hollon & Kendall, 1980; A. M. Nezu & Ronan, 1985; Peterson & Villanova, 1988). However, it is important that this research be viewed in light of the limitations of the sample.

With this reservation in mind, these findings call into question those studies that have used commonly accepted self-report measures to corroborate a model of depression. The limited discriminant validity of the measures used to test these models does not allow the researcher to distinguish hypotheses that are true of depression in particular, or are true of emotional distress in general.

Of the measures relevant to the study of depression included in this study, five (the ZDS, ATQ, BDI, and DEQ scales) only loaded on the negative affectivity factor. The constructs tapped by these scales cannot be considered specific to depression but may instead be generally related to negative affective state. The three ASQ scales proved independent of both affective dimensions. The PES scales only loaded on the positive affectivity factor, suggesting that they are generally associated with the experience of PA. This still leaves open the possibility that when individuals with low PES scores experience a negative affective state it is likely to present as depression rather than an anxiety disorder, although previous research does not strongly support the existence of a relationship between pleasant events and depression (Lewinsohn, Hoberman, & Rosenbaum, 1988). Of the theory-relevant constructs that were found to be related to negative emotional states, only poor problem-solving ability can be proposed as having special relevance for depressed affective states.

Our results should not be taken as suggesting these theories do not have special relevance to depression. Rather, it is only our contention that the theory-relevant scales used in this study are inadequate for demonstrating this specificity. It may be possible to develop measures with greater discriminant validity that will better serve the purpose of distinguishing models of depression from models of general

distress. For example, D. A. Clark and colleagues (1990) have suggested that the Cognitions Checklist may be able to distinguish between depression-specific and anxiety-specific cognitions. The BDI and ZDS both focus primarily on the cognitive distress associated with depression; the development of depression measures that focus on behavioral withdrawal as well as cognitive distress could prove useful for improving on the discriminant validity of such measures. Modification of the ATQ to include more cognitions that D. A. Clark and colleagues (1990) identified as depression-specific could make the scale more unique to depression. Similarly, mood measures may fail to discriminate between depressed and anxious mood states not because respondents cannot distinguish between them, but because existing measures do not adequately address positive affective states.

The results of our study highlight the need to demonstrate that a theory of depression really is a theory of depression, as opposed to a theory of emotional distress. Simple correlations between a measure of the theory's key construct and a common measure of depression should not be considered adequate evidence. As we have seen, the two measures of depression used here appear too heavily loaded with negative affectivity and too poorly loaded with positive affectivity to allow such discriminations. To substantiate that a theory has specific relevance to depression, the researcher should also demonstrate a differential relationship with depression as opposed to other emotional states, particularly anxiety.

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