

The Role of Somatic Awareness
in Anxiety and Depression

BY

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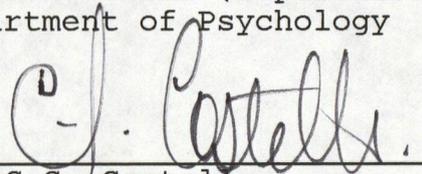
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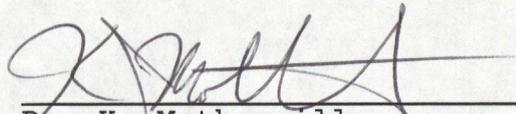
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ABSTRACT

The co-occurrence of anxious and depressive symptoms has been documented in both patient and nonpatient populations, using a variety of assessment techniques. Previous research concerned with the discrimination of anxiety and depression, suggests that differences between these two states may be detected at the level of perceived somatic arousal. The present study explored possible differences in perceived somatic experiences between anxiety and depression, using the concept of somatic awareness. Five hundred and fifty seven undergraduate students at the University of Calgary, rated adjectives describing anxiety, depression and positive affective states. These adjectives were rated for: (1) the degree to which they experienced these states with bodily feelings, and; (2) degree of self-descriptiveness. Subjects' responses were then factor analyzed. Bodily feelings ratings (BFR) resulted in three stable and interpretable dimensions labelled Negative Affect, Well Being and Energetic Arousal. Self-descriptiveness ratings (SDR) resulted in five stable and interpretable dimensions labelled Depressive Self, SDR Energetic Arousal, Anxious Self, Skillful Self and Hostility. It was concluded that the two methods of ratings produced relatively unique factor structures. The three BFR and five SDR dimensions were then used in further analyses aimed at exploring the relationship between anxiety and depression. Previous research has attempted to discriminate between these two emotions on the basis of

dimensions underlying subject-rated affect (e.g. Watson, Clark & Carey, 1988). In the present research, a relationship between subjects' self-report of anxiety symptoms and the BFR Negative Affect factor was noted. The SDR Depressive Self and SDR Anxious Self factors were found to be related to symptoms of both anxiety and depression. Both the SDR and BFR Energetic Arousal factors were strongly related to symptoms of trait depression. The SDR factors of Skillful Self and Hostility were related to state depression. It was concluded that negative affective states were associated with symptoms of both anxiety and depression while positive affective states (in particular, Energetic Arousal) were most strongly related to symptoms of depression. The importance of these somatic awareness factors for the differentiation of anxiety and depression, was discussed.

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DEDICATION

This work is dedicated to Stephen, whose love and unflagging support were always with me. You alone understand what this means to me.

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INTRODUCTION

The co-occurrence of anxious and depressive symptoms has long been recognized and debated by researchers, theorists and clinicians in the area of psychopathology (Foa & Foa, 1982). Though some investigators maintain that the two states cannot or should not be differentiated, others believe that discriminating between the two is essential for adequate understanding and treatment (Foa & Foa, 1982; Roth & Mountjoy, 1982, Watson & Kendall, 1989). The overlap of anxious and depressive symptoms has been noted using clinical diagnoses, clinician rating scales and self-administered symptom measures. Furthermore, the finding that these two states co-occur appears to be robust, emerging in both patient and nonpatient populations.

In clinical populations, overlapping symptoms of anxiety and depression at the diagnostic level are widely reported and documented. Mountjoy and Roth (1982a) report that a mixture of anxious and depressive symptoms "...is perhaps the commonest syndrome of emotional disorder seen in psychiatric outpatient departments and in general practice" (p. 127). In a study of anxiety neurosis, Clancy, Noyes, Hoenk and Slymen (1978) reported that 44 percent of the patients diagnosed with primary anxiety experienced secondary depression. Clark (1989) reviewed a number of studies reporting overlapping diagnoses of anxiety and depression in clinical samples. Averaged across studies, Clark (1989) observed that 67 percent of patients with agoraphobia/

panic and 38 percent of generalized anxiety disorder patients, also reported some form of depression. Similarly, Leckman, Weissman, Merikangas, Pauls and Prusoff (1983) found that 58 percent of their depressed probands reported symptoms of anxiety meeting diagnostic criteria for agoraphoria, panic disorder or generalized anxiety.

The overlap of anxious and depressive symptoms has also been observed in clinical populations, using self-report instruments and clinician rating scales. Mendels, Weinstein and Cochrane (1972) administered self-report measures of depression and anxiety to patients and found that the two types of measures correlated between .42 to .87. Zuckerman, Persky, Eckman and Hopkins (1967) used checklists, clinical rating scales and questionnaires to measure anxiety and depression in clinical patients and observed that the two states could not be separated. Johnstone, Cunningham Owens, Frith, McPherson, Dowie, Riley and Gold (1980) reported that the Hamilton Depression Rating Scales (HDRS; Hamilton, 1967) and the Hamilton Anxiety Rating Scale (HARS; Hamilton, 1959) correlated .53 in a group of neurotic outpatients. The Leeds self-report scales of anxiety and depression, which were designed to maximize discrimination of anxiety and depression (Snaith, Bridge & Hamilton, 1976), correlated .45 in the same group.

In nonpatient populations, self-report measures of anxiety and depression have been found to be highly correlated. Orme, Reis

and Herz (1986) reported a correlation of .71 between the Centre for Epidemiological Studies of Depression scale (CES-D; Radloff, 1977) and the Spielberger State-Trait Anxiety Inventory - Trait scale (STAI-T; Spielberger, Gorsuch & Luchene, 1970), in an adult nonpatient population. In a study using both student and nonstudent subjects, Dent and Salkovskis (1986) reported significant correlations between the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961) and both severity and frequency of anxiety symptoms, as measured by the Beck Anxiety Check List (BACL; Beck, Brown & Steer, 1986). A number of investigators have reported correlations ranging from approximately .50 to .73, among self-report measures of anxiety and depression in university student populations (Nezu, Nezu & Nezu, 1986; Tanaka-Matsumi & Kameoka, 1986; Meites, Lovallo & Piskin, 1980; Dobson, 1985; Gotlib, 1984).

Anxiety-depression symptom overlap has not diminished efforts to separate these clinical conditions. A number of studies have attempted to demonstrate that subjects diagnosed as anxious or depressed can be distinguished on the basis of specific clinician- and self-rated psychiatric symptoms and features. Roth and colleagues (Roth, Gurney, Garside and Kerr, 1972; Gurney, Roth, Garside, Kerr and Schapira, 1972; Mountjoy & Roth, 1982b) identified differences between anxious and depressed inpatients on several clinical features. Anxious features found to differentiate between the two groups were autonomic arousal, panic/agoraphobia

symptoms, neuroticism, tension, derealization, and compulsive symptoms. Differentiating depressive features were depressed mood, early morning waking, psychomotor retardation and suicidal tendencies.

In a study investigating the differentiation of anxious neurotic and depressive neurotic twins, Torgenson (1985) performed a discriminant analysis on the items from the Present State Examination (PSE; Wing, Cooper & Sartorius, 1974). Discriminating anxious symptoms were associated with autonomic anxiety, avoidance, tension and hypochondriasis. Discriminating depressive symptoms were social withdrawal, loss of interest, hopelessness and delayed sleep. Mountjoy and Roth (1982a) used items from several self- and clinician-rating scales, to differentiate between anxious and depressed patients. Anxious symptoms with the highest discriminating ability were fear, panic and somatic anxiety, while those of depression were depressed mood, suicidal tendencies, insomnia and weeping. Lipman (1982) investigated self-reported symptom differences between anxious and depressed outpatients using the Hopkins Symptom Checklist (HSCL; Lipman, Covi & Shapiro, 1979). Symptoms rated highest by anxious subjects were suggestive of panic/agoraphobia and autonomic arousal. Symptoms rated highest by depressive subjects included feelings of hopelessness, loss of interest and disturbed sleep.

Several symptoms have emerged across these studies which appear to discriminate anxiety and depression with

some consistency. For depression, these symptoms are depressed mood, pessimistic outlook/hopelessness, loss of interest, sleep disturbance and early wakening, psychomotor retardation and tearfulness. Discriminating anxious symptoms are tension, derealization, panic, agoraphobia, compulsiveness and autonomic arousal.

When compared to the diagnostic criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders, revised, third edition (DSM-III-R; American Psychiatric Association; 1987), discriminating anxious symptoms appear to be descriptive of panic/agoraphobia disorder (e.g., panic attacks, agoraphobic features, autonomic arousal). Discriminating depressive symptoms imply major depression or major depression, melancholic type (e.g., depressed mood, loss of interest/pleasure, suicidal tendencies, psychomotor retardation, early waking).

Other researchers have also noted that the depressive symptoms emerging from such studies appear to be reflective of a more severe form of depression, while anxious symptoms are specific to panic disorder and agoraphobia (Clark, 1989; Lipman, 1982; Breier, Charney & Heninger, 1985; McNair & Fisher, 1978). These researchers have concluded that while endogenous depression can be separated from panic/agoraphobia, other forms of anxiety and depression remained to be differentiated. Further support for this conclusion is provided by a study by Fleiss, Gurland and Cooper (1971). These researchers factor analyzed 700 mental state

items collected from 500 consecutive admissions to two mental hospitals. Four hundred and eighty one of the items were from the Present State Examination and 197 from the Psychiatric Status Schedule (Spitzer, Fleiss, Endicott & Cohen, 1967). Several factors emerged, two of which corresponded to depression and phobic anxiety. The depression factor contained items suggestive of major depression (e.g., loss of interest, depressed mood, difficulty concentrating). The phobic factor contained items implying specific anxiety provoking situations (e.g., 'going out alone') and specific physiological signs of anxiety (e.g., trembling; hands shaky; weak at the knees). Though the depression factor failed to differentiate between anxious and depressed subjects, anxious patients could be distinguished from depressives on the basis of the phobic factor.

It would appear that a critical dimension differentiating these two states is autonomic arousal. Severe (endogenous) depression is characterized by hypoarousal, while panic/agoraphobia is characterized by hyperarousal. This suggests that a possible difference in the experience of anxiety and depression might be detected at the level of perceived somatic arousal.

Some years ago, Mendels et al. (1972) suggested that anxiety and depression might be differentiated at a somatic level. These researchers found that when factor analyzed, several self-report measures of anxiety and depression loaded on the same factor. They concluded that the mental content of these two states

was very similar and proposed an increased focus on "... those somatic experiences which are selectively related to one state or the other, and which can be discriminated by the patient..." (p. 653). Support for the use of somatic experiences for separating anxiety and depression is also found in research in the general area of emotion. Though not dealing specifically with psychopathological states of anxiety and depression, these studies indicate that perceived somatic experiences differ across emotions.

Mason (1959) provided evidence that subjects are able to localize internal sensations accompanying feeling states in different areas of the body. Subjects were exposed to affective stimulating material, based on Thematic Apperception Test cards and short film clips, and were asked to report felt emotion, type of internal sensation, intensity and location of sensation. Subjects reported greatest internal sensations in the center chest, right midriff and lower abdomen areas. Some differences in body location were reported for different feeling states. For example, fear was most strongly associated with sensations in the back body areas, especially the lower back. Depression was most strongly associated with the abdominal area.

A more recent study by Nieuwenhuysse, Offenbergh and Frijida (1987) adopted Mason's method for assessing body experience. Subjects indicated where on their bodies they experienced each of 10 emotions. Subjects rated both recalled instances of emotions

and emotions as they occurred. Analyses revealed different patterns of reported body experiences for all ten emotions. For example, distress was localized mostly in the lower back, back of the head, the face and the throat. Fear was felt in most of the body, but primarily in the anal, abdominal, leg, genital and stomach areas. The authors suggested that these body locations were reflective of symptoms associated with the emotions. For example, the body pattern of fear was thought to reflect some of the symptoms associated with this feeling state, such as general somatic activation, intestinal upset and nervous stomach.

Shields (1984) demonstrated that subjects reported differences in the perception of somatic experiences for anger, anxiety and sadness (a mood state associated with depression). Subjects in this study indicated the number, intensity and type of bodily symptoms accompanying these mood states. Anxiety was accompanied by more bodily symptoms of greater magnitude, than either anger or sadness. Anxiety and anger were associated with cardiac symptoms and general restlessness, while sadness was characterized by low arousal and sluggishness.

Taken together, these studies demonstrate that subjects are able to report different perceived somatic experiences for different emotional experiences. Shields' (1984) study lends support to the notion that the experiences of anxiety and depression may be characterized at a feeling level by hyperarousal versus hypoarousal. The present research was interested in further

exploring possible differences in perceived somatic arousal between these two states, using the concept of somatic awareness. Somatic awareness was defined as the degree to which subjects report experiencing affective states with bodily feelings. This concept was proposed as an alternate means by which subjects could rate affective experiences.

In the present research, it was anticipated that subject ratings of affective states for somatic awareness would prove useful in the differentiation of anxiety and depression. Since somatic awareness represents a method of subject-rated affect, the approach taken was similar to that used by Watson and colleagues (Watson, Clark & Carey, 1988; Watson & Kendall, 1989) who recently explored the relationship between subject-rated affect and the experience of anxiety and depression. Both Watson et al. (1988) and Watson and Kendall (1989) used two dimensions thought to underly subjects rating of affective experiences, as possible discriminators of anxiety and depression. These two dimensions have been labelled Positive Affect (PA) and Negative Affect (NA) (Zevon & Tellegen, 1982). PA has been described as representing a person's zest for life, while NA is the extent to which a person is upset or negatively aroused (Watson & Tellegen, 1985).

Watson et al. (1988) assessed trait NA and PA in a sample of proband twins admitted as psychiatric in- or outpatients. Co-twins receiving a diagnosis for an anxiety or depressive disorder were

also included. PA was found to be negatively correlated with symptoms of depression and diagnoses of depression, but not with symptoms or diagnoses of anxiety (the exception to this was social phobia). High NA was positively correlated with symptoms and diagnoses of both anxiety and depression. Stepwise multiple regression was performed using the diagnoses of major depression, dysthymia and social phobia. PA and NA were found to be predictors of both types of depression. NA was not predictive of social phobia, but PA was. This finding is contrary to the prediction that PA is related to depression alone. Since other anxiety disorders were not included in the stepwise analysis, the relationship between PA, NA and other forms of anxiety were not explored.

Watson and Kendall (1989) used a sample of 391 undergraduates, to compare subject ratings of PA and NA with self-reported symptoms of anxiety and depression on the HSCL. As with the Watson et al. (1988) findings, NA was correlated with symptoms of anxiety and depression, while PA was most strongly associated with depressive symptoms. Both Watson et al. (1988) and Watson and Kendall (1989) conclude that PA appears to have a stronger relationship with depression than with anxiety and that this factor may be useful in discriminating the two states. NA appears to be associated with the symptoms of both anxiety and depression and, therefore, would not contribute to their distinction.

These dimensions of Positive Affect and Negative Affect

have consistently emerged from factor analyses of subjects' self-reported affect in the work of Tellegen and colleagues (e.g., Zevon & Tellegen, 1982; Watson & Tellegen, 1985). According to Zevon & Tellegen (1982), the high ends of these two dimensions are characterized by emotional arousal, while the low ends are characterized by a relative absence of affective arousal. High NA reflects a wide range of negative states, including those characterized by unpleasant arousal, while low NA is defined by 'placid disengagement' states such as calm and relaxed (Watson & Tellegen, 1985). High PA represents an individual's positive engagement with the environment and is reflective of pleasurable and high positive arousal states (e.g., proud, determined, energetic, peppy). Low PA is characterized by melancholy and low negative arousal (e.g., blue, dull, sluggish).

In an early study, Zevon and Tellegen (1982) performed individual analyses on the self-reported mood of 23 subjects over a period of 90 days. They were able to identify PA and NA as underlying the self-report of 21 of the subjects. In a similar study, Watson, Clark and Tellegen (1984) provided some evidence for possible cross-cultural similarities of subject-rated affect. Eighteen Japanese subjects used Japanese affective terms to self-report mood over a 90 day period. Analyses revealed that the dominant dimensions of NA and PA could be identified in most subjects' ratings. Watson and Tellegen (1985) reanalysed several studies of self-rated mood

using factor analysis with varimax rotation. They demonstrated that when extraction and rotation is limited to the first two factors, bipolar PA and NA dimensions emerged across studies varying in terms of methodology, type of subjects and moods states available for rating.

The approach taken in the present study, was somewhat different to that used by researchers investigating PA and NA. First, subjects were asked to rate anxiety-, depression- and positive-descriptive affective states, rather than a variety of affective states thought to cover a wide range of mood experiences (Zevon & Tellegen, 1982). Second, subjects in the present study rated these adjectives for somatic awareness in general, rather than for current self-descriptiveness.

A third difference has to do with the method of analyses used. Since Tellegen and colleagues (e.g., Zevon & Tellegen, 1982; Watson & Tellegen, 1985) have been primarily interested in the dominant dimensions underlying self-reported affect, their analytic techniques have been aimed at identifying only major factors. For example, Watson and Tellegen (1985) limited extraction and rotation to the first two factors emerging from a principal factors analysis with varimax rotation. However, the importance of other dimensions for the adequate description of affective experiences has been noted (Daly, Lancee & Polivy, 1983). Watson and Tellegen (1985) also acknowledged the possible existence of other yet to be identified dimensions and the possibility of

this was suggested by the finding of Zevon and Tellegen (1982) that certain affective states did not appear to be clearly related to either the NA or PA factors. Several other studies investigating subject-rated mood have identified a third smaller dimension (e.g., Bush, 1973; Dittman, 1972; Mehrabian & Russell, 1974, 1977). In view of the possibility of a third factor, the present study will adopt the method of analysis used by Watson & Tellegen (1985) but will not limit extraction and rotation to the first two factors.

In the present study, it was predicted that factor analysis of subjects' ratings would result in at least two major dimensions. It was anticipated that the themes of these two dimensions might be different from PA and NA, since somatic awareness represents a method of rating not previously explored. In order to further investigate the possibility that somatic awareness provides subjects with a unique means of conceptualizing affective experiences, somatic awareness dimensions were compared to subjects' self-descriptive ratings of the same affective states. As already mentioned, the possibility of additional dimensions was considered.

The present research was also interested in determining if the factors emerging from subjects' rating of affective states for somatic awareness, would produce dimensions useful for the differentiation of anxious and depressive states. Unlike previous studies (Watson et al., 1988; Watson & Kendall, 1989), analyses of possible relationship were not limited to simple correlation.

Multiple regression and multivariate analysis of variance were used to explore the relationship between somatic awareness factors and symptoms of trait/state anxiety and trait/state depression.

METHOD

Subjects

Subjects were 557 undergraduate students enrolled in twelve sections of an introductory psychology course at the University of Calgary. Three hundred and thirty one subjects were females and 221 were males. Five subjects did not identify their gender. Subjects ranged in age from 17 to 60, with a mean age of 20.8.

Measures

Several self-report questionnaires were used to establish level of anxiety and depression:

Measures of Depression

(1) The Costello-Comrey Depression Scale (CCD; Costello & Comrey, 1967) was used to measure level of trait depression. The CCD was designed using both clinical and normal subjects and is therefore considered suitable for use with nonclinical populations (Costello & Comrey, 1967; Kuiper, 1978). The CCD consists of 14 statements accompanied by nine response choices. Subjects are asked to respond according to how each statement applies to them. Costello and Comrey (1967) reported a .79 test-retest reliability for this measure in a group of psychiatric patients and a split-half reliability of .70 using normal subjects. In research

comparing the CCD to other measures of depression, this instrument has demonstrated adequate validity. Mendels et al. (1972) reported that in a psychiatric population, the CCD correlated .65 with the Zuckerman Multiple Affect Adjective Checklist - depression subscale (MAACL-D; Zuckerman & Lubin, 1965), .70 with the Minnesota Multiphasic Personality Inventory - depression scale (MMPI-D; Dahlstrom & Welsh, 1962) and .74 with the Zung Self-Rating Depression Scale (SRS-D; Zung, 1965). In a student population, the CCD correlated .63 with the MAACL-D, .70 with the BDI, .71 with the MMPI-D and .81 with the SRS-D (Dobson, 1985).

(2) The Beck Depression Inventory (BDI) measures existing symptom levels and was used to establish state depression. The BDI consists of 21 items. For each item, subjects must choose from four alternative statements (ranging from 0 to 3), in order to best describe the way they have been feeling over the past week. Beck et al. (1961) reported a split-half reliability of .86. According to Gotlib and Cane (1989), split-half reliabilities for the BDI across studies average about .86. In a psychiatric population, the BDI correlated .65 with clinician ratings (Beck et al., 1961). Mendels et al. (1972) reported that the BDI correlated .59 with the MAACL-D, .70 with the CCD and MMPI-D and .79 with the SRS-D.

While some researchers have questioned the validity of using the BDI in student populations (Gotlib, 1984), other research has demonstrated that self-report by students is similar

to self-report by depressed psychiatric patients and that the BDI does measure aspects of depression in student populations (Hill, Kemp-Wheeler & Jones, 1986). In student populations, the BDI has been shown to correlate .67 with the MMPI-D, .75 with the CCD, .76 with the SRS-D and .82 with the MAACL-D (Dobson, 1985).

Measures of Anxiety

(1) The State-Trait Anxiety Inventory - Trait Scale (STAI-T) was used to measure trait anxiety. This instrument was originally designed for research with normal subjects, although Spielberger et al. (1970) claim that it is also useful for measuring anxiety in patient populations. The STAI-T is composed of 20 statements and subjects are asked to choose from four possible responses (almost never, sometimes, often, almost always) according to how they generally feel. Seven items are positively worded and the remaining items are negatively worded. According to Spielberger et al. (1970), trait anxiety is conceptualized as anxiety proneness or the tendency to respond to situations that are perceived as threatening, with an elevation in state anxiety. Test-retest reliabilities for this measure range from .65 to .86 (reported in Gotlib & Cane, 1989). Gotlib and Cane (1989) also report that the STAI-T correlates significantly with other measures of anxiety and appears to discriminate normal subjects from psychiatric patients.

Research comparing the STAI-T with other measures of anxiety in student populations, report reasonable validity for this

instrument. Tanaka-Matsumi and Kameoka (1986) reported that the STAI-T correlated .69 with the Zung Self Rating Scale - anxiety subscale (SRS-A; Zung, 1971) and .79 with the Taylor Manifest Anxiety Scale (TMAS; Taylor, 1953). Dobson (1985) reported that the STAI-T correlated .58 with the Costello-Comrey Anxiety scale (CCA; Costello & Comrey, 1967), .77 with the IPAT Anxiety Scale (IPAT; Cattell & Scheier, 1961) and .68 with the Zuckerman Multiple Affect Adjective Check List - anxiety scale (MAACL-A; Zuckerman & Lubin, 1965).

(2) The Beck Anxiety Inventory (BAI) was used to quantify level of state anxiety. Though originally designed to measure anxiety in psychiatric populations (Beck, Epstein, Brown & Steer, 1988), preliminary research has provided normative data for non-clinical populations (Dent & Salkovskis, 1986). The BAI consists of 21 symptoms. Subjects are asked to indicate how much they were bothered by each symptom in the past week. Possible responses range from not at all to severely.

According to Beck et al. (1988), the BAI was purposely constructed to maximize discriminant validity when compared to measures of depression. Correlations between this measure and clinician rating scales and self-report measures of depression ranged from .22 to .48. These correlations are considerably lower than the correlations reported between other measures of anxiety and depression. The Spielberger State-Trait Anxiety Inventory - State Scale (STAI-S), which is a widely used anxiety inventory

(Gotlib & Cane, 1989), has demonstrated correlations ranging from .47 to .66 with measures of depression (Orme, Reis & Herz, 1986; Tanaka-Matsumi & Kameoka, 1986; Gotlib, 1984; Nezu, Nezu & Nezu, 1986).

Beck et al. (1989) reported that the BAI has demonstrated good reliability and validity in a psychiatric population. The scale demonstrated an internal consistency of .92 and a test-retest reliability of .75. The BAI correlated .51 with both a clinician rating scale and self-report measure of anxiety. Although these correlations are somewhat low, they are comparable to those reported for the more established STAI-S. Similar correlations ranging from .53 to .58 have been reported between the STAI-S and other measures of anxiety (Tanaka-Matsumi & Kameoka, 1986; Gotlib, 1984). Although the BAI represents a relatively new measure of anxiety, it was chosen for use in the present research based on its adequate reliability, convergent validity and, in particular, its discriminant validity.

Adjective List Describing Affective States

The 68 adjectives used in the present research were considered to be descriptive of depression, anxiety and positive mood states. The depression and positive mood adjectives were randomly selected from a larger group of adjectives which had been rated by psychiatric staff for their depressive- and manic-descriptiveness, and by students for social desirability,

pleasantness, self-descriptiveness, emotional intensity and imagery (Myers, 1984). Adjectives used in this original list were chosen for their similarity on all of these dimensions. Though the manic adjectives were originally meant for research on manic-depressives, other research has shown that these adjectives discriminate between depressed and nondepressed subjects when rated for self-descriptiveness (Myers, Lynch & Bakal, 1989). The remaining adjectives were gleaned from the DSM-III-R and were chosen for their anxiety-descriptiveness. Two lists were constructed using the adjectives, one list for somatic awareness ratings and one for self-descriptiveness ratings. The order of adjective presentation was randomly varied across the two lists. A list of the adjectives can be found in Appendix A.

Procedure

Subjects were required to complete the four anxiety and depression measures and to rate the 68 adjectives for somatic awareness and self-descriptiveness.

When rating the adjectives for somatic awareness, subjects were asked to indicate for each word, the degree to which, in general, they experienced the state expressed by the word as a 'bodily feeling'. The following example was given to illustrate the meaning of bodily feelings:

When some people are WORRIED they experience this state more with bodily reactions such as 'butterflies' or 'knots in the stomach'.

Other people may experience being WORRIED
 less with bodily reactions and more with
 thoughts.

Each word was presented in the following manner:

	Not at all Experienced As a Bodily Feeling									Very Much Experienced As a Bodily Feeling				
WORRIED	1	2	3	4	5	6	7	8	9					

Initial pilot work indicated that somatic awareness ratings showed adequate reliability over a two week period. Thirty four subjects at the University of Calgary were asked to rate negative and positive affect adjectives for degree of somatic awareness. Students returned two weeks later and again rated the adjectives. Correlations between the first and second rating sessions were $r = .73$ for negative adjectives and $.81$ for positive adjectives. Subjects verbally indicated that they were able to comply with the task.

Subjects in the present study were also asked to indicate for each word, the degree to which, in general, they felt the adjective was descriptive of them. Each word was presented in the following manner:

	Extremely UNLIKE ME			Neutral				Extremely LIKE ME		
WORRIED	1	2	3	4	5	6	7	8	9	

Actual instructions for the bodily feeling and self-descriptive ratings can be found in Appendices B and C.

Students were approached to participate in the present research during tutorials connected with their introductory psychology classes. The experimenter would arrive at the beginning of these tutorials and explain to the students that they were being asked to fill out a series of questionnaires about 'how people feel'. It was made clear that participation in the experiment was completely voluntary and that grades would not be influenced by either students' decision to participate, or by their responses.

Students who were not interested in participating were allowed to leave. The remaining subjects were given folders containing the four questionnaires and two lists of adjectives to be rated. Order of questionnaires was counterbalanced across subjects to control for possible order effects. Subjects were asked not to discuss their responses with classmates and to remain as quiet as possible. Subjects were allowed approximately 45 minutes to complete the questionnaires and were then debriefed. Subjects who provided incomplete data were eliminated from analyses.

RESULTS

Sample Characteristics

Characteristics of the sample are presented in Table 1. Three hundred and thirty one of the subjects were female and 221 were males. Females differed significantly from males on all measures of anxiety and depression. Females scored higher on

Table 1.

Means Scores and Standard Deviations for Anxiety
and Depression Measures

	Female (N = 331)		Male (N = 221)		Total Sample (N = 557)	
	Mean	SD	Mean	SD	Mean	SD
BAI	11.12	8.91	8.64	6.94	10.12	8.24
BDI	8.58	7.63	6.30	5.25	7.68	6.86
CCD	42.85	15.75	38.52	13.36	41.10	15.00
STAI-T	41.20	10.12	38.10	8.80	39.92	9.73

state anxiety (11.12 vs 8.6), $t(527) = 3.43$, $p < .001$, state depression (8.58 vs 6.3), $t(538) = 3.84$, $p < .001$, trait depression (42.85 vs 38.52), $t(549) = 3.36$, $p < .001$ and trait anxiety (41.19 vs 38.10), $t(538) = 3.67$, $p < .001$.

Correlations Between Anxiety and Depression Measures

Correlations between the anxiety and depression measures are found in Table 2. All measures of anxiety and depression were highly intercorrelated. Highest correlations were between state measures and between trait measures, rather than between measures of depression or between measures of anxiety. The trait measure of anxiety (STAI-T) correlated higher with trait depression (CCD; $r = .76$), than with either state anxiety (BAI; $r = .49$) or state depression (BDI; $r = .67$). The state measure of anxiety (BAI) correlated higher with state depression (BDI; $r = .53$), than with either trait anxiety or trait depression (CCD; $r = .40$).

Factor Analyses of Bodily Feeling Ratings

Factor analyses were performed to determine the number and type of factors underlying subjects' rating of feeling states for bodily feelings. Analyses were performed on all 557 subjects who participated in the research project. This sample falls one short of the five subjects per observed variable recommended by Tabachnick and Fidell (1989), but is considered to be adequate by Comrey (1973).

Principal factors extraction with varimax rotation was performed on the 68 adjectives for bodily feelings ratings (BFR). Principal component extraction with varimax rotation was used

Table 2.

Correlations Among Anxiety and Depression Measures

	STAI-T	BAI	CCD	BDI
STAI-T	1.000			
BAI	0.49	1.000		
CCD	0.76	0.40	1.000	
BDI	0.67	0.53	0.68	1.000

prior to principal factors analysis to rule out the possible presence of singularity, extreme multicollinearity and outliers among cases.

One hundred and eighty two multivariate outliers were identified, using a cutoff of $\alpha = .001$. Due to the large number of outliers, it was not feasible to perform a case-by-case analysis to identify the variables on which these cases were outliers. A discriminant function analysis revealed that outliers could be discriminated from nonoutliers on the basis of their total state anxiety and total trait anxiety scores with $p < .01$. Since a hypothesis of the present research is that subjects differing on measures of anxiety and/or depression would also differ in terms of how they rate the adjectives, extreme ratings of the adjectives by the outliers were of interest and were, therefore, retained.

The principal components correlation matrix (R) was evaluated for factorability. Inspection of the matrix revealed many correlations exceeding .30. Factorability of R was further evaluated using a Kaiser-Meyer-Olkin measure of sampling adequacy. The correlation matrix was found to be factorable (K-M-O = .93666) and the emergence of factors was anticipated (Tabaschnick & Fidell, 1989).

The principal factors extraction with varimax rotation was used to determine the number of factors represented in the data. Sorted, rotated factor loadings, along with percent of variance and covariance for each factor, are presented in Table 3.

Table 3.

Factor Loadings and Percents of Variance and Covariance
for Principal Factors Extraction and Varimax
Rotation on Bodily Feelings Ratings

	F 1	F 2	F 3	F 4	F 5	F 6
FEARFUL	.75	.00	.00	.00	.00	.00
WORRYING	.73	.00	.00	.00	.00	.00
UNEASY	.72	.00	.00	.00	.00	.00
GLOOMY	.71	.00	.00	.00	.00	.00
THREATENED	.71	.00	.00	.00	.00	.00
NERVOUS	.70	.00	.00	.00	.00	.00
ANGRY	.70	.00	.00	.00	.00	.00
DOOMED	.67	.00	.00	.00	.00	.00
TEARFUL	.67	.00	.00	.00	.00	.00
GLUM	.67	.00	.00	.00	.00	.00
INFERIOR	.66	.00	.00	.00	.00	.00
TENSE	.65	.00	.00	.00	.00	.00
PANICKY	.65	.00	.00	.00	.00	.00
DEJECTED	.65	.00	.00	.00	.00	.00
GUILTY	.64	.00	.00	.00	.00	.00
SHUNNED	.63	.00	.00	.00	.00	.00
HOSTILE	.63	.00	.00	.00	.00	.00
IRRITABLE	.62	.00	.00	.00	.00	.00
DEFENSELESS	.62	.00	.00	.00	.00	.00
REPULSIVE	.61	.00	.00	.00	.00	.00
HEARTSICK	.58	.00	.00	.00	.00	.00
STUPID	.58	.00	.00	.00	.00	.00
SHAKY	.57	.00	.00	.00	.00	.00
DISMAL	.56	.00	.00	.00	.00	.00
SUICIDAL	.56	.00	.00	.00	.00	.00
INADEQUATE	.54	.00	.00	.00	.00	.00
EXHAUSTED	.50	.00	.00	.00	.00	.00
IMPATIENT	.50	.00	.00	.00	.00	.00
SHY	.00	.00	.00	.00	.00	.00
LISTLESS	.00	.00	.00	.00	.00	.00
DANGEROUS	.00	.00	.00	.00	.00	.00
VIGILANT	.00	.00	.00	.00	.00	.00
OPTIMISTIC	.00	.74	.00	.00	.00	.00
CONFIDENT	.00	.74	.00	.00	.00	.00
INTERESTED	.00	.72	.00	.00	.00	.00
CAPABLE	.00	.71	.00	.00	.00	.00
TALENTED	.00	.71	.00	.00	.00	.00

Table 3 (continued)

	F 1	F 2	F 3	F 4	F 5	F 6
SKILLFUL	.00	.70	.00	.00	.00	.00
CREATIVE	.00	.68	.00	.00	.00	.00
PRODUCTIVE	.00	.67	.00	.00	.00	.00
SAFE	.00	.66	.00	.00	.00	.00
CONTENT	.00	.65	.00	.00	.00	.00
IMPRESSIVE	.00	.63	.00	.00	.00	.00
ENTERTAINING	.00	.61	.00	.00	.00	.00
DOMINANT	.00	.60	.00	.00	.00	.00
HAPPY	.00	.60	.00	.00	.00	.00
WITTY	.00	.60	.00	.00	.00	.00
OUTGOING	.00	.59	.00	.00	.00	.00
STEADY	.00	.58	.00	.00	.00	.00
ADVENTUROUS	.00	.55	.00	.00	.00	.00
MOTIVATED	.00	.55	.00	.00	.00	.00
CALM	.00	.52	.00	.48	.00	.00
DEPENDENT	.00	.00	.00	.00	.00	.00
BUBBLY	.00	.00	.64	.00	.00	.00
SPARKLING	.00	.00	.63	.00	.00	.00
ZESTFUL	.00	.00	.61	.00	.00	.00
RADIANT	.00	.00	.60	.00	.00	.00
FRISKY	.00	.00	.60	.00	.00	.00
SPIRITED	.00	.48	.53	.00	.00	.00
ENERGETIC	.00	.00	.50	.00	.00	.00
BRIMMING	.00	.00	.50	.00	.00	.00
JOVIAL	.00	.00	.00	.00	.00	.00
RACING	.00	.00	.00	.00	.00	.00
JOYFUL	.00	.00	.00	.00	.00	.00
LUSTY	.00	.00	.00	.00	.00	.00
RELAXED	.00	.00	.00	.71	.00	.00
RESTED	.00	.00	.00	.66	.00	.00
AGGRESSIVE	.00	.00	.00	.00	.00	.00
Percent of Variance	18.49	15.34	6.91	3.23	2.32	1.87
Percent of Covariance	38.40	31.85	14.34	6.72	4.82	3.87

As can be seen, six factors emerged. Loadings under .45 were replaced by zeros (all factor loadings greater than .25 can be found in Appendix D). The squared multiple correlations (SMC) in Table 4 indicated that all factors were internally consistent and well defined by the variables. The lowest SMC for factors from variables was .71.

Factor Analyses of Self-Descriptiveness Ratings

Factor analyses were also conducted on subjects ratings of the adjectives for self-descriptiveness (SDR). These ratings were included to determine if somatic awareness represented a unique method of rating mood states. Principal component extraction with varimax rotation was used prior to principal factors analysis to rule out the possible presence of singularity, extreme multicollinearity and outliers among cases.

Principal factors extraction with varimax rotation, resulted in six self-descriptiveness factors. Sorted, rotated factor loadings of greater than .45 can be found in Table 5 (Appendix E contains all factor loadings of greater than .25). The squared multiple correlations (SMC) in Table 6 indicated that all factors were internally consistent and well defined by the variables. The lowest SMC for factors from variables was .73.

Interpretation and Stability of the Factors

In the BFR analysis, three factors did not correlate with more than two variables and were not considered to be adequately defined. These factors were eliminated from further analyses. The

Table 4.

Factor Score Covariance Matrix - BFR

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
Factor1	0.956					
Factor2	-0.008	0.945				
Factor3	0.029	0.039	0.839			
Factor4	0.006	-0.008	0.056	0.790		
Factor5	0.008	-0.009	0.036	0.012	0.744	
Factor6	0.010	0.024	-0.025	-0.018	0.010	0.712

Table 5.

Factor Loadings and Percents of Variance and Covariance
for Principal Factors Extraction and Varimax
Rotation on Self-Descriptive Ratings

	F 1	F 2	F 3	F 4	F 5	F 6
SHUNNED	.62	.00	.00	.00	.00	.00
DISMAL	.61	.00	.00	.00	.00	.00
INADEQUATE	.61	.00	.00	.00	.00	.00
GLOOMY	.60	.00	.00	.00	.00	.00
INFERIOR	.59	.00	.00	.00	.00	.00
GLUM	.59	.00	.00	.00	.00	.00
DOOMED	.57	.00	.00	.00	.00	.00
REPULSIVE	.56	.00	.00	.00	.00	.00
DEJECTED	.55	.00	.00	.00	.00	.00
THREATENED	.53	.00	.00	.00	.00	.00
DEFENSELESS	.51	.00	.00	.00	.00	.00
FEARFUL	.50	.00	.48	.00	.00	.00
SHY	.49	.00	.00	.00	.00	.00
STUPID	.47	.00	.00	.00	.00	.00
SHAKY	.47	.00	.00	.00	.00	.00
GUILTY	.00	.00	.00	.00	.00	.00
LISTLESS	.00	.00	.00	.00	.00	.00
HEARTSICK	.00	.00	.00	.00	.00	.00
OPTIMISTIC	-.00	.00	.00	.00	.00	.00
SUICIDAL	.00	.00	.00	.00	.00	.00
DEPENDENT	.00	.00	.00	.00	.00	.00
ZESTFUL	.00	.73	.00	.00	.00	.00
BUBBLY	.00	.69	.00	.00	.00	.00
SPARKLING	.00	.68	.00	.00	.00	.00
RADIANT	.00	.64	.00	.00	.00	.00
BRIMMING	.00	.63	.00	.00	.00	.00
SPIRITED	.00	.63	.00	.00	.00	.00
ENTERTAINING	.00	.59	.00	.00	.00	.00
FRISKY	.00	.59	.00	.00	.00	.00
OUTGOING	.00	.58	.00	.00	.00	.00
WITTY	.00	.56	.00	.00	.00	.00
JOVIAL	.00	.55	.00	.00	.00	.00
JOYFUL	.00	.55	.00	.00	.00	.00
HAPPY	.00	.50	.00	.00	.00	.00
ENERGETIC	.00	.00	.00	.00	.00	.00
ADVENTUROUS	.00	.00	.00	.00	.00	.00
LUSTY	.00	.00	.00	.00	.00	.00

Table 5 (continued)

	F 1	F 2	F 3	F 4	F 5	F 6
WORRYING	.00	.00	.70	.00	.00	.00
NERVOUS	.00	.00	.66	.00	.00	.00
PANICKY	.00	.00	.64	.00	.00	.00
TENSE	.00	.00	.63	.00	.00	.00
RELAXED	.00	.00	-.61	.00	.00	.00
CALM	.00	.00	-.59	.00	.00	.00
UNEASY	.51	.00	.52	.00	.00	.00
TEARFUL	.00	.00	.46	.00	.00	.00
EXHAUSTED	.00	.00	.46	.00	.00	.00
RESTED	.00	.00	-.00	.00	.00	.00
IRRITABLE	.00	.00	.00	.00	.00	.00
SKILLFUL	.00	.00	.00	.68	.00	.00
TALENTED	.00	.00	.00	.61	.00	.00
CAPABLE	.00	.00	.00	.56	.00	.00
PRODUCTIVE	.00	.00	.00	.56	.00	.00
CREATIVE	.00	.00	.00	.48	.00	.00
INTERESTED	.00	.00	.00	.45	.00	.00
CONFIDENT	.00	.00	.00	.00	.00	.00
IMPRESSIVE	.00	.00	.00	.00	.00	.00
STEADY	.00	.00	.00	.00	.00	.00
SAFE	.00	.00	.00	.00	.00	.00
MOTIVATED	.00	.00	.00	.00	.00	.00
HOSTILE	.00	.00	.00	.00	.64	.00
AGGRESSIVE	.00	.00	.00	.00	.62	.00
DANGEROUS	.00	.00	.00	.00	.56	.00
ANGRY	.00	.00	.00	.00	.55	.00
DOMINANT	.00	.00	.00	.00	.50	.00
IMPATIENT	.00	.00	.00	.00	.00	.00
RACING	.00	.00	.00	.00	.00	.00
VIGILANT	.00	.00	.00	.00	.00	.00
CONTENT	.00	.00	.00	.00	.00	.00
Percent of Variance	11.63	10.69	8.66	6.92	4.28	3.41
Percent of Covariance	25.51	23.45	18.99	15.18	9.39	7.47

Table 6.

Factor Score Covariance Matrix - SDR

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
Factor1	0.862					
Factor2	-0.009	0.882				
Factor3	0.077	-0.006	0.849			
Factor4	-0.043	0.061	-0.009	0.810		
Factor5	0.015	0.024	0.024	0.010	0.824	
Factor6	-0.019	0.063	-0.019	0.033	-0.038	0.725

amount of variance accounted for by the remaining three factors ranged from 6.91 to 18.49 percent (see Table 3). These three factors were labelled Negative Affect, Well Being and Energetic Arousal.

For the SDR analysis, one factor did not correlate with more than two variables and was not considered to be adequately defined. This factor was eliminated from further analyses. The amount of variance accounted for by the remaining five factors ranged from 3.41 to 11.63 percent (see Table 5). These five factors were labelled Depressive Self, SDR Energetic Arousal, Anxious Self, Skillful Self and Hostility.

A final set of analyses were conducted on the bodily feeling and self-descriptiveness ratings to determine the replicability of the factor structure. Subject data was randomly split in half and each half subjected to principal factor extractions with varimax rotation. Rotated factor loadings for BFR analyses on the two subsamples can be found in Appendix F. Analyses on both of the subsamples produced three factors. These factors correspond to the three factors found in the original analysis on all subjects: Negative Affect, Well Being and Energetic Arousal. It is concluded that the obtained factors remained essentially the same across the two subsamples and that the observed factor structure in the analysis on the total sample was stable and replicable.

Rotated factor loadings for SDR analyses on the two subsamples can be found in Appendix G. Analyses on the two

subsamples produced seven factors, but only six were adequately defined. There was some movement of adjectives among the factors and several of the factors reversed order. An Anxious Self, SDR Energetic Arousal, Skillful Self and Hostility factor could be identified in both of the subsamples. A Depressive Self factor was identified in the second subsample, but was split into two smaller factors in the first subsample. It was concluded that the obtained factors remained essentially the same across the two subsamples and that the observed factor structure in the analysis on the total sample was stable and replicable. However, it was also concluded that the SDR factors were not quite as stable as the BFR factors.

A comparison was made between the BFR and SDR factors. The rationale behind this comparison was to determine if subjects rated the mood adjectives the same, whether rating them for self-descriptiveness or for degree of bodily feeling. Several differences were noted across the two analyses.

Adjectives which loaded on the first factor in the BFR analysis, were distributed among the first, third and fifth SDR factors. Rather than loading on one large negative factor, depressive-descriptive adjectives loaded on the first factor, anxious-descriptive adjectives on the third factor and hostility-descriptive adjectives on the fifth. Many of the anxiety-descriptive adjectives also loaded on the first factor, though not as highly as on the third (see Appendix E). The second SDR factor was

similar to the third BFR Energetic Arousal factor and was labelled SDR Energetic Arousal. This second SDR factor was also comprised of adjectives which in the BFR analysis, loaded on the Well Being factor. However, the bulk of the 'well being' adjectives loaded on the fourth Skillful Self factor in the SDR analysis. It would appear that bodily feeling ratings and self-descriptiveness ratings result in somewhat different factor structures.

In order to further determine the correspondence of the SDR factor structure to that of the BFR ratings, a forced-factor analysis limiting the number of factors extracted and rotated, was conducted. This analysis was performed first on the BFR ratings, limiting the number of factors to three to further establish the stability of the three interpretable factors identified in the original BFR analysis. A forced three-factor analysis was then performed on the SDR ratings, to determine whether the factors emerging under these circumstances would be the same as those emerging for BFR ratings. The sorted, rotated factor loadings can be seen in Table 7 for both BFR and SDR. In both analyses, the first two factors could be labelled Negative Affect and Well Being. The third factor emerging in the BFR analysis corresponds to the Energetic Arousal factor identified in the original analysis. The third factor emerging from the SDR analysis corresponded to the Hostility factor identified in the first analysis.

Table 7.

Forced Three Factor Principal Factors Extraction with
Varimax Rotation on Bodily Feelings and Self
Descriptiveness Ratings

Variables	BFR	SDR
Factor 1		
Fearful	0.745	0.695
Gloomy	0.738	0.687
Threatened	0.716	0.644
Dejected	0.715	0.601
Inferior	0.713	0.653
Doomed	0.710	0.600
Worrying	0.708	0.672
Uneasy	0.707	0.716
Angry	0.692	-----
Glum	0.690	0.659
Shunned	0.679	0.606
Tearful	0.679	0.625
Nervous	0.662	0.698
Panicky	0.654	0.714
Guilty	0.652	0.578
Repulsive	0.650	0.510
Defenseless	0.642	0.604
Tense	0.635	0.609
Hostile	0.634	-----
Dismal	0.630	0.718
Irritable	0.623	-----
Stupid	0.622	0.556
Heartsick	0.618	0.516
Suicidal	0.612	0.409
Inadequate	0.568	0.639
Shaky	0.561	0.682
Impatient	0.507	-----
Listless	0.415	0.443
Shy	0.430	0.474
Exhausted	0.467	0.454
Dangerous	0.390	-----
Dependent	-----	0.350
Calm	-----	-0.463
Steady	-----	-0.456

Table 7 (continued)

Variables	BFR	SDR
Factor 2		
Confident	0.759	0.523
Optimistic	0.752	0.502
Interested	0.746	0.671
Talented	0.736	0.512
Skillful	0.724	0.540
Capable	0.721	0.487
Creative	0.716	0.480
Productive	0.683	0.608
Content	0.675	0.541
Impressive	0.674	0.580
Safe	0.666	0.308
Entertaining	0.658	0.680
Witty	0.651	0.494
Dominant	0.647	-----
Happy	0.633	0.725
Outgoing	0.627	0.613
Adventurous	0.595	0.516
Steady	0.589	-----
Motivated	0.585	0.441
Spirited	0.540	0.762
Jovial	0.537	0.695
Dependent	0.504	-----
Aggressive	0.350	-----
Vigilant	0.342	-----
Calm	0.472	-----
Joyful	0.420	0.791
Brimming	0.464	0.651
Sparkling	-----	0.787
Zestful	-----	0.779
Radiant	-----	0.775
Energetic	-----	0.634
Frisky	-----	0.622
Bubbly	-----	0.597
Rested	-----	0.357
Relaxed	-----	0.402

Table 7 (continued)

Variables	BFR	SDR
Factor3		
Energetic	0.727	-----
Frisky	0.652	-----
Zestful	0.630	-----
Bubbly	0.578	-----
Rested	0.577	-----
Relaxed	0.568	-----
Radiant	0.546	-----
Lusty	0.497	0.366
Sparkling	0.485	-----
Racing	0.434	0.415
Hostile	-----	0.640
Aggressive	-----	0.633
Angry	-----	0.584
Impatient	-----	0.560
Dominant	-----	0.543
Dangerous	-----	0.542
Irritable	-----	0.516
Vigilant	-----	0.365

The Relationship Between Factors and Anxiety/Depression

One of the goals of the present research was to determine if the factors emerging from subjects' somatic awareness ratings of the adjectives would prove useful in differentiating between anxious and depressive states. Though the main focus of this research is on the usefulness of somatic awareness, self-descriptiveness factors were also included to determine if these two methods of rating affective states were differentially related to self-reported symptoms of anxiety and depression. In order to explore the relationship between anxious symptoms, depressive symptoms and the factors, two types of multivariate analyses were used: Multivariate analysis of variance (MANOVA) and Multiple Regression.

MANOVA was used to explore main effects and the interaction of anxiety and depression symptoms on subjects' ratings of the adjectives for bodily feelings and self descriptiveness. The continuous independent variables (trait/state anxiety and depression) were transformed into discrete variables by using cutoff scores to dichotomize each of the four measures of anxiety and depression. These cutoff scores were used to categorize subjects into the following groups: (state) depressed, (state) nondepressed, (state) anxious, (state) nonanxious, (trait) depressed, (trait) nondepressed, (trait) anxious and (trait) nonanxious. All subjects scoring above the cutoff scores on any of the measures were selected. Because the number of subjects scoring below the cutoff

scores was very large, however, a subsample of these subjects was randomly selected to ensure that the sizes of the groups to be compared were similar. Consequently, not all 557 subjects were used in the multivariate analyses. The cutoff scores used to establish the groups and the exact number of subjects comprising each of these groups are described below.

For each of the four measures of anxiety and depression, criteria was established to dichotomize subjects according to their scores on state/trait anxiety and depression. Cutoffs for categorizing the BDI are available (Beckham & Leber, 1985) and were used in the present research. Accordingly, a cutoff score of 16 on the BDI was used to divide subjects into two groups. The first group consisted on subjects scoring 16 or less on the BDI, which is considered to be indicative of mild to no depression (Beckham & Leber, 1985). This group was labelled (state) nondepressed. The second group consisted of subjects with a score above 16, which indicates at least a moderate level of depression (Beckham & Leber, 1985). This group was labelled (state) depressed. Using these cutoff scores, 95 of the subjects met the criterion for selection into the first groups, while 48 subjects met the criterion for selection into the second group.

In the absense of established cutoff scores for the other measures in this study, a cutoff score of one standard deviation above the mean of the total sample ($N = 557$) was used to classify subjects into groups. For the BAI, the cutoff score was

18.36. Subjects scoring equal to or less than this score were placed in the (state) nonanxious group, while those scoring above this score were classified as (state) anxious. Sixty-eight nonanxious and 75 anxious subjects were identified. For the CCD, the cutoff score was 56.08. Subjects scoring less than or equal to this value were placed in the (trait) nondepressed group, while those scoring above it were classified as (trait) depressed. Ninety-two nondepressed and 85 depressed subjects were identified. Finally, for the STAI-T, the cutoff score was 49.61. Subjects scoring less than or equal to this score were placed in the (trait) nonanxious group, while those scoring above were classified as (trait) anxious. Eighty-four nonanxious and 93 anxious subjects were identified.

Group Characteristics

Means, standard deviations and ranges for each of the groups on the relevant measures, are presented in Table 8. The (state) nondepressed group had a mean BDI score of 7.84, which falls in the nondepressed range (Beckham & Leber, 1985) and the (state) depressed group had a mean BDI score of 22, which falls in the moderately depressed range (Beckham & Leber, 1985). The mean score on the BAI was 9.35 for the (state) nonanxious group and 25.5 for the anxious group. Thus, the nonanxious group scored slightly lower than a group of university students tested by Dent and Salkovskis (1986; $\bar{X} = 11.08$, $SD = 9.10$), but similar to a group of medical students in the same study ($\bar{X} = 8.89$, $SD = 7.30$).

Table 8.

Means, Standard Deviations and Ranges on
Anxiety and Depression Measures
for Subject Subsample

	Mean	SD	Minimum	Maximum	N
State Depression	22.00	7.72	17	53	48
Nondepression	7.84	4.45	0	16	95
Trait Depression	67.39	10.67	57	118	85
Nondepression	43.10	10.17	23	56	92
State Anxiety	25.49	7.85	19	55	75
Nonanxiety	9.35	5.19	0	18	68
Trait Anxiety	55.94	4.88	50	72	93
Nonanxiety	40.39	7.38	22	49	84

The mean score of the anxious group was similar to the mean BAI scores reported by Beck et al. (1988) for pure anxious ($X = 24.59$, $SD = 11.41$), and primary anxious ($X = 25.39$, $SD = 11.48$) subjects.

The (trait) nondepressed group scored 43.10 on the CCD, while the (trait) depressed group scored 67.39. Use of the cutoff score resulted in the top 15 percent of subjects in the total sample ($N=557$) being classified as depressed. This percentage is similar to percentages utilized by other researchers using normal populations. Kuiper (1978) selected the top 15 percent of a sample of 340 subjects for a depressed group, while Rowney (1975) selected the top 10 percent of a sample of 400 subjects. Due to differences in scoring procedures, mean scores from these other studies required conversion using a constant, in order to be compared with mean scores in the present study. The depressed subjects in the present research are somewhat more depressed than those identified by Kuiper (1978; $X = 60.2$) and Rowney (1975; $X = 62.5$). On the other hand, the mean score of the nondepressed subjects in the present study was higher than the scores for the nondepressed groups identified by Kuiper (1978; $X = 24$) and Rowney (1975; $X = 19.5$). These differences are likely due to variations in subject selection. Kuiper (1978) and Rowney (1975) both selected only a percentage of extreme low scoring subjects for their nondepressed groups, while in the present research any subject not in the top 15 percent was eligible for

selection for the nondepressed group. Mean scores on the CCD for clinical subjects have not been reported in the literature.

The (trait) nonanxious group scored 40.40 on the STAI-T and the (trait) anxious group scored 55.94. The mean for the nonanxious group is slightly higher than the means ($\bar{X} = 38$, $SD = 9$) reported by Spielberger et al. (1970) and Nezu et al. (1986; $\bar{X} = 38.8$, $SD = 11.63$) for undergraduate students, but somewhat less than that reported by Tanaka-Matsumi and Kameoka (1986; $\bar{X} = 41.72$, $SD = 10.25$). Finally, the mean for the anxious group is slightly higher than that reported by Spielberger et al. (1970) for neuropsychiatric patients diagnosed with anxiety reaction ($\bar{X} = 48.08$).

MANOVA on BFR Factors

Two 2 X 2 between-subjects MANOVAs were performed to investigate the relationship between the factors and scores on anxiety and depression measures. One of these analyses explored the relationship between the factors and state depression and anxiety, using the (state) depressed/nondepressed and (state) anxious/nonanxious groups. A total of 143 subjects were used in this analysis. The other analysis explored the relationship between the factors and trait depression and anxiety, utilizing the (trait) depressed/nondepressed and (trait) anxious/nonanxious groups. A total of 177 subjects were used. To reduce the possibility of Type I errors, alpha was set at .01 for interpretation of univariate statistics in all analyses.

Table 9 contains the cell means and standard deviations on

Table 9.

Cell Means and Standard Deviations on Factors for High/Low
State Anxiety and State Depression Subjects

	Low Depression		High Depression	
	X	SD	X	SD
Negative Affect				
Low Anxiety	-.206	1.155	.473	.609
High Anxiety	.502	.812	.543	.839
Well Being				
Low Anxiety	.186	.920	-.020	.806
High Anxiety	-.080	.830	-.188	.692
Energetic Arousal				
Low Anxiety	.328	.772	-.429	1.089
High Anxiety	.162	.814	-.642	.840

the dependent variables for the analysis involving state anxiety and depression. Using Wilks' criterion, there were significant differences in the linear combinations of DVs across levels of depression, $F(3,137) = 9.98$, $p < .01$, and anxiety $F(3,137) = 3.17$, $p < .05$. The interaction was not statistically significant. Univariate tests of depression, anxiety and their interactions can be found in Table 10. The only significant result at the .01 level of significance was Energetic Arousal for depression. Nondepressed subjects ($\bar{X} = .232$, $SD = .797$) scored significantly higher on this factor than did depressed subjects ($\bar{X} = -.517$, $SD = .986$). Although not significant at the .01 level of significance, both high state anxiety and high state depression subjects scored in the expected direction on Negative Affect. Depressed subjects scored higher ($\bar{X} = .502$, $SD = .706$) than nondepressed subjects ($\bar{X} = .204$, $SD = 1.027$). Anxious subjects scored higher ($\bar{X} = .513$, $SD = .813$) than nonanxious ($\bar{X} = .074$, $SD = 1.019$).

Table 11 contains the cell means and standard deviations on the dependent variables for the analysis with trait anxiety and depression. Using Wilks' criterion, there were significant differences in the combined DVs across levels of depression, $F(3,171) = 3.84$, $p < .01$, and anxiety $F(3,171) = 4.70$, $p < .01$. The interaction was not statistically significant. Univariate tests of depression, anxiety and their interactions can be found in Table 12. For depression, Energetic Arousal was significant at $p < .01$. Non-depressed subjects ($\bar{X} = -.093$, $SD = .877$)

Table 10.

Tests of State Anxiety, State Depression
and Their Interaction

<u>IV</u>	<u>DV</u>	<u>Univariate F</u>	<u>df</u>
Anxiety			
	Negative Affect	5.88*	1,139
	Well Being	2.10	1,139
	Energetic Arousal	1.49	1,139
Depression			
	Negative Affect	5.02*	1,139
	Well Being	1.10	1,139
	Energetic Arousal	25.22**	1,139
Anxiety by Depression Interaction			
	Negative Affect	3.95*	1,139
	Well Being	.11	1,139
	Energetic Arousal	.02	1,139

* $p < .05$ ** $p < .01$

Table 11.

Cell Means and Standard Deviations on Factors for High/Low
Trait Anxiety and Trait Depression Subjects

	Low Depression		High Depression	
	X	SD	X	SD
Negative Affect				
Low Anxiety	.050	.964	.200	.760
High Anxiety	.467	.734	.598	.688
Well Being				
Low Anxiety	.086	1.034	-.160	.991
High Anxiety	-.066	.693	-.258	.659
Energetic Arousal				
Low Anxiety	.066	.836	-.653	.983
High Anxiety	-.330	.863	-.359	1.051

Table 12.

Tests of Trait Anxiety, Trait Depression
and Their Interaction

<u>IV</u>	<u>DV</u>	<u>Univariate F</u>	<u>df</u>
Anxiety			
	Negative Affect	10.56**	1,173
	Well Being	.87	1,173
	Energetic Arousal	.12	1,173
Depression			
	Negative Affect	1.25	1,173
	Well Being	2.69	1,173
	Energetic Arousal	6.52**	1,173
Anxiety by Depression Interaction			
	Negative Affect	.01	1,173
	Well Being	.04	1,173
	Energetic Arousal	5.55*	1,173

* $p < .05$ ** $p < .01$

scored higher on this factor than did depressed subjects ($\bar{X} = -.46$, $SD = 1.012$). For anxiety, Negative Affect was significant at $p < .01$. Nonanxious subjects ($\bar{X} = .101$, $SD = .897$) scored significantly lower on the factor than anxious subjects ($\bar{X} = .55$, $SD = .706$).

MANOVA for SDR Factors

Two 2 X 2 between-subjects MANOVAs were performed to investigate the relationship between SDR factors and scores on anxiety and depression measures. Depressive Self, SDR Energetic Arousal, Anxious Self, Skillful Self and Hostility served as the dependent variables.

The first analysis was performed using state anxiety and depression as the independent variables (see Table 13 for cell means and standard deviations). Using Wilks' criterion, there were significant differences on the combination of the DVs across levels of depression, $F(5,135) = 12.40$, $p < .01$ and level of anxiety, $F(5,135) = 4.59$. The interaction was not statistically significant.

Univariate tests of depression, anxiety and their interactions can be found in Table 14. For depression, significant results were found at the .01 level of significance for Depressive Self, Anxious Self, Skillful Self and Hostility. Nondepressed subjects scored significantly lower than did depressed subjects on Depressive Self ($\bar{X} = .120$, $SD = .994$ vs $\bar{X} = .843$, $SD = 1.043$), Anxious Self ($\bar{X} = .254$, $SD = .944$ vs $\bar{X} = .683$, $SD = 1.022$) and Hostility ($\bar{X} = -.098$, $SD = .879$ vs $\bar{X} = .344$, $SD = 1.097$). The

Table 13.

Cell Means and Standard Deviations on Factors for High/Low
State Anxiety and State Depression Subjects

		Low Depression		High Depression	
		X	SD	X	SD
Depressive Self					
	Low Anxiety	-.280	.781	.882	1.050
	High Anxiety	.411	1.037	.789	1.064
(SDR) Energetic Arousal					
	Low Anxiety	.144	.883	.042	1.354
	High Anxiety	-.089	.930	-.489	1.143
Anxious Self					
	Low Anxiety	-.135	.783	.477	.933
	High Anxiety	.537	.956	.970	1.095
Skillful Self					
	Low Anxiety	.067	.899	-.612	1.108
	High Anxiety	-.021	.847	-.818	1.456
Hostility					
	Low Anxiety	-.198	.835	.444	1.063
	High Anxiety	-.025	.910	.204	1.157

Table 14.

Tests of State Anxiety, State Depression
and Their Interaction

<u>IV</u>	<u>DV</u>	<u>Univariate F</u>	<u>df</u>
Anxiety			
	Depressive Self	2.91	1,139
	SDR Energetic Arousal	4.15*	1,139
	Anxious Self	12.24**	1,139
	Skillful Self	.65	1,139
	Hostility	.04	1,139
Depression			
	Depressive Self	19.259**	1,139
	SDR Energetic Arousal	1.79	1,139
	Anxious Self	9.85**	1,139
	Skillful Self	16.35**	1,139
	Hostility	6.41**	1,139
Anxiety by Depression Interaction			
	Depressive Self	4.99*	1,139
	SDR Energetic Arousal	.63	1,139
	Anxious Self	.29	1,139
	Skillful Self	.10	1,139
	Hostility	1.44	1,139

* $p < .05$ ** $p < .01$

nondepressed subjects scored higher than depressed subjects on the Skillful Self factor ($\bar{X} = .016$, $SD = .866$ vs $\bar{X} = -.698$; $SD = 1.254$). For anxiety, significant results were found at the .01 level of significance for Anxious Self. On this factor, nonanxious subjects scored lower ($\bar{X} = .117$, $SD = .894$) than anxious subjects ($\bar{X} = .653$, $SD = 1.006$).

The second analysis was performed using trait anxiety and depression as the independent variables (see Table 15 for cell means and standard deviations). Using Wilks' criterion, there were significant differences on the combination of the DVs across levels of depression, $F(5,169) = 11.48$, $p < .01$, and anxiety $F(5,169) = 15.11$, $p < .05$. The interaction was not statistically significant. Univariate tests of depression, anxiety and their interactions can be found in Table 16. For depression, Depressive Self, SDR Energetic Arousal and Skillful Self were significant at $p < .01$. Nondepressed subjects scored significantly lower on the Depressive Self factor than depressed subjects ($\bar{X} = -.111$, $SD = .945$ vs $\bar{X} = .950$, $SD = .970$). Nondepressed subjects scored significantly higher than depressed subjects on SDR Energetic Arousal factor ($\bar{X} = -.128$, $SD = .924$ vs $\bar{X} = -.570$, $SD = .994$) and Skillful Self ($\bar{X} = .077$, $SD = .871$ vs $\bar{X} = -.589$, $SD = 1.188$). For anxiety, Depressive Self and Anxious Self were significant at $p < .01$. Nonanxious subjects scored lower than anxious subjects on Depressive Self ($\bar{X} = .203$, $SD = .964$ vs $\bar{X} = .795$, $SD = 1.007$) and Anxious Self ($\bar{X} = -.040$, $SD = .765$ vs $\bar{X} = .801$, $SD = 1.027$).

Table 15.

Cell Means and Standard Deviations on Factors for High/Low
Trait Anxiety and Trait Depression Subjects

		Low Depression		High Depression	
		X	SD	X	SD
Depressive Self					
	Low Anxiety	-.067	.904	.714	.875
	High Anxiety	.375	.928	1.073	.967
(SDR) Energetic Arousal					
	Low Anxiety	-.098	.890	-.581	.871
	High Anxiety	-.174	.958	-.565	1.087
Anxious Self					
	Low Anxiety	-.096	.805	.067	.684
	High Anxiety	1.067	1.092	.625	.951
Skillful Self					
	Low Anxiety	.152	.887	-.271	.984
	High Anxiety	-.035	.809	-.754	1.280
Hostility					
	Low Anxiety	.063	.879	.001	1.079
	High Anxiety	-.139	.965	.244	1.056

Table 16.

Tests of Trait Anxiety, Trait Depression
and Their Interaction

<u>IV</u>	<u>DV</u>	<u>Univariate F</u>	<u>df</u>
Anxiety			
	Depressive Self	7.67**	1,173
	SDR Energetic Arousal	.04	1,173
	Anxious Self	37.31**	1,173
	Skillful Self	4.33*	1,173
	Hostility	.02	1,173
Depression			
	Depressive Self	26.22**	1,173
	SDR Energetic Arousal	8.38**	1,173
	Anxious Self	.99	1,173
	Skillful Self	12.62**	1,173
	Hostility	1.08	1,173
Anxiety by Depression Interaction			
	Depressive Self	.08	1,173
	SDR Energetic Arousal	.09	1,173
	Anxious Self	4.61*	1,173
	Skillful Self	.85	1,173
	Hostility	2.08	1,173

* $p < .05$ ** $p < .01$

Multiple Regression Analyses

Although MANOVA provides a means of testing the main effects and interaction of the anxiety/depression measures on subjects' ratings of the adjectives, the need for continuous independent variables to be rendered discrete results in a loss of information (Tabachnick & Fidell, 1989). Multiple regression using the independent variables as continuous, provides a more powerful means of testing the main effects of anxiety and depression scores on adjective ratings. Multiple regression analyses were therefore undertaken to further explore the main effects of anxiety and depression on subjects' ratings of the adjectives. In order to more clearly compare the results of these two types of analyses, the same subsample of subjects used for the MANOVAs, was used in for these analyses. Use of a smaller sample of subjects is also justifiable as with large numbers of subjects, variables accounting for negligible variance in the dependent variable nonetheless will be statistically significant (Tabachnick & Fidell, 1989).

Multiple Regression on BFR Factors

Three multiple regressions were performed, one on each of the three BFR factors. Tables 17 thru 19 contain the correlations between the variables, the unstandardized regression coefficients (b), the intercept, the standardized regression coefficients (B), the semipartial correlations (sr) and R^2 , R^2 and the adjusted R^2 . To reduce the possibility of Type I errors, alpha was set at .01 for interpretation of all univariate analyses.

Table 17.

Standard Multiple Regression of State and Trait Anxiety and
Depression on the Negative Affect Factor

Variables	Negative Affect	BAI	BDI	STAI-T	CCD	b	B	r^2 sr (unique)
BAI	.301					.020**	.213	.04
BDI	.237	.423				-.004		
STAI-T	.336	.363	.665			.026**	.304	.04
CCD	.207	.234	.644	.695		.026		
Intercept = -1.071								
Means	.261	13.94	10.70	45.39	49.38			
Standard Deviations	.896	9.94	7.83	10.34	16.37		$R^2 = .15$	
							$R^2 = .14$	
							$R = .39^{**}$	

* $p < .05$
 ** $p < .01$

Table 18.

Standard Multiple Regression of State and Trait Anxiety and
Depression on the Well Being factor

Variables	Well Being	BAI	BDI	STAI-T	CCD	b	B	r^2 sr (unique)
BAI	-.071					-.002		
BDI	-.124	.423				.011		
STAI-T	-.199	.363	.665			-.008		
CCD	-.239	.234	.644	.695		-.013*	-.231	.02
							Intercept =	.850
Means	-.052	13.94	10.70	45.39	49.38			
Standard Deviation	.892	9.94	7.83	10.34	16.37		$R^2 =$.06
							Adjusted $R^2 =$.05
							$R =$.25**

* $p < .05$
** $p < .01$

Table 19.

Standard Multiple Regression of State and Trait Anxiety and Depression on the Energetic Arousal factor

Variables	Energetic Arousal	BAI	BDI	STAI-T	CCD	b	B ² _{sr} (unique)
BAI	-.019					.006	
BDI	-.161	.423				.010	
STAI-T	-.254	.363	.665			-.013	
CCD	-.303	.234	.644	.695		-.016**	-.272 .04
Intercept =							1.04
Means	-.136	13.94	10.70	45.39	49.38		
Standard Deviations	.939	9.94	7.83	10.34	16.37	R ² =	.10
						Adjusted R ² =	.09
						R =	.32**

* $p < .05$
 ** $p < .01$

Statistical information for the regression between the Negative Affect factor and the independent variables can be found in Table 17. R for regression was significantly different from zero, $F(4,227) = 10.12$, $p < .001$. and two of the independent variables contributed significantly to the prediction of Negative Affect scores at $p < .01$: State Anxiety ($sr^2 = .04$) and Trait Anxiety ($sr^2 = .04$). The remaining two variables contribute another .07 in shared variability. Altogether, 15 percent (14 percent adjusted) of the variability in the Negative Affect scores was accounted for by knowing subjects' scores on the four independent variables. Inspection of the zero-order correlations between state depression and Negative Affect ($r = .237$) was significantly different from zero, $F(4,227) = 3.38$, $p < .01$. Once the effects of the other independent variables had been partialled out, however, state depression did not add anything unique to the prediction of Negative Affect.

Statistical information for the regression between the Well Being factor and the independent variables can be found in Table 18. R for regression was significantly different from zero, $F(4,227) = 3.85$, $p < .005$. However, none of the independent variables contributed significantly to the prediction of Well Being scores at $p < .01$.

Statistical information for the regression between the Energetic Arousal factor and the independent variables can be found in Table 19. R for regression was significantly

different from zero, $F(4,227) = 6.61, p < .001$ and one of the independent variables made a statistically significant unique contribution to the prediction of Energetic Arousal scores: Trait Depression ($sr^2 = .036$). The remaining three variables contributed another .068 in shared variability. Altogether, 10 percent (9 percent adjusted) of the variability in the Energetic Arousal scores was accounted for by knowing subjects' scores on the four independent variables. Inspection of the zero-order correlations revealed that the correlation between trait anxiety and Energetic Arousal ($r = -.254$), was significantly different from zero, $F(4,227) = 3.91, p < .01$. Once the effects of the other independent variables were partialled out, however, trait anxiety did not add anything unique to the prediction of Energetic Arousal.

Multiple Regression on SDR Factors

Five multiple regressions were performed, one on each of the five SDR factors. Tables 20 thru 24 contain the correlations between the variables, the unstandardized regression coefficients (b), the intercept, the standardized regression coefficients (B), the semipartial correlations (sr^2) and R , R^2 and the adjusted R^2 .

Statistical information for the regression between the Depressive Self factor and the independent variables can be found in Table 20. R for regression was significantly different from zero, $F(4,227) = 18.32, p < .001$. and one of the

Table 20.

Standard Multiple Regression of State and Trait Anxiety and
Depression on the Depressive Self

Variables	Depressive Self	BAI	BDI	STAI-T	CCD	b	B	R^2 sr (unique)
BAI	.246					.009		
BDI	.392	.423				.008		
STAI-T	.434	.363	.665			.016		
CCD	.452	.234	.644	.695		.016**	.270	.033
							Intercept = -1.437	
Means	.330	13.94	10.70	45.39	49.38			
Standard Deviations	.994	9.94	7.83	10.34	16.37		$R^2 = .24$	
							Adjusted $R^2 = .23$	
							$R = .49^{**}$	

* $p < .05$
 ** $p < .01$

Table 21.

Standard Multiple Regression of State and Trait Anxiety and Depression on the SDR Energetic Arousal factor

Variables	Energetic Arousal	BAI	BDI	STAI-T	CCD	b	B	R^2 sr (unique)
BAI	-.022					.007		
BDI	-.183	.423				.018		
STAI-T	-.312	.363	.665			-.016		
CCD	-.385	.234	.644	.695		-.022**	-.374	.06
							Intercept =	1.41
Means	-.152	13.94	10.70	45.39	49.38			
Standard Deviation	.979	9.94	7.83	10.34	16.37		$R^2 = .17$	
							Adjusted $R^2 = .16$	
							$R = .41^{**}$	

* $p < .05$

** $p < .01$

Table 22.

Standard Multiple Regression of State and Trait Anxiety and Depression on the SDR Anxious Self factor

Variables	Anxious Self	BAI	BDI	STAI-T	CCD	b	B ² sr (unique)
BAI	.289					.014*	.144 .02
BDI	.279	.423				-.016	
STAI-T	.509	.363	.665			.058**	.602 .15
CCD	-.281	.234	.644	.695		.006	
Intercept = -2.49							
Means	.291	13.94	10.70	45.39	49.38		
Standard Deviations	.998	9.94	7.83	10.34	16.37		R ² = .29
							Adjusted R ² = .28
							R = .54**

* $p < .05$
 ** $p < .01$

Table 23.

Standard Multiple Regression of State and Trait Anxiety and
Depression on the Skillful Self Factor

Variables	Skillful Self	BAI	BDI	STAI-T	CCD	b	B	r^2 sr (unique)
BAI	-.121					.008		
BDI	-.450	.423				-.05**	-.354	.06
STAI-T	-.351	.363	.665			-.002		
CCD	.404	.234	.644	.695		.011*	.182	.02
							Intercept =	.07
Means	-.156	13.94	10.70	45.39	49.38			
Standard Deviations	1.03	9.94	7.83	10.34	16.37		$R^2 =$.23
							Adjusted $R^2 =$.22
							$R =$.48**

* $p < .05$ ** $p < .01$

Table 24.

Standard Multiple Regression of State and Trait Anxiety and Depression on the SDR Hostility factor

Variables	Hostility	BAI	BDI	STAI-T	CCD	b	B	R^2 sr (unique)
BAI	.098					.005		
BDI	.156	.423				.027		
STAI-T	.037	.363	.665			-.011		
CCD	.058	.234	.644	.695		-.0008		
							Intercept =	.19
Means	.005	13.94	10.70	45.39	49.38			
Standard Deviation	.961	9.94	7.83	10.34	16.37		R^2	= .03
							Adjusted R^2	= .02
							R	= .19***

*** Non-significant

independent variables made a statistically significant unique contribution to the prediction of the Depressive Self scores at $p < .01$: Trait Depression ($\underline{sr}^2 = .03$). The remaining three variables contributed another .21 in shared variability. Altogether, 24 percent (23 percent adjusted) of the variability in the Depressive Self scores was accounted for by knowing subjects' scores on the four independent variables. Inspection of zero-order correlations revealed that the correlation between state anxiety and Depressive Self ($r = .246$) was significantly different from zero, $F(4,227) = 3.66$, $p < .01$ as were the correlations with state depression ($r = .392$, $F(4,227) = 10.30$) and trait anxiety ($r = .434$, $F(4,227) = 13.17$).

Once the effects of the other independent variables had been partialled out, however, state depression, state anxiety and trait anxiety did not add anything unique to the prediction of Depressive Self.

Statistical information for the regression between the SDR Energetic Arousal factor and the independent variables can be found in Table 21. R for regression was significantly different from zero, $F(4,227) = 11.62$, $p < .001$ and one of the independent variables made a statistically significant unique contribution to the prediction of Energetic Arousal scores at $p < .01$: Trait Depression ($\underline{sr}^2 = .06$). The remaining three variables contributed another .11 in shared variability. Altogether, 17 percent (16 percent adjusted) of the variability in the Energetic Arousal scores was accounted for by knowing subjects' scores on the

four independent variables. Inspection of zero-order correlation revealed that the correlation between trait anxiety and the factor ($r = -.312$), was significantly different from zero, $F(4,227) = 6.12$. Once the effects of the other independent variables had been partialled out, however, trait anxiety did not add anything unique to the prediction of the factor.

Statistical information for the regression between the SDR Anxious Self factor and the independent variables can be found in Table 22. R for regression was significantly different from zero, $F(4,227) = 22.92$, $p < .001$ and one of the independent variables made a statistically significant contribution to the prediction of Anxious Self scores at $p < .01$: Trait Anxiety ($sr = .15$). The remaining variables contributed another .14 in shared variability. Altogether, 29 percent (28 percent adjusted) of the variability in the Anxious Self scores was accounted for by knowing subjects' scores on the four independent variables. State anxiety made a significant contribution to the prediction of Anxious Self at the .05 level of significance ($sr = .02$). Inspection of zero-order correlations revealed that the correlation between the factor and trait depression ($r = -.281$) was significantly different from zero, $F(4,227) = 4.87$ as was the correlation between the factor and state depression ($r = .279$, $F(4,227) = 4.79$). Once the effects of the other independent variables have been partialled out, however, trait depression and state depression do not add anything unique to the

prediction of the factor.

Statistical information for the regression between the SDR Skillful Self factor and the independent variables can be found in Table 23. R for regression was significantly different from zero, $F(4,227) = 16.92$, $p < .001$ and one of the independent variables contributed significantly to the prediction of Skillful Self scores at $p < .01$: State Depression ($sr^2 = .06$). The remaining variables contributed another .17 in shared variability. Altogether, 23 percent (22 percent adjusted) of the variability in the Skillful Self scores was accounted for by knowing subjects' scores on the five independent variables. Trait depression made a statistically significant contribution to the prediction of Skillful Self at the .05 level of significance ($sr^2 = .02$). Inspection of zero-order correlations revealed that the correlation between the factor and trait anxiety ($r = -.351$, $F(4,227) = 7.97$) was significantly different from zero. Once the effects of the other independent variables had been partialled out, however, trait anxiety did not add anything unique to the prediction of the factor.

Statistical information for the regression between the Hostility factor and the independent variables can be found in Table 11. R for regression was not significantly different from zero, precluding further interpretation.

Summary

Three stable and interpretable BFR and five SDR factors

emerged from principal factors analysis of bodily feeling ratings. The BFR factors appeared to be somewhat more stable than the SDR factors. MANOVA using BFR factors revealed that state and trait depressed subjects scored significantly lower on Energetic Arousal than nondepressed subjects, regardless of subjects' level of anxiety. Trait anxious subjects scored significantly higher on Negative Affect than did nonanxious subjects, regardless of level of depression. Multiple regression analyses using the BFR factors showed that state and trait anxiety were predictive of Negative Affect, while trait depression was predictive of Energetic Arousal scores.

MANOVA using SDR factors revealed that trait depressed subjects scored significantly lower on Energetic Arousal, than nondepressed subjects, regardless of subjects' level of anxiety. State depressed subjects scored significantly higher on Anxious Self and Hostility than did nondepressed subjects, regardless of level of anxiety. Both state and trait depressed subjects scored higher on Depressive Self and lower on Skillful Self, than did nondepressed subjects, regardless of level of anxiety. State and trait anxious subjects scored higher on the Anxious Self factor than did nonanxious subjects, regardless of level of depression. Trait anxious subjects scored higher on the Depressive Self factor than did nonanxious subjects, regardless of level of depression.

Multiple regression analyses using the SDR factors showed

that trait depression was predictive of Depressive Self and SDR Energetic Arousal. State depression was predictive of Skillful Self. Trait anxiety was predictive of Anxious Self.

DISCUSSION

Studies of college students have generally found a high degree of overlap between anxiety and depression measures. Correlations ranging from .60 to .79 have been reported between the Spielberger State-Trait Anxiety Inventory - Trait version (STAI-T) and the Beck Depression Inventory (Nezu et al. 1986; Dobson, 1985; Tanaka-Matsumi & Kameoka, 1986). Dobson (1985) reported a correlation of .80 between the STAI-T and the Costello-Comrey Depression scale (CCD). In the present study, correlations of similar magnitude were found. Even the Beck Anxiety Inventory (BAI), which was designed to maximize discrimination of anxiety and depression (Beck et al. 1988), failed to adequately distinguish between the two states. In the present research, a correlation of ($r = .53$) was found between the BDI and the BAI, indicating a substantial amount of overlap between the two measures.

The findings in the present study lend support to the contention that self-report measures of anxiety and depression appear to be tapping some form of general distress (Dobson, 1985; Gotlib, 1984). These results suggest the need to further delineate differences between the two states in order to develop

more effective methods of measurement. Several years ago, Mendels et al. (1972) recognized this difficulty and proposed that in lieu of mental content, researchers should focus on possible somatic differences between the two states, which can be discriminated by the subject. It was in this light that somatic awareness was used to explore possible differences between anxiety and depression. Initial results using the body as a referent were encouraging. Subjects were able to reliably report the degree to which they experienced negative and positive affective states with bodily feelings. Post-experimental discussions revealed that subjects were able to conceptualize the states in this manner, with many remarking that the task was of interest.

Three stable and interpretable unipolar dimensions emerged from analysis of subjects' somatic awareness ratings. The largest dimension was descriptive of negative feeling states and included adjectives descriptive of both anxiety (e.g., fearful, worrying, tense, nervous) and depression (e.g., gloomy, tearful, exhausted, listless). This factor was labelled Negative Affect. The second and third dimensions were descriptive of positive feeling states. The first of these two positive dimensions was composed of pleasant affective states (e.g., happy, content, calm) and positive descriptors (e.g., motivated, interested, witty). This dimension was labelled Well Being. The second positive dimension was comprised of affective states different in nature from those loading on the Well Being dimension and was labelled Energetic Arousal. It contained

adjectives implying positive intensity, (e.g., bubbly, sparkling, zestful).

The three factors identified through somatic awareness ratings were compared to the factor structure emerging from subjects' ratings of the adjectives for degree of self-descriptiveness. These self-descriptiveness ratings were included to determine if somatic awareness represented a method of rating feeling states different from simple self-report. Five interpretable unipolar dimensions emerged from analysis of subjects' ratings of the adjectives for self-descriptiveness. The first dimension was descriptive of depressive states (e.g., dismal, dejected, glum), incompetence (e.g., inadequate, stupid) and apprehension (e.g., fearful, doomed). This factor was labelled Depressive Self. The second SDR dimension was descriptive of positive intensity, (e.g., bubbly, sparkling, zestful) and social confidence (e.g., entertaining, outgoing). This dimension was labelled SDR Energetic Arousal. The third SDR dimension was comprised of anxiety descriptive adjectives (e.g., nervous, panicky, uneasy) and labelled Anxious Self. The fourth dimension was labelled Skillful Self and was comprised of adjectives descriptive of competency (e.g., talented, capable, productive). The final SDR dimension was labelled Hostility. Adjectives such as 'angry', 'hostile' and 'dangerous' loaded on this dimension.

A comparison of these two factor structures revealed that the BFR Negative Affect factor was split into three SDR factors

(Depressive Self, Anxious Self, Hostility). Adjectives loading on the BFR Well Being factor were distributed across the SDR Energetic Arousal and Skillful Self factors. The Energetic Arousal factor was similar in both analyses, although the SDR version contained social confidence adjectives. It was concluded therefore that these two methods of rating feeling states resulted in somewhat different factor structures.

In order to further investigate the correspondence between BFR and SDR factor structures, both sets of ratings were subjected to a forced three-factor analysis. Analysis of somatic awareness ratings resulted in the same three dimensions as the original analysis. Analysis of self-descriptiveness ratings resulted in two unipolar dimensions which were essentially the same as the first two factors emerging from somatic awareness ratings. The third dimension was distinctly different and corresponded to the Hostility factor in the original analysis. When forced-factored, then, two dimensions dominate subject ratings of affective states, whether rated for somatic awareness or for self-descriptiveness. However, the emergence of distinctly different third dimensions suggests that these methods of rating produce unique patterns of relationships among certain feeling states. The factor labelled Energetic Arousal, although appearing in the original SDR analysis, disappeared in the forced three-factor analysis. This Energetic Arousal factor was robust in the BFR analyses, emerging in both the original and forced-factor analysis. The Hostility factor appeared

in both the original and the forced-factor analyses of self-descriptiveness ratings. Thus, although somatic awareness ratings and self-descriptiveness ratings appear to be dominated by the same two major dimensions, these methods of rating also provided subjects with a unique means of conceptualizing emotionality.

The first two somatic awareness dimensions emerging from the original analysis were similar to the two dimensions identified in research by Tellegen and colleagues (e.g., Zevon & Tellegen, 1982; Watson & Tellegen, 1985). Negative Affect (NA) and Positive Affect (PA) have been identified across a number of studies as underlying subject-rated affect (Watson & Tellegen, 1985). The two dimensions are bipolar and independent, but with negatively correlated positive and negative states loading on opposite ends of each factor. For example, 'regret' and 'lonely' load positively on NA, while 'calm' and 'relaxed' load negatively. For PA, 'delighted' and 'attentive' load positively, while 'tired' and 'sad' load negatively.

The Negative Affect factor emerging from BFR analysis, was similar in theme to NA. Both NA and Negative Affect were descriptive of general distress. The Well Being factor resembled PA, in that both were comprised of pleasantness and positive self states. PA also contained intense positive affective states, which in the present study, comprised the Energetic Arousal dimension. Thus, the somatic awareness factors emerging in the present research were similar in theme to those identified by Tellegen and

colleagues.

The five original self-descriptiveness factors emerging in the present study did not appear similar to the two dimensions identified in research by Tellegen and colleagues (e.g., Zevon & Tellegen, 1982; Watson & Tellegen, 1985). In the original analysis self-descriptiveness ratings were not dominated by large general distress and positive affect factors, but instead produced several negative and positive factors with specific themes. Such factors only emerged from subsequent analyses which used a forced-factor method to reduce the number of factors extracted and rotated.

A notable difference between all of the dimensions in the present research and those identified by Tellegen and colleagues, is that BFR and SDR factors were unipolar. As previously mentioned, NA and PA are viewed as distinctly bipolar dimensions. This difference in polarity may reflect a methodological difference. Tellegen and colleagues (e.g., Watson & Tellegen, 1985) have typically asked subjects to rate their current mood. Under these rating conditions, individuals reporting an increase in certain negative affective states might report a related decrease in certain positive affective states. The same would be true for an increase in positive affective states. Because these negative and positive states are negatively correlated, they could be expected to load on opposite ends of the same bipolar dimension.

Subjects in the present study were asked to rate feeling

states in general, as opposed to current mood. Under such instructions, negative and positive affect could be viewed by subjects as independent. This possibility is supported by a study by Diener and Emmons (1984), which explored intra-individual experiences of negative and positive affect. They found that when subjects reported their current affective experiences, negative and positive affect were negatively correlated. However, when longer intervals of time were considered, the same positive and negative affective states tended to become uncorrelated. The unipolarity of the dimensions emerging from the present research might therefore be a reflection of the manner in which affective states are conceptualized when considered in general. The unipolarity of the factors in the present study might also be due to an insufficient number of affective terms which, if included, might have resulted in bipolar factors.

Utilizing the three somatic awareness factors to differentiate anxiety and depression produced some interesting similarities and differences with the research of Watson et al. (1988) and Watson and Kendall (1989). These researchers found that anxiety and depression were both related to NA. In the present research the Negative Affect dimension was significantly related to anxiety, but unlike the Watson studies, depression was not found to be significantly related to Negative Affect. However, the scores of the depressed subjects on this factor were in the expected direction. In the present research, it appears that the

relationship with Negative Affect is stronger for anxiety than depression.

The five self-descriptiveness factors were also used to differentiate anxiety and depression. Anxious Self was found to be related to trait anxiety, state anxiety and state depression. Depressive Self was related to state depression, trait depression and trait anxiety. Hostility proved to be the only 'negative' factor which differentiated between anxious and depressive groups. This factor was significantly related to state depression only. These findings are somewhat in line with the claims of Watson et al. (1988) that both anxiety and depression are dominated by negative affective states.

According to Watson et al. (1988) and Watson and Kendall, (1989), the key to separating anxiety and depression lies in their differential relationship with PA. In the present research it was the positive affect dimension of Energetic Arousal that was found to be inversely related to depression, but not to anxiety. The positive affect dimensions of SDR Energetic Arousal and Skillful Self were also found to be inversely related to depression and not related to anxiety. This relationship was more robust for Energetic Arousal. As with the positive BFR dimension, the relationship was strongest for trait depression.

Other researchers have noted a relationship between positive affect and depression. General support for a relationship between

depression and positive affect is provided by studies which have considered this relationship in a variety of ways. Blaney (1986) reviewed research investigating affect and memory. The findings of a number of these studies indicated that positive material was more influenced by depression than negative material. Using a self-referent intentional recall depth of processing paradigm, Myers et al. (1989) reported that remitted depressives recalled significantly more hypomanic adjectives than when their disorder was present. The authors hypothesized that an inhibition of processes controlling positive experience are more important to an episode of severe depression than those controlling negative experience. Bouman and Luteijin (1986) performed a factor analysis on subjects' ratings of Pleasant Events Schedule (PES - Dutch version; Lewinsohn & Graf, 1973), the BDI, the STAI and the Dutch Personality Questionnaire (NPV: Luteijn, 1974). Two factors emerged which corresponded to positive and negative affect. Subjects diagnosed with major depression obtained the lowest factor scores on the positive affect dimension, compared to dysthymic and nondepressed subjects.

Other researchers have conceptualized the relationship between depression and positive affect, as a temperamental tendency or predisposition. Klein (1974) suggested that 'endogenomorphic' depressives are characterized by a pervasive inability to experience pleasure. This inability leads to a marked loss of interest, a symptom considered descriptive of major depression

(DSM-III-R; American Psychological Association, 1987). Meehl (1975) speculated about the possible existence of a temperamental disposition labelled hedonic capacity. According to Meehl, some individuals are born with a low hedonic capacity. This temperamental disposition interferes with their ability to get a "...kick" out of life's purported positive experiences" (p. 298). Larsen (1984) developed the Affect Intensity Measure (AIM) to measure characteristic tendencies to experience positive and negative emotions with intensity. This instrument contains several items which are similar in meaning to the affective states comprising the Energetic Arousal dimension. For example, subjects respond to such statements as "When I'm happy, I bubble over with energy" and "When good things happen I am usually much more jubilant than others".

When these studies are considered within the context of the present data, they suggest the possibility that depressives are characterized by a stable tendency or predisposition that suppresses their ability to experience positive affective states and in particular, Energetic Arousal states, in the same way as nondepressed individuals. This finding has implications for both the measurement and treatment of anxiety and depression. Increased emphasis on suppressed positive experiences, especially intense positive affect states, may improve the discriminant validity of measures of depression. Current therapies which focus on negative views or negative affect might also take into account

a suppression or loss of the ability to experience positive affect with some level of intensity.

Interpretation of the present findings must be tempered by a consideration of the limitations in the study. First, the factor structures obtained in the present research must be replicated in other samples to determine their stability and robustness. This replication should be undertaken using a number of diverse samples, including clinical samples. Second, subjects used in the present research were students, rather than clinically diagnosed anxious and depressive subjects. This fact limits the conclusions which can be drawn regarding the usefulness of these factors in differentiating between anxiety and depression in clinical populations. Future research should be aimed at replicating the present findings using a patient population. A final limitation of the present study is that the cutoff scores used to define the groups were to some degree, arbitrary. Although the mean scores of the groups on anxiety and depression measures were comparable to those found by other researchers, the exact meaning of these scores in student populations remains unclear.

To summarize, having subjects rate affective states for somatic awareness provided subjects with a unique means of conceptualizing their emotional experiences, that is different from self-descriptiveness. However, both somatic awareness and self-descriptiveness ratings produced factors which proved useful in discriminating anxiety and depression. The present findings

replicated to some extent, other findings that negative affect is associated with both anxiety and depression, while positive affect is related to depression only. However, the present results suggest that the relationship between depression and positive affect is not as straight-forward as implied by the findings of other researchers. Energetic Arousal appears to show the strongest relationship to depression, especially trait depression. These data support continued focus on exploring the relationship between depression and the experience of intense positive emotions.

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APPENDIX A

DANGEROUS	HEARTSICK
JOYFUL	AGGRESSIVE
LUSTY	SHY
PANICKY	ADVENTUROUS
WITTY	FEARFUL
SHAKY	RESTED
CAPABLE	GUILTY
DISMAL	STUPID
LISTLESS	ENERGETIC
ZESTFUL	CONTENT
STEADY	SKILLFUL
BUBBLY	HAPPY
SPARKLING	CALM
TENSE	GLUM
DOMINANT	DEFENSELESS
INADEQUATE	OUTGOING
INTERESTED	RELAXED
DEPENDENT	UNEASY
BRIMMING	JOVIAL
EXHAUSTED	SPIRITED
MOTIVATED	SUICIDAL
THREATENED	TALENTED
DEJECTED	SAFE
VIGILANT	WORRYING
OPTIMISTIC	CREATIVE
CONFIDENT	ANGRY
PRODUCTIVE	RACING
FRISKY	IMPATIENT
GLOOMY	SHUNNED
IMPRESSIVE	TEARFUL
DOOMED	INFERIOR
RADIANT	REPULSIVE
IRRITABLE	ENTERTAINING
NERVOUS	HOSTILE

APPENDIX B

During this task you will be required to make decisions about a list of adjectives which will be presented to you. For each word you will be asked to indicate the degree to which, in general, you experience the state expressed by the word as a 'bodily feeling'. For example, when some people are WORRIED they experience this state more with bodily reactions such as 'butterflies or knots in the stomach'. Other people may experience being WORRIED less with bodily reactions and more with thoughts.

The words will be presented in the following manner:

	Not At All Experienced As a Bodily Feeling					Very Much Experienced As a Bodily Feeling			
WORRIED	1	2	3	4	5	6	7	8	9

If for you being WORRIED is NOT AT ALL EXPERIENCED AS A BODILY FEELING then circle the number "1". If for you being WORRIED is VERY MUCH EXPERIENCED AS A BODILY FEELING then circle the number "9". If you think the state expressed by the word would be experienced to a degree somewhere between these two positions then determine to what extent and circle the appropriate number. Feel free to use the entire range of numbers. There is no right or wrong way to respond. Simply respond the way you honestly feel. If you have any questions, please ask me. Now turn the page and begin.

APPENDIX C

During this task you will be required to make decisions about a list of adjectives which will be presented to you. For each word you will be asked to indicate the degree to which, in general, you feel the adjective describes you.

The words will be presented in the following manner:

	Extremely UNLIKE ME			Neutral			Extremely LIKE ME		
TIMID	1	2	3	4	5	6	7	8	9

If you view yourself as an EXTREMELY timid person you would circle the number "9". If for you being timid is EXTREMELY UNLIKE you then circle the number "1". If you view yourself as being timid to a degree somewhere between these two positions then determine to what extent and circle the appropriate number. Feel free to use the entire range of numbers. There is no right or wrong way to respond. Simply respond the way you honestly feel. If you have any questions, please ask me. Now turn the page and begin.

APPENDIX D

Factor Loadings for Principal Factors Extraction and
Varimax Rotation on Bodily Feelings Ratings
Greater Than .25

	F 1	F 2	F 3	F 4	F 5	F 6
FEARFUL	.75	.00	.00	.00	.00	.00
WORRYING	.73	.00	.00	.00	.00	-.26
UNEASY	.72	.00	.00	.00	.00	.00
GLOOMY	.71	.00	.00	.00	.00	.00
THREATENED	.71	.00	.00	.00	.00	.00
NERVOUS	.70	.00	.00	.00	.00	-.26
ANGRY	.70	.00	.00	.00	.29	.00
DOOMED	.67	.00	.00	.00	.00	.00
TEARFUL	.67	.00	.00	.00	.00	.00
GLUM	.67	.00	.00	.00	.00	.00
INFERIOR	.66	.00	.00	.00	.00	.33
TENSE	.65	.00	.00	.00	.00	.00
PANICKY	.65	.00	.00	.00	.00	.00
DEJECTED	.65	.00	.00	.00	.00	.00
GUILTY	.64	.00	.00	.00	.00	.00
SHUNNED	.63	.00	.00	.00	.00	.33
HOSTILE	.63	.00	.00	.00	.33	.00
IRRITABLE	.62	.00	.00	.00	.00	.00
DEFENSELESS	.62	.00	.00	.00	.00	.31
REPULSIVE	.61	.00	.00	.00	.00	.25
HEARTSICK	.58	.00	.25	.00	.00	.00
STUPID	.58	.00	.00	.00	.00	.00
SHAKY	.57	-.30	.00	.25	.00	.00
DISMAL	.56	.00	.00	.00	-.28	.00
SUICIDAL	.56	.00	.00	.00	.00	.00
INADEQUATE	.54	.00	.00	.00	.00	.28
EXHAUSTED	.50	-.30	.00	.32	.00	.00
IMPATIENT	.50	.00	.00	.00	.00	.00
SHY	.42	.32	.00	.00	.00	.00
LISTLESS	.41	.00	.30	.26	.00	.00
DANGEROUS	.37	.00	.00	.00	.00	.00
VIGILANT	.28	.00	.00	.00	.00	.00
OPTIMISTIC	.00	.74	.00	.00	.00	.00
CONFIDENT	.00	.74	.00	.00	.00	.00
INTERESTED	.00	.72	.00	.00	.00	.00
CAPABLE	.00	.71	.00	.00	.00	.00
TALENTED	.00	.71	.00	.00	.00	.00

	F 1	F 2	F 3	F 4	F 5	F 6
SKILLFUL	.00	.70	.00	.00	.25	.00
CREATIVE	.00	.68	.00	.00	.00	.00
PRODUCTIVE	.00	.67	.00	.00	.00	.00
SAFE	.00	.66	.00	.00	.00	.00
CONTENT	.00	.65	.00	.00	.00	.00
IMPRESSIVE	.00	.63	.00	.00	.00	.00
ENTERTAINING	.00	.61	.00	.00	.00	.00
DOMINANT	.00	.60	.00	.00	.00	.00
HAPPY	.00	.60	.36	.00	.00	.00
WITTY	.00	.60	.00	.00	.00	.00
OUTGOING	.00	.59	.33	.00	.00	.00
STEADY	.00	.58	.00	.00	.00	.00
ADVENTUROUS	.00	.55	.00	.00	.26	.00
MOTIVATED	.00	.55	.00	.00	.00	.00
CALM	.00	.52	.00	.48	.00	.00
DEPENDENT	.27	.44	.00	.00	.00	.00
BUBBLY	.00	.00	.64	.00	.00	.00
SPARKLING	.00	.31	.63	.00	.00	.00
ZESTFUL	.00	.00	.61	.00	.00	.00
RADIANT	.00	.37	.60	.00	.00	.00
FRISKY	.00	.00	.58	.00	.00	.00
SPIRITED	.00	.48	.53	.00	.00	.00
ENERGETIC	.00	.00	.50	.36	.26	.00
BRIMMING	.00	.28	.50	.00	.00	.00
JOVIAL	.00	.41	.43	.00	.00	.00
RACING	.38	.00	.42	.00	.29	.00
JOYFUL	.00	.38	.41	.00	.00	.00
LUSTY	.00	.00	.33	.00	.00	.00
RELAXED	.00	.00	.00	.71	.00	.00
RESTED	.00	.00	.00	.66	.00	.00
AGGRESSIVE	.27	.33	.00	.00	.43	.00

APPENDIX E

Factor Loadings for Principal Factors Extraction and
Varimax Rotation on Self-Descriptive Ratings
Greater Than .25

	F 1	F 2	F 3	F 4	F 5	F 6
SHUNNED	.62	.00	.00	.00	.00	.00
DISMAL	.61	.00	.32	.00	.00	.00
INADEQUATE	.61	.00	.00	-.36	.00	.00
GLOOMY	.60	.00	.34	.00	.00	-.26
INFERIOR	.59	.00	.00	-.26	.00	.00
GLUM	.59	.00	.26	.00	.00	.00
DOOMED	.57	.00	.00	-.27	.00	.00
REPULSIVE	.56	.00	.00	.00	.00	.00
DEJECTED	.55	.00	.00	.00	.00	-.30
THREATENED	.53	.00	.30	.00	.00	.00
DEFENSELESS	.51	.00	.00	.00	.00	.00
FEARFUL	.50	.00	.48	.00	.00	.00
SHY	.49	-.27	.00	.00	.00	.00
STUPID	.47	.00	.00	-.41	.00	.00
SHAKY	.47	.00	.44	.00	.00	.00
GUILTY	.39	.00	.34	.00	.00	.00
LISTLESS	.39	.00	.00	.00	.00	-.36
HEARTSICK	.36	.00	.27	.00	.00	.00
OPTIMISTIC	-.36	.35	-.26	.00	.00	.00
SUICIDAL	.35	.00	.00	-.25	.00	.00
DEPENDENT	.27	.00	.00	.00	.00	.00
ZESTFUL	.00	.73	.00	.00	.00	.00
BUBBLY	.00	.69	.00	.00	.00	.00
SPARKLING	.00	.68	.00	.00	.00	.36
RADIANT	.00	.64	.00	.31	.00	.00
BRIMMING	.00	.63	.00	.00	.00	.00
SPIRITED	.00	.63	.00	.29	.00	.00
ENTERTAINING	.00	.59	.00	.25	.00	.00
FRISKY	.00	.59	.00	.00	.00	.00
OUTGOING	-.36	.58	.00	.00	.00	.00
WITTY	.00	.56	.00	.00	.00	.00
JOVIAL	.00	.55	.00	.00	.00	.00
JOYFUL	.00	.55	.00	.34	.00	.43
HAPPY	-.27	.50	.00	.35	.00	.45
ENERGETIC	.00	.44	-.34	.00	.00	.35
ADVENTUROUS	.00	.43	.00	.28	.00	.00
LUSTY	.00	.41	.00	.00	.00	.00
WORRYING	.37	.00	.70	.00	.00	.00

	F 1	F 2	F 3	F 4	F 5	F 6
NERVOUS	.42	.00	.65	.00	.00	.00
PANICKY	.43	.00	.64	.00	.00	.00
TENSE	.32	.00	.63	.00	.00	.00
RELAXED	.00	.00	-.61	.00	.00	.00
CALM	.00	.00	-.59	.30	.00	.00
UNEASY	.51	.00	.52	.00	.00	.00
TEARFUL	.40	.00	.46	.00	.00	.00
EXHAUSTED	.00	.00	.46	.00	.00	.00
RESTED	.00	.00	-.43	.00	.00	.28
IRRITABLE	.00	.00	.42	.00	.41	.00
SKILLFUL	.00	.28	.00	.68	.00	.00
TALENTED	.00	.28	.00	.61	.00	.00
CAPABLE	-.33	.25	.00	.56	.00	.00
PRODUCTIVE	.00	.27	.00	.56	.00	.34
CREATIVE	.00	.28	.00	.48	.00	.00
INTERESTED	.00	.41	.00	.45	.00	.26
CONFIDENT	-.40	.30	.00	.43	.00	.00
IMPRESSIVE	.00	.37	.00	.42	.00	.00
STEADY	.00	.00	-.37	.42	.00	.00
SAFE	.00	.00	.00	.41	.00	.00
MOTIVATED	.00	.00	.00	.38	.00	.32
HOSTILE	.27	.00	.00	.00	.64	.00
AGGRESSIVE	.00	.00	.00	.00	.62	.00
DANGEROUS	.00	.00	.00	.00	.56	.00
ANGRY	.32	.00	.32	.00	.55	.00
DOMINANT	-.29	.30	.00	.00	.50	.00
IMPATIENT	.00	.00	.33	.00	.41	.00
RACING	.00	.30	.00	.00	.33	.00
VIGILANT	.00	.00	.00	.00	.26	.00
CONTENT	.00	.35	-.33	.26	.00	.37

APPENDIX F

Factor Loadings for Principal Factors Analysis with
 Varimax Rotation on Random Subgroups
 For BFR Ratings

	Subgroup 1	Subgroup2
Uneasy	0.768	0.656
Gloomy	0.735	0.690
Glum	0.732	0.615
Fearful	0.730	0.742
Threatened	0.723	0.665
Doomed	0.697	0.670
Worrying	0.687	0.740
Angry	0.674	0.703
Defenseless	0.660	0.591
Nervous	0.659	0.704
Shunned	0.657	0.643
Tearful	0.655	0.678
Hostile	0.654	0.594
Inferior	0.651	0.702
Panicky	0.650	0.613
Guilty	0.638	0.644
Repulsive	0.637	0.626
Tense	0.629	0.622
Dejected	0.621	0.658
Suicidal	0.604	0.534
Heartsick	0.601	0.549
Inadequate	0.595	0.492
Stupid	0.594	0.588
Irritable	0.563	0.657
Dismal	0.559	0.527
Shaky	0.543	0.564
Exhausted	0.473	0.498
Impatient	0.468	0.516
Shy	0.455	0.386
Listless	0.428	-----
Dangerous	0.419	0.309
Confident	0.758	0.703
Optimistic	0.747	0.701
Productive	0.733	0.615
Talented	0.733	0.703
Capable	0.730	0.701
Creative	0.726	0.626
Interested	0.726	0.712

	Subgroup 1	Subgroup2
Skillful	0.711	0.711
Safe	0.692	0.615
Content	0.666	0.613
Dominant	0.648	0.585
Motivated	0.631	0.448
Impressive	0.626	0.643
Entertaining	0.624	0.559
Happy	0.617	0.504
Steady	0.617	0.581
Outgoing	0.588	0.587
Calm	0.566	-----
Adventurous	0.549	0.562
Spirited	0.538	-----
Witty	0.533	0.644
Jovial	0.480	-----
Aggressive	0.411	-----
Dependent	0.403	0.497
Vigilant	0.324	-----
Zestful	0.655	0.577
Bubbly	0.610	0.688
Frisky	0.575	0.569
Radiant	0.550	0.652
Energetic	0.534	0.508
Sparkling	0.514	0.725
Racing	0.410	0.422
Brimming	0.410	0.485
Joyful	0.406	0.478
Lusty	0.346	0.347
Jovial	-----	0.437
Rested	0.697	0.656
Relaxed	0.655	0.710
Calm	-----	0.520
Aggressive	-----	0.445
Vigilant	-----	0.344

APPENDIX G

Factor Loadings for Principal Factors Analysis with
Varimax Rotation on Random Subgroups
For Self-Descriptiveness Ratings

	Subgroup 1	Subgroup2
Factor 1		Factor 2
Worried	0.785	0.730
Panicky	0.758	0.713
Nervous	0.722	0.739
Tense	0.652	0.738
Fearful	0.648	0.554
Uneasy	0.603	0.584
Shaky	0.588	0.504
Relaxed	-0.539	-0.535
Tearful	0.522	0.546
Exhausted	0.502	0.454
Calm	-0.468	-0.593
Defenseless	0.405	-----
Heartsick	0.353	-----
Guilty	0.365	0.488
Dependent	0.264	-----
Irritable	0.463	-----
Threatened	0.452	-----
Suicidal	-----	0.279
Factor 2		Factor 1
Zestful	0.712	0.738
Bubbly	0.688	0.681
Sparkling	0.674	0.663
Brimming	0.657	0.606
Radiant	0.619	0.653
Spirited	0.605	0.627
Jovial	0.593	0.493
Witty	0.592	0.526
Entertaining	0.581	0.608
Outgoing	0.554	0.588
Frisky	0.546	0.662
Happy	0.431	0.548
Interesting	-----	0.433
Lusty	0.402	0.478
Joyful	0.464	0.599

	Subgroup 1	Subgroup2
Factor 2 (continued)		Factor 1 (continued)
Energetic	-----	0.496
Adventurous	0.351	0.501
Factor 3		Factor 4
Productive	0.595	0.535
Skillful	0.584	0.680
Capable	-----	0.543
Interested	0.455	-----
Motivated	0.444	0.391
Rested	0.456	-----
Steady	0.421	-----
Talented	0.422	0.719
Safe	0.427	0.369
Creative	0.383	0.555
Confident	0.412	0.499
Energetic	0.391	-----
Content	0.415	-----
Impressive	0.430	0.486
Factor 4		Factor 3
Inadequate	0.611	0.599
Capable	-0.530	-----
Repulsive	0.527	0.636
Stupid	0.525	0.507
Shunned	0.502	0.601
Gloomy	-----	0.575
Dismal	-----	0.539
Glum	-----	0.605
Defenseless	-----	0.512
Optimistic	-----	0.360
Heartsick	-----	0.350
Suicidal	0.405	-----
Dejected	-----	0.480
Shy	-----	0.393
Inferior	0.487	0.623
Doomed	-----	0.478
Listless	-----	0.342
Threatened	-----	0.457

	Subgroup 1	Subgroup2
<hr/>		
Factor 5		Factor 5
Gloomy	0.610	-----
Dismal	0.510	-----
Happy	-0.486	-----
Glum	0.484	-----
Optimistic	-0.464	-----
Rested	-----	0.499
Steady	-----	0.369
Dejected	0.397	-----
Content	-----	0.447
Doomed	0.478	-----
Listless	0.412	-----
Factor 6		Factor 6
Hostile	0.638	0.651
Aggressive	0.622	0.596
Dangerous	0.580	0.503
Angry	0.537	0.558
Dominant	0.457	0.500
Vigilant	0.301	-----
Racing	0.335	0.282
Impatient	0.460	0.394
Irritable	-----	0.446
Factor 7		Factor 7
Vigilant	-----	0.366
Shy	-0.396	-----
