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AFFECTIVE INTENSITY AND PSYCHOPATHOLOGY: AN EXAMINATION OF MUSIC STUDENTS

By

Michael James Finton

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Abstract

AFFECTIVE INTENSITY AND PSYCHOPATHOLOGY:
AN EXAMINATION OF MUSIC STUDENTS

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Michael James Finton

Affective illness has often been associated with artistic ability. In this study, music students and control subjects were initially assessed for levels of bipolar symptomatology and affective intensity, and were then administered either an elated or neutral mood induction, utilizing the Autobiographical Recall Method. Music students did not differ from control subjects in levels of intensity or bipolar symptomatology. However, the experimental groups appeared to differ in their reactions to the mood induction procedure, suggesting that musicians and non-musicians may utilize different processes to regulate the magnitude of experienced affective stimulation.

To my parents.

Without your love, support, and encouragement, completion of this project would never have been possible.

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INTRODUCTION

Andreasen (1978) has noted that ". . . genius has been viewed with ambivalence, seen as both a curse and a blessing, because it has so frequently been attended by physical and mental suffering" (p. 113). In particular, psychological dysfunction has traditionally been associated with those who are gifted artistically. Indeed, a list of individuals, casualties of the creative forces which shaped their lives, would have to include an extensive list of authors (e.g., Tolstoy, Dostoevski, Hemingway, Plath, and Woolf), poets (e.g., Byron, Keats, Mill, and Poe), musicians (e.g., Donizetti, Handel, Tchaikovsky, Wolf, Mahler, and Schumann), and painters (e.g., Van Gogh). The lives of these artists seem to validate Kierkegaard's observation that ". . . an artist is an unhappy being whose heart is torn by secret sufferings, but whose lips are so strangely formed that when the sighs and the cries escape them, they sound like beautiful music" (cited in Sandblom, 1989, p. 35).

Links between creativity and mental illness have been made for thousands of years (Andreasen, 1978). Aristotle believed that ". . . those who have been eminent in the arts have all had tendencies toward melancholia . . ." (cited in Andreasen & Canter, 1974, p. 129). Similarly, both epilepsy

and melancholia were linked with creativity by the ancient Greeks (Andreasen & Canter, 1974). However, it was clear that they excluded more virulent forms of psychopathology, since both Socrates and Plato made a clear distinction between insanity and behaviors associated with periods of creative functioning (Frosch, 1987).

These beliefs were modified with the advent of psychiatric nosologies and more sophisticated models of mental illness. Behaviors that exemplified the creative process were no longer seen as benign: The range of pathology associated with the creative process was extended and elaborated. Specifically, because creative states are associated with affective intensity, euphoria, and a decreased need for sleep, comparisons were inevitably made to mania, which is characterized by a similar subjective and objective phenomenology.

Changes in the way the creative process was perceived also mirrored shifts in the range of pathology associated with artists. Beginning in the 1700's, candid biographies and historical accounts suggested that creative ability was coupled with a broad spectrum of psychological dysfunction. Of these pathologies, artists suffered most frequently from affective disorders (Goodwin & Jamison, 1990). However, because these conclusions were based on anecdotal information, the link between creativity and psychopathology

was somewhat tenuous. It remained for later investigators to substantiate this link with more rigorous research designs.

Review of the Literature

In the first systematic discussion of the link between creativity and psychiatric disorders (Andreasen, 1978), Lombroso hypothesized that genius was a degenerative psychosis. In addition, he suggested that creativity and mental illness were coupled together within families (Andreasen, 1978). Like Lombroso, Galton found that creativity and psychiatric disorders often occurred together within families (Andreasen, 1978). His study was based upon the examination of pedigrees of eminent individuals.

In a study of eminent people within British society, Ellis (1926) selected 1,020 persons from the British Dictionary of National Biography. This population was quite heterogenous, and included politicians as well as scientists and artists. Five percent of this sample were diagnosed as suffering from a personality disorder, 8 percent were diagnosed as having an affective disorder, and almost 4 percent were diagnosed as having a schizophrenic disorder.

Juda (1949) examined gifted German artists and scientists in a study which attempted to correlate high mental capacity and psychopathology. Her sample was also heterogeneous: of 113 artists, 12 were architects, 18 were sculptors, 37 were poets, 20 were painters, and 26 were musicians. The sample of 181 scientists included 51

theoretical scientists, 112 natural scientists, 9 technical applied scientists, and 9 'statesmen'.

Juda found that artists exhibited higher levels of psychological distress when they were compared to both scientists and the general population. Personality disorders were the most common diagnosis for both groups, but were applied almost twice as often for artists than scientists. Further, artists manifested higher rates of alcoholism, "weak character", excitability, and hysteria.

Interestingly, poets and musicians received the highest number of diagnoses. Eccentrics were more prevalent among artists. This unconventional behavior may have led to more diagnoses of schizophrenia, which was diagnosed within the artists at a rate of almost 3 percent. This sharply contrasted with the rate of 85 percent found in the general population. Both poets (48 percent) and musicians (almost 35 percent) were diagnosed as 'psychopathic'. No incidences of manic-depressive psychosis were found.

The relatives of artists showed a predominance of cyclothymia. Almost 22 percent of the children of artists received this diagnosis. This figure rose to 32 percent when comparisons were restricted to those children whose intellectual ability was above average. A familial loading for affective disorder was also found in the siblings of artists. These subjects were diagnosed as manic-depressive at a rate twice that of the general population. Finally,

endogenous psychoses were also found in the families of artists at rates approximately twice those found in the general population.

McNeil (1971) attempted to determine if creative and noncreative individuals manifested differential levels of psychopathology, and whether genetic or environmental factors influenced this relationship. The subjects were adults who had been adopted shortly after birth, allowing McNeil to examine adoptees as well as their biological and adoptive parents. Levels of psychopathology were determined through an examination of official documents from several sources, including the Psychiatric Register of the Human Genetics Institute, the Bispebjerg Hospital Psychiatric Records, and military service records. Levels of creativity were determined by selecting occupations deemed 'creative' by three judges. Individuals within these occupations were sent a questionnaire which requested information about their education, memberships in professional associations, free-choice aspirations in life, and the creative aspects of their vocations and avocations. Self-ratings of creative ability were also made.

Of 50 adoptees, 5 showed a history of mental illness. The diagnosis for all 5 subjects was constitutional psychopathy, a broad category ". . . which includes character disorders, sexual perversions, psychopathic personalities, addictions and strong antisocial behavior" (McNeil, 1971, p.

400). When these individuals were grouped according to creative achievement, 3 were classified in the high-creativity group (N = 10), and 2 were assigned to the average-creativity group (N = 20). None of the subjects included in the group of low creativity had a positive history for psychiatric disorders.

Adoptive parents did not exhibit differential rates of pathology across levels of creativity, and levels of mental illness were approximately half of that found in adoptees. McNeil concluded that the relationship between creative ability and mental illness was not affected by environmental influences.

However, the comparatively high levels of pathology exhibited by the biological parents of adoptees seemed to implicate a strong link between creativity and mental illness. Of those biological parents who were highly creative, almost 28 percent were diagnosed as suffering from mental illness. For those subjects with above average levels of creativity, approximately 8 percent were diagnosed with psychopathology, as compared with 12 percent of those with low creative ability. The strong relationship between creativity and psychopathology found in adoptees and their biological parents suggests that liability is transmitted by genetic factors, although the small sample size of this study warrants caution in interpretation.

Andreasen (1987) examined a relatively homogeneous sample of 30 creative individuals and 30 matched controls. All of her experimental subjects were participants of the University of Iowa's Writer's Workshop, and data were collected over a period of fifteen years. A structured interview designed by the author was used to determine patterns of creativity and history of mental illness, the Research Diagnostic Criteria were used to make psychiatric diagnoses of the writers, and the Family History Research Diagnostic Criteria were used to make diagnoses of first-degree relatives.

Andreasen found that the lifetime prevalence of psychopathology in her sample of writers was extraordinarily high: Eighty percent had suffered from periods of affective disorder, and 43 percent had suffered from bipolar I or bipolar II disorders. Of the control subjects, only 30 percent had suffered from periods of affective disorder, and only 10 percent had suffered from a form of bipolar disorder. Alcoholism was found in 30 percent of the writers, as opposed to 7 percent of the controls. No other findings were statistically significant, although 7 percent of the writers committed suicide during the time of the study.

The first-degree relatives of the writers exhibited rates of pathology higher than those typically found in the general population. Eighteen percent reported suffering from some type of affective disorder during their lives. Of these

individuals, 15 percent had suffered from major depression. Interestingly, psychiatric disorders within the families of writers were closely associated with creativity, whereas the association appeared to be randomly scattered in control subjects.

These results seemed to amplify many of the conclusions reached by earlier investigators. However, Andreasen cautioned that the results may have been influenced by methodological problems. First, because she was aware of the level of creativity within the writers, her estimates of creativity in first-degree relatives may have been biased. Second, only some of the first-degree relatives were directly interviewed; diagnoses based solely upon retrospective reports may not be valid. Third, some of the responses used to calculate psychopathology were suggestive of an unconventional lifestyle, rather than a clinical manifestation of illness. Finally, the subjects themselves may have been unrepresentative of other psychiatric samples of writers, due to their level of education, income, and professional success. Nevertheless, Goodwin and Jamison (1990) note that the use of structured interviews and matched control groups make Andreasen's study methodologically superior to earlier investigations. It is tempting to speculate that better methodology resulted in diagnoses which centered around affective disorders, rather than a wide range of psychopathology.

Richards, Kinney, Lunde, Benet, and Merzel (1988) studied creativity and the risk for manic-depressive disorder. This study differed from others in an important way. Rather than first identifying a creative population and then establishing rates of psychopathology, Richards et al. used the Lifetime Creativity Scales to evaluate levels of creativity in a diverse population composed of (1) individuals with cyclothymic disorders and manic-depressive disorders, (2) relatives without a history of affective disorder, (3) control subjects with a previous history of affective disorder, and (4) control subjects without a history of affective disorder.

Relatives without a history of affective disorder and individuals with cyclothymic disorders exhibited the highest levels of creativity when compared to the other groups. Peak creativity seemed to be related to the severity of the disorder. Those subjects that displayed milder expressions of bipolar liability tended to have the highest levels of creativity, whereas subjects who showed no bipolar liability and those who had more severe manifestations of psychiatric disorders had lower levels of creativity.

Jamison (1989) designed an investigation whose primary goal was to establish actual rates of treatment within a sample of artists. She suggested that this is potentially an accurate index of the severity of affective disorders, since two-thirds of those who suffer from such disorders do

not seek treatment. Unlike other studies, Jamison did not include a component which examined liability in relatives of the experimental subjects. Her sample was comprised of poets, playwrights, novelists, biographers, painters, and sculptors, all of whom were British.

Thirty-eight percent of Jamison's sample had been treated for affective disorder; this rate is slightly higher than the estimate of 33 percent found in American populations. Seventy-five percent of those treated had required a specific medical intervention, such as lithium, antidepressants, or hospitalization. Antidepressants were used by slightly more than 23 percent of the sample, a figure sharply higher than the population rate of 2.5 percent.

The frequency and type of mood that was experienced varied across the subgroups of artists. Poets and novelists experienced extended and elated states more often than other subgroups. In contrast, playwrights and artists were more likely than other groups to experience severe mood swings.

The subgroups also exhibited differential rates of treatment. Fifty percent of the poets in the sample ". . . had been treated with drugs, psychotherapy, and/or hospitalization for mood disorders" (Jamison, 1989, p. 127). Thirty-three percent of the poets were prescribed medication for depression. Seventeen percent were treated for mania by hospitalization, electroconvulsive therapy, or lithium. High rates of treatment were also evident within the

playwrights. Sixty-three percent were treated for affective disorders. Of this number, 60 percent utilized psychotherapy, although Jamison was unsure if this reflected severity of the disorder or treatment preference.

Interpreted as indicators of pathology, these data reflect a high incidence of affective disorder and medical treatment. However, these rates may be artificially inflated by the use of a British sample. Because the health care system in Great Britain is much more medically oriented than that in the United States, the chances of receiving an organic rather than a psychological diagnosis are therefore much higher. And, instead of comparing the percentage of her sample that received treatment with American estimates of pathology, Jamison should have used British estimates.

Even if Jamison's estimates of pathology and treatment are accurate, they do not necessarily indicate a heightened severity of affective disorder. While those who are virtually incapacitated by an affective disorder may search for medical and psychological interventions, paradoxically, treatment may also be sought by those who possess high levels of ego strength. Such individuals are distinguished not by the intensity of dysfunction, but by their willingness to make use of the aid offered by others.

Evaluation of the Literature

Although creativity clearly seems to be strongly associated with affective disorders, four fundamental

assumptions may have distorted the magnitude of this relationship found in these studies.

First, in most of these studies (Andreasen, 1987; Ellis, 1926; Galton, 1892, cited in Andreasen, 1978; Lombroso, 1891, cited in Andreasen, 1978; Jamison, 1989; Juda, 1949; McNeil, 1971), an eminent or creative population was identified, after which estimates or measurements of psychopathology were made. However, societal acceptance of artistic products is not an adequate measure of creative ability. Basing estimates of pathology solely upon those who have attained eminence may distort the actual rates of dysfunction. The true correlation between artistic ability and psychological disorders will remain unknown until levels of pathology in both successful and unsuccessful artists are considered.

Second, several of these investigations were limited by their reliance upon historical accounts of pathology. Subjective descriptions of a disorder can potentially magnify unconventional lifestyles, rather than illumine dysfunction. Similarly, estimates by subjects of the level of mental illness in their relatives can be distorted by the halo effect or the passage of time. Estimates of pathology made without directly interviewing all experimental subjects compromises the veridicality of psychiatric diagnoses. Of the studies reviewed, only Andreasen (1987), Jamison (1989), and Richards et al. (1988) used some form of direct interviewing.

Third, the derivation of estimates of psychopathology from creative populations seems to imply that results can be generalized to those members of typical families who have bipolar disorders (Richards et al., 1988), and that high levels of creativity cause affective disorders. Neither supposition has yet been satisfactorily demonstrated. Indeed, it is possible that the reverse is true, namely, that affective disorders are instrumental in creativity. Consideration of only one causal direction may obscure facets of etiology which are, as yet, unknown. Richards et al. (1988) were the only investigators to evaluate the level of creativity in a population known to suffer from affective disorder.

Fourth, the cultural components inherent to some studies may have affected the way that psychiatric disorders were identified, diagnosed, and treated. Culturally diverse samples were used in the studies conducted by Ellis (1926), Galton (1892, cited in Andreasen, 1978), Jamison (1989), Juda (1949), and McNeil (1971). Although the high level of agreement between these studies indicates that the link between creativity and mental illness is maintained across geographical and racial boundaries, future research needs to include adequate control procedures for cultural variables.

Given these caveats, research has consistently documented that affective disorders occur with a higher incidence in artistic individuals and their families than in

the general population. These pathologies are closely linked to the creative process. For example, Jamison (1989) reported that the phenomenology of intensely creative episodes closely parallels that of hypomania. A majority of her subjects reported a decrease in the need for sleep prior to these episodes. However, as a cautionary note, Frosch (1987) has warned that ". . . it is important that we not mistake analogous behaviors for homologous ones" (p. 321). That is, while creative furor may mimic mania, it does not necessarily arise for the same reasons. Interludes of weariness between creative cycles might represent the total disbursement of available creative resources, rather than a pathological state. Similarly, a period reminiscent of manic functioning may merely indicate someone who is at the height of their creative powers.

Research also appears to indicate that affective disorders characterize highly creative populations. For example, Jamison (1989) reported that almost one-third of her sample of writers and artists reported severe mood swings, and one-fourth reported histories of cyclothymic or manic mood states. In general, the overall pattern of symptomatology showed a clear correspondence to DSM-III-R criteria for these disorders. In addition, seasonal patterns of psychiatric disorder appeared when the mood and productivity curves of those who had never been treated for mental illness were compared with the mood and productivity

curves of those who had a history of such treatment. Significantly, the moods of artists peaked during the summer months. This is consistent with the seasonal patterns for hypomania, mania, and depression. Jamison did not comment on whether this particular constellation of symptoms could also be interpreted as indicative of seasonal affective disorder (SADS).

The Importance of Affect to Artists

The fact that 89 percent of Jamison's sample experienced intense, highly productive, and creative episodes suggests that these subjects may have used both mood and cognitive symptoms to provide themselves with a rich environment for the creation of artistic products. Indeed, 90 percent of the subjects reported that their work was dependent on the experience of intense feelings and moods. Extremes of affect, characterized by an elevated and expansive mood and increased emotional intensity, provide a richer palette from which the musical, literary, and visual artist can draw.

This seems to validate the observations of investigators (Luxenburger, 1933; Myerson & Boyle, 1941) who noted that positive features are often associated with manic depressive disorders. In a like manner, Jamison (1989) and Goodwin and Jamison (1990) suggested that manic depression, normally a catastrophic disorder, may confer some advantages on its sufferers and make high accomplishment within the arts more likely. For example, the cognitive changes associated with

manic states, such as sharpened and unusually creative thinking, flight of ideas, hyperacusis, delusions, and hallucinations can provide a wealth of material for artistic works. Virginia Woolf wrote that

> As an experience, madness is terrific I can assure you, and not to be sniffed at; and in its lava I still find most of the things I write about. It shoots out of one everything shaped [sic], final, not in mere driblets, as sanity does (in Goodwin & Jamison, 1990, p. 347).

The increased energy level and decreased need for sleep common to cyclothymia, mania, and bipolar disorders can also provide the impetus by which emotion is transformed from a raw material into a finished work of art. This was evident in the life of Schumann, who wrote "I cannot see that there is anything remarkable about composing a symphony in a month. Handel wrote a complete oratorio in that time" (in Goodwin & Jamison, 1990, p. 341).

The relative importance of these positive cognitive and affective variables to different kinds of artists may help to explain the relative differences in pathology between subgroups of artists found by Jamison (1989). Novelists would be expected to exhibit moderate levels of pathology, since the demands of their field draw more equally upon narrative skill and emotion. In contrast, poets would be expected to have high rates of disorder, because the success of their work depends on the creation of vivid imagery. The

ability to access, manipulate, and report intense emotional experience presupposes a sensitivity to extremes of affect, and implies personal knowledge of their depth. In this vein, Woodberry believed that poets

> have been singularly creatures of passion. They lived before they sang. Emotion is the condition of their existence; passion is the element of their being; and, moreover, the intensifying power of such a state of passion must also be remembered, for emotion of itself naturally heightens all the faculties, and genius burns the brighter in its own flames (in Goodwin & Jamison, 1990, p. 342).

The Relation of Affect Intensity to Creativity

The centrality of emotion to the work of the artist suggests that creativity is a by-product, rather than a precursor, of affect. This validates the words of Yeats, who believed that literature was ". . . wrought about a mood, or a community of moods" (in Goodwin & Jamison, 1990, p. 342). As such, the creation of artistic works represents an attempt by the artist to express an intensity of experience which has no analog in the realm of ordinary discourse. Its practitioners are united by a profound emotional intensity, as well as an intense desire to communicate this experience to others, regardless of whether or not they are consumed in the process. Thus, while creativity may indeed be a marker of psychopathology, a more appropriate focus for empirical study

should be the intensity of the substrate of emotion which inspires it.

Those suffering from affective disorders would be expected to manifest higher levels of intensity. Further, their emotional range would self-select them into artistic fields, allowing them to regularly express this emotion. Such a connection would validate Kraeplin, who observed that artistic ability was a by-product of both the mild and severe forms of what he termed the 'manic temperament' (Goodwin & Jamison, 1990). His use of this construct is analagous to the present definition of cyclothymia.

Larsen and Diener (1987) have defined affective intensity as "the typical strength of affective states, regardless of how frequently those states are experienced" (p. 2). When objective measurements of emotional intensity are made, individuals who score high on this construct tend to react more strongly to mild, moderate, and severe events (Larsen, Diener, & Emmons, 1986). Like other traits, emotional intensity has been found to be normally distributed (Diener, Larsen, Levine, & Emmons, 1985), and is a stable individual difference characteristic.

Larsen and Diener (1987) suggested that emotional intensity can be partitioned into both positive and negative affect. The intensity of positive affect can be defined as the strength of a subject's positive emotions during periods when the majority of reported emotions are positive.

Likewise, negative affect intensity is defined as the strength of a subject's negative affect during periods when the majority of emotions reported are negative. According to Larsen and Diener (1987), ". . . these scores refer to how high the subject typically goes up when he or she is 'up' and how low that person typically goes down when he or she is 'down'" (p. 3). An emotionally intense individual thus experiences both types of emotion. This characteristic distinguishes affective intensity from emotionality, which refers ". . . to the regular experience of negative emotion and the tendency to easily slip from a positive or neutral state into a negative emotional state" (Larsen & Diener, 1987, p. 2).

Larsen developed the Affective Intensity Measure (AIM; Larsen, 1984) to quantify the subjective intensity of emotional experience. If emotional intensity is an important factor in affective functioning, then individuals who manifest extreme levels of intensity may be at an increased risk for affective disorders. If true, a Pearson product-moment correlation between the AIM and scores on a measure of affective disorder should be higher in populations who are affectively intense, and this should be more prevalent in artists. This study is an attempt to assess the differential effects of emotional intensity upon affective disorders in samples of music students and controls.

Affective intensity subsumes several variables, including strength of response (i.e., the magnitude with which an individual responds to a given stimulus), emotional reactivity (i.e., how quickly an individual responds to a given stimulus), and emotional expressivity (i.e., the manner in which emotions are typically expressed by an individual). The latter variable appears to be partially dependent upon subjective awareness of internal affective states. This study will focus exclusively upon strength of response to environmental stimuli.

In an early study examining the relationship between cyclothymia and affective intensity, Larsen (personal communication, May 24, 1991) examined 74 college undergraduates using both the GBI and the AIM. The correlation between the AIM and the GBI was .33, suggesting that only a modest correlation exists between affective disorders and emotional intensity in a population of 'normal' subjects.

Hypotheses

Hypothesis I:

Although rates of affective disorder have not yet been studied intensively in musicians, the qualitative similarities between their field and other artistic subgroups suggests that the incidence of affective disorders will be highly similar to that found by Andreasen (1987), Jamison (1989), Juda (1949), McNeil (1971), and Richards et al.

(1988). Specifically, in this study, the group of music students is expected to have a significantly higher mean score on the General Behavior Inventory (GBI; Depue, Krauss, Spoont, & Arbisi, 1989) than a population of control subjects.

Hypothesis II:

A population of control subjects is expected to have scores on the Depression and Hypomania/Biphasic subscales of the GBI which are significantly lower than those of music students.

Hypothesis III:

Because affect intensity is central to the creation of any artistic product, music students in this study are expected to have significantly higher levels of affective intensity than controls, as measured by the AIM.

Hypothesis IV:

The correlation between scores on the AIM and the GBI is expected to be significantly higher for the group of music students than for the group of control subjects.

Hypothesis V:

If emotional intensity is a stable individual characteristic as suggested by Diener et al. (1985), then a mood induction procedure should differentially affect the subjective perception of emotion for music students and controls. Specifically, mean scores of positive affect on the Multiple Affect Adjective Checklist (MAACL; Zuckerman &

Lubin, 1965) and the Emotion Assessment Scale (EAS; Carlson et al., 1989) will be significantly higher for music students who are administered an elation induction procedure than for control subjects who undergo the same procedure.

Hypothesis VI:

Subjects who are administered a neutral mood induction procedure will manifest significantly lower levels of both positive and negative affect on the MAACL and EAS than will subjects who are administered an elated mood induction procedure.

Hypothesis VII:

Music students who are administered a neutral mood induction procedure are expected to manifest significantly higher levels of positive affect on the MAACL and EAS than control subjects who undergo the same procedure.

Method

Subjects

Fifty-three subjects, many of whom were underclassmen, were recruited from the Michigan State University School of Music. A second group of 53 subjects was formed from students in introductory psychology courses at Michigan State University. Five subjects in the musician group did not complete all of the questionnaires and were dropped from subsequent analyses. To preserve the orthogonality of groups, five subjects assigned to the control group were randomly selected and dropped from subsequent analyses. Participation in this experiment was optional for the music students; subjects from the psychology class were given extra-credit points which were later added to their final course grade. There was not a significant difference between music students and control subjects in age.

Demographic information related to experience in music was also collected to ensure that subjects in the musician group differed from control subjects. Subjects in the musician group differed from control subjects in the number of months involved in music, duration of practice periods, and whether or not they had practiced in the previous three months or six months. However, the groups did not differ significantly in the number of times each week that they practiced or performed. Group means and standard deviations for demographic information are summarized in Table 1.

Table 1

Means and Standard Deviations for Demographic Information

	Musicians		Controls	
Variable	$\bar{X}$	SD	$\bar{X}$	SD
Age	20.2	3.60	19.3	1.50
Experience in Music	122	44.3	51.0	54.0
Frequency of Practice	1.53	0.74	1.88	1.55
Previous Three Months	1.00	0.00	0.38	0.49
Previous Six Months	1.00	0.00	0.73	0.45
Duration of Practice	4.53	1.23	2.50	1.96
Honesty (in mm)	90.7	15.2	92.4	8.42
Effort (in mm)	88.6	16.7	90.7	9.24

Materials

The revised version of the General Behavior Inventory (GBI; Depue et al., 1989) is a 73 item self-report questionnaire which assesses behaviors associated with depression, hypomania, and mania. It has been shown effective in the identification of a wide range of unipolar and bipolar disorder, including active forms of both disorders, mild forms of affective disorders such as euthymia, cyclothymia, and dysthymia (Goodnick, Fieve, Peselow, Schlegel, and Filippi, 1986), and subsyndromal forms of affective disorders.

Both the original and revised versions of the GBI have been validated on clinical and nonclinical populations, and exhibit virtually identical psychometric data (Depue et al., 1989). One-factor solutions have consistently been found for the GBI, with severity of cyclothymia occurring as the main factor. Coefficient alphas have ranged from .90 to .96, and test-retest reliabilities have ranged from .71 to .74. The external validity of the GBI is also high. Depue et al. (1981) reported that the GBI is related to the course and outcome of affective disorders, family history of bipolar disorder, informant reports, and ratings of mood and behavior that were taken daily over a 28-day period. In addition, in identifying probable cases, the GBI showed an overall concordance of .82 when compared to structured interviews (Depue et al., 1989).

The Affective Intensity Measure (AIM; Larsen, 1984) is a 40 item self-report questionnaire. Individual items of the AIM were selected by their ability to assess the intensity of both positive and negative emotions, independent of the frequency of emotional experiences. Respondents are instructed to indicate how they react emotionally to typical life events. A Likert scale ranging from 1 (never) to 6 (always) is used to measure the magnitude of response.

When subjects were evaluated each month for three consecutive months, the test-retest reliabilities were .80, .81, and .81. AIM scores separated by a period of two years were correlated .75. The AIM correlated .50 with parental reports of emotional intensity. Other measures of validity were more variable. When compared with average daily affect intensity as measured by self report at random times during the day, correlations ranged from .49 to .61.

The Multiple Affect Adjective Check List Revised (MAACL-R; Zuckerman & Lubin, 1985) is a 132 item self-report scale which contains both positive-mood (e.g., strong, lucky, enthusiastic) and negative-mood (e.g., sad, suffering, lost) adjectives. Responses are scored on seven subscales: Positive Affect, Sensation Seeking, Positive Affect/Sensation Seeking, Dysphoria, Depression, Hostility, and Anxiety. Although the use of the earlier version in mood induction research was well-substantiated (Kenealy, 1986), revisions were made in order to lower correlations between subscales,

limit the possible influence of an acquiescence response set, and reflect the theoretical assumption that positive and negative moods were independent factors. Correlations between MAACL-R scores and peer ratings were generally high, with the Anger subscale correlating .55 with peer ratings of anger, the Depression subscale correlating .47 with peer ratings of depression, the Hostility subscale correlating .53 with peer ratings of hostility, and the Positive Affect subscale correlating .32 with peer ratings of elation (Lubin et al., 1986).

To provide a baseline measure of emotional state prior to the mood induction procedure, a bipolar rating scale utilizing positive and negative adjectives was administered to all subjects. Participants were asked to indicate their current mood on a 10-centimeter visual analog scale.

The Emotional Assessment Scale (EAS; Carlson et al., 1989) is a 24-item questionnaire developed to evaluate state-forms of emotional intensity. The 24 items are separated into 8 categories: Anger, Anxiety, Disgust, Fear, Guilt, Happiness, Sadness, and Surprise. Subjects are asked to indicate their current level of emotional intensity by placing a mark somewhere along a 10-centimeter analog scale anchored between 0 and 100. "I do not feel _____ " is placed at the left end point, and "I feel extremely _____" at the right end point; the blank is filled with the appropriate item.

Interitem reliability coefficients for the eight emotion categories of the EAS range from .70 to .91. Four of these categories have coefficients greater than .88. Split-half reliability is also high, with a correlation of .94. Criterion validity for this scale is supported by correlations with existing measures. For example, the Anxiety subscale of the EAS correlated .78 with the State Trait Anxiety Scale, the Anger subscale of the EAS correlated .69 with the Anger/Hostility Scale of the POMS, the Happiness subscale of the EAS correlated -.36 with the Beck Depression Inventory, and the Sadness subscale of the EAS correlated .74 with the Depression/Dejection scale of the POMS and .65 with the Beck Depression Inventory (Carlson et al., 1989).

A questionnaire constructed to obtain information about the musical experience of each subject was administered. This measure also required each subject to indicate on a ten-centimeter visual analogue scale their level of effort and honesty in completing the measures used in this study.

Procedure

Administration.

The questionnaires were administered to all 48 music students in a single testing session. The measures were administered to groups of control subjects during a 2-week period; group sizes ranged from 12 to 23 members. All interactions with subjects, including the disbursement of test materials, were made by experimenters blind to the

hypotheses of the experiment and the identities of the subjects.

The music students and control subjects were subdivided into neutral mood induction groups and elated mood induction groups during each testing session. Groups were created by randomly distributing the mood induction procedure within the packets of questionnaires. The packets were then distributed sequentially to participants. Each packet of measures contained the current mood pretest, the AIM, the GBI, a mood induction procedure, the MAACL, the EAS, and the musical experience questionnaire.

All groups were given the pretest to complete, followed by the AIM and the GBI. After the completion of these measures, subjects received mood induction materials in accordance with their group assignment (i.e., neutral or elated). After the mood induction procedures for each group were given, the MAACL, the EAS, and the musical experience questionnaire were administered.

Mood Induction.

In the Autobiographical Recollections Method (ARM; Brewer, Doughtie, and Lubin, 1980) of mood induction, the subject recalls personal events which were affectively charged, and utilizes cognitive imagery to relive them. The ARM is a safe, established, and reliable method of eliciting mood change, and can be traced to a technique of Adlerian

psychotherapy (Brewer et al., 1980; Goodwin and Williams, 1982).

The ARM was slightly altered to provide a neutral mood induction condition. To ensure that subjects visualized neutral experiences, subjects in the neutral mood induction condition were given three neutral scenes, such as washing a car, doing laundry, and grocery shopping. This condition served as a control for the effects of both participation in the experiment and the act of visualization. The ARM for elated states required subjects to list three instances during their lives that they felt very happy, as if they were on top of the world. Subjects in both groups were then instructed to think about the first scene, and to try and concentrate their full attention on as many details of the experience as they could. Individuals in the elated condition were also encouraged to feel the emotions that were originally experienced. The examiner told subjects when to proceed to the second and third scenes.

The subjects were debriefed about the purposes of the experiment after all data was collected. They were encouraged to discuss the mood induction procedure, and the examiner confirmed that the subjects' mood returned to normal before they left the experiment.

Results

Where applicable, Error Mean Squares and degrees of freedom for all statistical tests are reported in Appendix A.

Demographic Information

Univariate tests did not produce a significant F value when music students were compared to controls in their reported honesty or effort put forth in completing the questionnaires used in this study. The means and standard deviations for these variables are recorded in Table 1 (page 24).

Hypothesis I

The GBI was first evaluated by analyzing each level of response to the Likert scale, as suggested by Depue (1987). Contrary to the hypothesis, music students did not have higher total scores on the GBI than control subjects. When analyses were restricted to the highest two Likert responses, no significant differences in total scores were found between music students and control subjects. Means and standard deviations on the GBI are reported for both musician and control groups in Table 2.

Hypothesis II

Contrary to the hypothesis, scores on the Depression and Biphasic/Hypomania subscales of the GBI did not differ between control subjects and music students. No significant differences between groups were found when analyses were

Table 2

Means and Standard Deviations for GBI Subscales

	Musicians		Controls	
	$\bar{X}$	SD	$\bar{X}$	SD
Total Score	65.1	31.9	66.6	32.5
Depression Subscale	40.4	23.2	40.3	22.2
Biphasic/Hypomania Subscale	26.0	11.8	27.5	12.8

restricted to the highest two Likert responses. Means and standard deviations for these data are reported in Table 2.

A Depression subscale item relating to the frequency of suicidal ideation was subjected to analysis. No significant differences were found between music students and controls when all Likert values were considered. Further, no significant differences were found between groups when analyses utilized the highest Likert value.

Hypothesis III

Contrary to the hypothesis, scores for music students on the AIM ($\bar{X}$ = 156.8, SD = 17.0) did not differ significantly from those of control subjects ($\bar{X}$ = 157.0, SD = 14.9).

Hypothesis IV

Contrary to the hypothesis, music students and control subjects did not differ significantly in the correlation between total scores on the AIM and total scores on the GBI or the correlation between total scores on the AIM and scores on the GBI when analyses were restricted to the two highest Likert values. Music students and control subjects did not differ significantly in the correlation between total scores on the AIM and scores on the Depression subscale of the GBI, or the Biphasic/Hypomanic subscale of the GBI. In addition, when analyses were restricted to the two highest Likert values, the groups did not differ significantly in the correlation between total scores on the AIM and the Depression subscale of the GBI or the Biphasic/Hypomanic

subscale of the GBI. Correlations between scores on the GBI and the AIM are reported in Table 3.

Hypothesis V

Contrary to the hypothesis, neither MANOVA nor univariate tests were significant between groups. Music students did not differ from control subjects in levels of positive affect as measured by the Positive Affect scale of the MAACL-R or the Happiness and Surprise subscales of the EAS. There were no interactions between group assignment and mood induction conditions. Means and standard deviations for the MAACL-R subscales are reported in Table 4. Means and standard deviations for the subscales of the EAS are reported in Table 5.

Hypothesis VI

Consistent with the hypothesis, subjects in the neutral mood induction groups endorsed significantly lower levels of positive affect than subjects in the elated mood induction groups as measured by the Happiness and Surprise subscales of the EAS. However, levels of positive affect did not differ significantly between groups on the Positive Affect subscale of the MAACL-R. Differences between mood induction conditions were not significant according to group membership as measured by the Happiness or Surprise subscales of the EAS. There were no significant interactions between mood condition and group membership.

Table 3

Correlations Between Scores on the AIM and the GBI

	AIM Total	
GBI Variable	Musicians	Controls
Total Score	.20	.35**
Depression Subscale	.13	.28*
Biphasic/Hypomania Subscale	.30*	.40**
Extreme Scores		
Total	.32*	.25*
Depression Subscale	.22	.17
Biphasic/Hypomania Subscale	.42**	.32*

Note. Correlations used 46 degrees of freedom.

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

Table 4

Means and Standard Deviations for MAACL-R Subscales in Each Group and Mood Condition

	Neutral		Elated	
	$\bar{X}$	SD	$\bar{X}$	SD
		Musicians		
PA	54.7	13.0	58.2	12.1
SS	54.5	9.51	54.6	9.09
PA/SS	54.2	13.0	58.7	11.5
DYS	59.4	24.9	50.9	16.5
DEP	58.5	32.8	56.0	24.5
HOS	58.0	23.5	48.5	11.0
ANX	56.9	22.0	49.6	11.7

(table continues)

Table 4 (cont'd)

	Neutral		Elated	
	$\bar{X}$	SD	$\bar{X}$	SD
		Controls		
PA	58.2	13.7	59.6	9.11
SS	54.6	7.67	58.7	11.1
PA/SS	58.3	11.6	60.9	10.3
DYS	56.4	18.6	51.1	18.9
DEP	61.2	29.2	54.0	28.2
HOS	53.7	16.9	49.4	12.9
ANX	52.8	14.1	49.4	14.2

Note. PA = Positive Affect; SS = Sensation Seeking; PA/SS = Positive Affect/Sensation Seeking; DYS = Dysphoria; DEP = Depression; HOS = Hostility; ANX = Anxiety

Table 5

Means and Standard Deviations in Millimeters for the EAS in Each Group and Mood Condition

	Neutral		Elated	
	$\bar{X}$	SD	$\bar{X}$	SD
		Musicians		
Anger	60.8	81.4	54.4	75.2
Anxiety	92.5	75.9	97.7	78.6
Disgust	43.9	58.0	31.6	48.7
Fear	43.0	67.7	56.0	73.7
Guilt	33.2	53.9	26.3	34.0
Happiness	118.2	76.9	157.0	72.5
Sadness	62.5	82.1	55.4	58.5
Surprise	27.0	28.8	45.5	50.2

(table continues)

Table 5 (cont'd)

	Neutral		Elated	
	$\bar{X}$	SD	$\bar{X}$	SD
		Controls		
Anger	36.2	40.2	53.1	63.1
Anxiety	97.5	77.1	78.9	69.3
Disgust	30.8	39.8	41.6	47.2
Fear	34.6	48.3	55.6	67.1
Guilt	27.8	45.3	31.3	43.0
Happiness	127.0	77.0	177.3	68.8
Sadness	58.2	63.3	50.8	57.0
Surprise	36.3	40.0	63.8	68.5

Contrary to the hypothesis, subjects in the neutral mood condition did not endorse lower levels of negative affect than subjects in the elated mood condition on the Anger, Anxiety, Disgust, Fear, Guilt, or Sadness subscales of the EAS. However, subjects in the neutral mood condition had higher scores than subjects in the elated mood condition on the Hostility subscale of the MAACL-R. Means and standard deviations for those subscales on the EAS that measure negative affect can be found in Table 5. Means and standard deviations for subscales on the MAACL-R are reported in Table 4.

Hypothesis VII

Contrary to the hypothesis, neither MANOVA nor individual univariate tests found differences in positive affect between music students and control subjects in the neutral mood condition on the Positive Affect scale of the MAACL-R or the Happiness and Surprise subscales of the EAS. Means and standard deviations for the EAS can be found in Table 5. Means and standard deviations for the MAACL-R can be found in Table 4.

Efficacy of the Mood Induction Procedures

There were no significant differences in affect among music students and control subjects evident in the pretest, although music students showed a slight trend toward higher scores on the Happiness subscale. Means and standard

deviations for subscale scores on the pretest are listed in Table 6.

Comparisons between posttest scores on the EAS suggested that the ARM for induction of positive affect was successful. Both MANOVA and univariate tests indicated that subjects in the positive mood condition scored higher on theHappiness and Surprise subscales of the EAS. The interaction between group assignment and mood condition was not significant. Means and standard deviations for the EAS are reported in Table 5.

ANCOVAs were performed for MAACL-R and EAS subscales that showed significant correlations with pretest subscale scores. Scores on the Happiness subscale of the EAS were significant for group assignment and mood condition when pretest Happiness, Tranquility, and Sadness scores were used as covariates. The interaction between group and mood condition was not significant. Scores on the Surprise subscale of the EAS were not significant for group assignment or mood condition when pretest Anger scores were used as a covariate. The interaction between group and mood condition was not significant.

When pretest Boredom, Sadness, Happiness, Anger, and Tranquility scores were used as covariates, scores on the Positive Affect subscale of the MAACL-R were not significant for group assignment or mood condition. The interaction term was not significant. Scores on the Positive Affect/Sensation Seeking subscale of the MAACL-R were not significant for

Table 6

Means and Standard Deviations on the Pretest in Millimeters

	Musicians		Controls	
Pretest	$\bar{X}$	SD	$\bar{X}$	SD
Anger	36.7	39.0	41.8	42.3
Boredom	63.9	39.8	61.2	36.8
Fatigue	127.4	59.5	117.5	59.6
Happiness	97.4	41.8	81.8	41.4
Sadness	50.7	37.9	61.4	52.0
Tranquility	123.5	42.2	121.4	43.8

group assignment or mood condition when pretest Boredom, Sadness, and Happiness scores were used as covariates. The interaction between group assignment and mood condition was not significant.

As evaluated by the Brown-Forsythe procedure (Winer, Brown, & Michels, 1991), the variances were homogeneous between groups and mood conditions. Means and standard deviations for scores used in this procedure can be found in Table 7.

Correlations, paired t-scores, and significance levels between subscales of the pretest and the EAS are presented for all subjects in Table 8. For comparison, correlations, paired t-scores, and significance levels between subscales of the pretest and the EAS are presented for subjects in the neutral mood condition in Table 9. Identical statistics for subjects in the elated mood condition are presented in Table 10.

There were no significant differences between groups in the number of significant paired t-scores for both elated and neutral conditions. Similarly, music students and control subjects in the elated mood condition did not differ in the number of correlations that reached statistical significance. However, music students in the neutral mood condition had more significant correlations than did control subjects.

Table 7

Means and Standard Deviations for Corrected Total Raw Scores on the EAS in Millimeters

	Neutral		Elated	
Total	$\bar{X}$	SD	$\bar{X}$	SD
Musicians	249.7	199.8	234.7	190.0
Controls	224.0	202.3	260.0	279.7

Table 8

Correlations, t-Scores, and Significance Levels Between Subscales of the Pretest and the EAS for All Subjects

	Pretest					
EAS	ANG	BOR	FAT	HAP	SAD	TRA
Anger						
r	.56**	.27**	.30**	-.28**	.26**	-.27**
t	-2.11	1.67	9.38	4.29	.69	7.94
p	*	.10	**	***	.49	***
Anxiety						
r	.45**	.24*	.20	-.15	.24*	-.37**
t	-7.68	-3.81	—	—	-4.52	3.06
p	***	***	—	—	***	**
Disgust						
r	.49**	.34**	.26*	-.26**	.40**	-.28**
t	.50	4.99	12.68	7.17	3.64	11.5
p	.62	***	***	***	***	***
Fear						
r	.38**	.23*	.27**	-.04	.21*	-.19
t	-1.27	2.24	9.86	—	1.22	—
p	.21	*	***	—	.22	—
Guilt						
r	.34**	.28**	.23*	-.15	.30**	-.20*
t	1.92	6.55	13.96	—	4.90	13.58
p	.06	***	***	—	***	***
Happiness						
r	-.26*	-.20*	-.22*	.53**	-.31**	.34**
t	-10.74	-8.77	-2.07	-8.33	-8.69	-2.97
p	***	***	*	***	***	**

(table continues)

Table 8 (cont'd)

	Pretest					
EAS	ANG	BOR	FAT	HAP	SAD	TRA
Sadness						
r	.48**	.36**	.23*	-.28**	.57**	-.27**
t	-2.95	.91	8.33	3.72	-.12	7.41
p	**	.36	***	***	.90	***
Surprise						
r	.37**	.21*	.12	.12	.18	-.25*
t	-.73	3.38	—	—	—	10.60
p	.47	***	—	—	—	***

Note. Correlations have 46 degrees of freedom.

ANG = Anger; BOR = Boredom; FAT = Fatigue; HAP = Happiness;

SAD = Sadness; TRA = Tranquility.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Table 9

Correlations, t-Scores, and Significance Levels Between Subscales of the Pretest and the EAS for Subjects in the Neutral Mood Condition

	Pretest					
EAS	ANG	BOR	FAT	HAP	SAD	TRA
Anger						
r	.29	.45*	-.01	-.05	.20	-.08
r[a]	.55**	.43*	.44*	-.39	.32	-.29
t	—	5.78	—	—	—	—
t[a]	-2.03	.04	3.93	—	—	—
p	—	***	—	—	—	—
p[a]	*	.97	***	—	—	—
Anxiety						
r	.47*	.38	-.07	-.19	.42*	-.32
r[a]	.55**	.04	.35	-.25	-.01	-.53**
t	-4.54	—	—	—	-2.49	—
t[a]	-4.58	—	—	—	—	1.47
p	***	—	—	—	*	—
p[a]	***	—	—	—	—	.16
Disgust						
r	.25	.36	-.09	-.15	.34	-.07
r[a]	.42*	.36	.45*	-.43*	.42*	-.41*
t	—	—	—	—	—	—
t[a]	-1.14	—	6.40	2.82	.92	4.70
p	—	—	—	—	—	—
p[a]	.27	—	***	**	.37	***

(table continues)

Table 9 (cont'd)

	Pretest					
EAS	ANG	BOR	FAT	HAP	SAD	TRA
Fear						
r	.48*	.24	.01	.06	.20	-.12
r[a]	.26	.06	.43*	-.30	.27	-.41*
t	-.03	—	—	—	—	—
t[a]	—	—	5.79	—	—	4.29
p	.98	—	—	—	—	—
p[a]	—	—	***	—	—	***
Guilt						
r	.31	.33	.07	-.14	.24	-.20
r[a]	.50*	.09	.45*	-.22	.28	-.17
t	—	—	—	—	—	—
t[a]	-.16	—	7.56	—	—	—
p	—	—	—	—	—	—
p[a]	.87	—	***	—	—	—
Happiness						
r	-.15	.10	-.13	.74**	-.42*	.60**
r[a]	-.24	-.45*	-.39	.63**	-.18	.29
t	—	—	—	-8.33	-2.97	-.75
t[a]	—	-2.68	—	-1.98	—	—
p	—	—	—	***	**	.46
p[a]	—	**	—	.06	—	—

(table continues)

Table 9 (cont'd)

	Pretest					
EAS	ANG	BOR	FAT	HAP	SAD	TRA
Sadness						
r	.30	.30	-.14	-.30	.62**	-.18
r[a]	.51*	.49*	.51*	-.41*	.51*	-.44*
t	—	—	—	—	.24	—
t[a]	-2.10	-.08	4.00	1.43	-.59	2.81
p	—	—	—	—	.82	—
p[a]	*	.94	**	.12	.56	**
Surprise						
r	.34	.16	-.01	.00	.12	-.13
r[a]	.24	.03	.34	.28	-.03	-.16
t	—	—	—	—	—	—
t[a]	—	—	—	—	—	—
p	—	—	—	—	—	—
p[a]	—	—	—	—	—	—

Note. All correlations utilize 46 degrees of freedom. Values for t or p are omitted if the correlation was non-significant for that group.

[a] = Musicians.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Table 10

Correlations, t-Scores, and Significance Levels Between Subscales of the Pretest and the EAS for Subjects in the Elated Mood Condition

	Pretest					
EAS	ANG	BOR	FAT	HAP	SAD	TRA
Anger						
r	.71**	.21	.17	-.20	.35	-.27
r[a]	.67**	.05	.46*	-.49*	.29	-.42*
t	-.41	—	—	—	—	—
t[a]	-1.12	—	5.31	2.28	—	3.32
p	.69	—	—	—	—	—
p[a]	.28	—	***	*	—	**
Anxiety						
r	.71**	.33	.08	-.15	.31	-.19
r[a]	.29	.26	.38	-.04	.23	-.45*
t	-2.99	—	—	—	—	—
t[a]	—	—	—	—	—	1.20
p	**	—	—	—	—	—
p[a]	—	—	—	—	—	.24
Disgust						
r	.51*	.54**	.33	.07	.47*	-.13
r[a]	.75**	.12	.30	-.51*	.41*	-.49*
t	.78	2.32	5.65	—	1.96	—
t[a]	1.42	—	—	4.48	1.62	5.62
p	.44	*	***	—	.06	—
p[a]	.17	—	—	***	.12	***

(table continues)

Table 10 (cont'd)

	Pretest					
EAS	ANG	BOR	FAT	HAP	SAD	TRA
Fear						
r	.66**	.44*	.19	.00	.29	-.18
r[a]	.15	.20	.38	.05	.15	-.10
t	-.60	.46	—	—	—	—
t[a]	—	—	—	—	—	—
p	.55	.65	—	—	—	—
p[a]	—	—	—	—	—	—
Guilt						
r	.46*	.52**	.36	.11	.40	-.16
r[a]	.24	.30	.01	-.42*	.31	-.33
t	1.80	3.66	—	—	—	—
t[a]	—	—	—	6.00	—	—
p	.08	***	—	—	—	—
p[a]	—	—	—	***	—	—
Happiness						
r	-.22	.00	.04	.47*	-.30	.22
r[a]	-.66**	-.47*	-.44*	.36	-.44*	.24
t	—	—	—	-7.50	—	—
t[a]	-5.00	-4.65	-.98	—	-5.60	—
p	—	—	—	***	—	—
p[a]	***	***	.34	—	***	—

(table continues)

Table 10 (cont'd)

	Pretest					
EAS	ANG	BOR	FAT	HAP	SAD	TRA
Sadness						
r	.54**	.33	.07	-.15	.58**	-.08
r[a]	.73**	.25	.42*	-.21	.72**	-.36
t	-.14	–	–	–	1.11	–
t[a]	-1.65	–	5.77	–	-.96	–
p	.89	–	–	–	.28	–
p[a]	.11	–	***	–	.35	–
Surprise						
r	.43*	.57**	.24	.13	.35	-.39
r[a]	.26	-.08	.01	.22	.05	-.30
t	-1.08	-.21	–	–	–	–
t[a]	–	–	–	–	–	–
p	.29	.83	–	–	–	–
p[a]	–	–	–	–	–	–

Note. All correlations utilized 46 degrees of freedom. Values for t or p are omitted if the correlation was non-significant for that group.

[a] = Musicians.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Discussion

Earlier research which supported a link between artistic ability and affective disorders (Ellis, 1926; Juda, 1949; Andreasen, 1987; Jamison, 1989) utilized professional artists. Levels of artistic ability within these subjects were clearly higher than those found in comparison groups. In this study, the relative lack of significant differences between groups was unexpected, but may have reflected methodological error as well as characteristics of the subjects.

At the outset of this study it was assumed that university music students could be differentiated from students in the general population with regard to artistic ability, simply on the basis of higher levels of musical experience and daily participation in musical activities. While these factors may indeed provide a rough index of ability, achievement in the arts is likely a broad concept that encompasses several factors (i.e., sensitivity, technical proficiency, creativity) which are common to all artistic endeavors. Future research should utilize standardized measures to assess experimental subjects for overall levels of artistic ability prior to group assignment.

Comparable levels of artistic ability between experimental groups may have also reflected a developmental process. That is, group variability in artistic ability becomes more skewed as less proficient individuals leave the

talent pool. Further, progressive levels of age, training, and experience result in a sample that is increasingly homogenous in level of ability. Professional musicians would thus be expected to have uniformly high levels of artistic ability that are markedly disparate from levels found in the general population. In contrast, the university musicians used in this study, the majority of whom were underclassmen, would not be expected to differ significantly from a comparison group of control subjects.

Third, segregation of groups by skill level exists within the university setting, where membership in the more advanced ensembles is a condition of higher musical and technical proficiency. A gradient in ability also exists between collegiate institutions: conservatories of music often attract a higher proportion of talented student musicians than do public universities, simply because they offer a more rigorous, comprehensive, and competitive level of musical training. Since many of the individuals in this sample were members of a middle-level ensemble at a public university having a small School of Music, they were likely not representative of instrumentalists possessing extremely high levels of proficiency. This is particularly important if affective illness in musicians is restricted to those with superior levels of artistic ability.

Affective intensity was assumed to be a trait of musicians as well as a requisite tool for artistic

expression. The values reported on the AIM were consistent with those of earlier studies (Goldsmith and Walters, 1989; Flett et al., 1986). The absence of differences between groups suggests that intensity as a trait is not a necessary characteristic for the creation of an artistic product. However, affective intensity may be a situationally related variable, and may only be displayed during the creative process itself. In addition, the lack of differences in intensity between groups may have been due to the presumed variability in artistic ability within the group of music students.

The relative lack of concordance between the EAS and the MAACL-R in evaluating the efficacy of both positive and neutral mood inductions was somewhat surprising. Discrepancies between these two measures may have reflected differences in the spectrum of affect identified on each questionnaire. Specifically, each subscale of the MAACL-R contains a wide range of adjectives that seem to differ qualitatively in the magnitude of affect represented. Responses to this measure may have been especially vulnerable to a method of mood induction which appears to emphasize the experience of affect solely along a single vector (i.e., high levels of happiness). In contrast, adjectives on each subscale of the EAS appear to assess unitary dimensions of affect, which suggests that, in this study, the EAS may be a

more appropriate index of emotional functioning than the MAACL-R.

Each subscale on the EAS is a composite of 3 semantically similar adjectives. Subscale scores thus reflect the additive contribution of 3 separate measurements, making the means and standard deviations appear to be excessively high. However, for most subjects, these values are consistent with those of the earlier validation study conducted by Carlson et al. (1989). The majority of exceptions were confined to the group of music students, whose responses were occasionally characterized by higher levels of variability. This suggests that the music students were somewhat more heterogenous with regard to emotional reactivity than were control subjects.

Responses to the EAS indicated that the neutral mood condition was somewhat effective in its intent to provide a comparison group for the elated mood condition. That is, subjects exposed to the neutral mood induction endorsed lower levels of positive affect than subjects in the elated mood induction. However, the specific nature of the neutral condition itself was somewhat difficult to determine. It was assumed that the impact of this condition would be manifested by lower levels of total affect on the EAS. Although this index seemed to indicate that the neutral mood induction was not effective, a valid and well-standardized outcome measure

is necessary to validly and accurately assess the influence of a neutral mood induction procedure.

Interestingly, the amount of positive affect increased for both groups in the neutral mood induction. Increases in positive affect in this condition were unexpected. While these changes may have reflected a treatment effect associated with the attention given experimental subjects, they may also reflect personality traits. For example, Larsen and Ketelaar (1991) found that extraverts were more responsive than introverts to inductions of positive affect. Given the higher magnitude of change in control subjects, it is tempting to speculate that the musician group was characterized by somewhat higher levels of introversion. This possibility should be explored further in future research.

Control subjects and music students appeared to be differentially affected by the mood induction procedures. Strelau (1983) suggested that individuals regulate their reactions to affective stimuli by an internal control mechanism. If true, the results from this study indicate that music students and control subjects seek optimal levels of arousal through somewhat different processes.

In general, control subjects appeared to respond directly to the valence of the mood induction procedure, rather than diffusing their reaction across a wide range of affect. This may partially explain why they obtained higher

scores than music students on scales measuring positive affect in the elated mood condition. While this response style may create optimal levels of arousal when low and moderate stimulation from affective sources is present, the unidimensional nature of their reaction to emotional stimuli implies that these individuals may be vulnerable to high levels of affective stimulation. In such cases, optimal levels of arousal may be regulated in part by a tendency to withdraw from the immediate affective environment. The trend toward higher levels of anxiety noted in control subjects may have thus reflected a fear of becoming overwhelmed by affect and a concomitant inability to withdraw from emotionally-laden stimuli.

In contrast to control subjects, music students tended to respond with higher levels of negative affect when confronted with a task deliberately designed to limit affective involvement. Moreover, they were somewhat more reactive to the influence of the elated mood induction than control subjects, both on positive and negative subscales of the EAS. This suggests that they may resent being placed in situations where affective stimulation is not present or is controlled by others. When this stimulation is present, music students may attempt to control the magnitude of their response by diffusing it through a broad spectrum of both positive and negative affect. If musicians are highly reactive to emotional stimuli (Lowenfeld, 1962; Getzels and

Csikszentmihalyi, 1975), then this process may help ensure that they are not overwhelmed by affective involvement. The question of whether this pattern of regulating emotional states harnesses an inborn awareness of multiple affects or whether knowledge of a broad range of emotion is acquired through extensive musical or artistic training would be an interesting area of exploration for future research.

Although the elated mood condition of the ARM produced results consistent with prior research, the validity of mood induction procedures has often been hotly debated. However, after reviewing extensive evidence, Martin (1990) reported that experimental demand does not seem to be sufficient to account for the changes in affect after mood induction procedures have been implemented. And, although it is difficult to reliably assess the degree to which subjects comply to the stated instructions of most mood induction procedures in general or the ARM in particular, the clear differences between mood conditions found in this study indicate that the procedures were indeed effective.

Future research should ensure that the individual components of artistic ability are clearly defined so that musician and control groups are clearly differentiated. Second, levels of artistic ability should be homogenous within each experimental group. Third, appropriate outcome measures for mood induction conditions should be specified and appropriate control over compliance of subjects to

instructions should be exercised. Attention to these details may reveal a direct and significant relationship between artistic ability and both affective disorder and affective intensity.

LIST OF REFERENCES

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Andreasen, N. C. (1978). Creativity and psychiatric illness. Psychiatric Annals, 8 (3), 113-119.

Andreasen, N. C. (1987). Creativity and mental illness: Prevalence rates in writers and their first-degree relatives. American Journal of Psychiatry, 144 (10), 1288-1292.

Andreasen, N. C., & Canter, A. (1974). The creative writer: Psychiatric symptoms and a family history. Comprehensive Psychiatry, 15 (2), 123-131.

Brewer, D., Doughtie, E. B., & Lubin, B. (1980). Induction of mood and mood shift. Journal of Clinical Psychology, 46, 129-148.

Carlson, C. R., Collins, F. L., Stewart, J. F., Porzelius, J., Nitz, J. A. & Lind, C. O. (1989). The assessment of emotional reactivity: A scale development and validation study. Journal of Psychopathology and Behavioral Assessment, 11 (4), 313-325.

Cunningham, M. R. (1988). What do you do when you're happy or blue? Mood, expectancies, and behavioral interest. Motivation and Emotion, 12 (4), 309-331.

Depue, R. A., Krauss, S., Spoont, M. R., & Arbisi, P.(1989). General Behavior Inventory identification of unipolar and bipolar affective conditions in a nonclinical university population. Journal of Abnormal Psychology,2, 117-126.

Depue, R. A., Slater, J. F., Wolfstetter-Kausch, H., Klein, D., Goplerud, E. & Farr, D. (1981). A behavioral paradigm for identifying persons at risk for bipolar depressive disorder: A conceptual framework and five validation studies. Journal of Abnormal Psychology Monograph, 90 (5), 381-437.

Diener, E., Larsen, R. J., Levine, S., & Emmons, R. A. (1985). Intensity and frequency: Dimensions underlying positive and negative affect. Journal of Personality and Social Psychology, 48 (5), 1253-1265.

Ellis, H. A. (1926). A study of British genius. New York: Houghton Mifflin.

Flett, G. L.; Boase, P.; McAndrews, M.P.; Pliner, P.; & Blankstein, K. R. (1986). Affect intensity and the appraisal of emotion. Journal of Research in Personality, 20, 447-459.

Frosch, W. A. (1987). Moods, madness, and music. I. Major affective disease and musical creativity. Comprehensive Psychiatry, 28 (4), 315-322.

Getzels, J. W. & Csikszentmihalyi, M. (1975). From problem solving to problem finding. In I. A. Taylor & J. W. Getzels (Eds.), Perspectives in creativity (pp. 90-116). Chicago, IL: Aldine.

Goldsmith, R. E. & Walters, H. (1989). A validity study of the Affective Intensity Measure. Journal of Social Behavior and Personality, 4 (1), 133-140.

Goodnick, P. J., Fieve, R. R., Peselow, E., Schlegel, A., & Filippi, A. (1986). General Behavior Inventory: Measurement of subclinical changes during depression and lithium prophylaxis. Acta Psychiatrica Scandinavica, 73, 529-532.

Goodwin, A. M. & Williams, J. M. G. (1982). Mood induction research--Its implications for clinical depression. Behaviour Research and Therapy, 20, 373-382.

Goodwin, F. K. & Jamison, K. R. (1990). Manic-depressive illness. New York: Oxford University Press.

Jamison, K. R. (1989). Mood disorders and patterns of creativity in British writers and artists. Psychiatry, 52, 125-134.

Juda, A. (1949). The relationship between highest mental capacity and psychic abnormalities. American Journal of Psychiatry, 106, 296-307.

Kenealy, P. M. (1986). The Velten Mood Induction Procedure: A methodological review. Motivation and Emotion, 10 (4), 315-335.

Larsen, R. J. & Diener, E. (1987). Affect intensity as an individual difference characteristic: A review. Journal of Research in Personality, 21, 1-39.

Larsen, R. J. & Ketelaar, T. (1991). Personality and susceptibility to positive and negative emotional states. Journal of Personality and Social Psychology, 61 (1), 132-140.

Larsen, R. J., Diener, E., & Emmons, R. A. (1986). Affect intensity and reactions to daily life events. Journal of Personality and Social Psychology, 51, 803-814.

Lowenfeld, V. (1962). Creativity: Education's stepchild. In S. J. Parnes & H. F. Harding (Eds.), A source book for creative thinking (pp. 9-17). New York: Scribner.

Lubin, B., Zuckerman, M., Hanson, P. G., Armstrong, T., Rinck, C. M., & Seever, M. (1986). Reliability and validity of the Multiple Affect Adjective Check List--Revised. Journal of Psychopathology and Behavioral Assessment, 8 (2), 103-117.

Martin, M. (1990). On the induction of mood. Clinical Psychology Review, 10, 669-697.

McNeil, T. F. (1971). Prebirth and postbirth influence on the relationship between creative ability and recorded mental illness. Journal of Personality, 39, 391-406.

Myerson, A. & Boyle, R. D. (1941). The incidence of manic-depressive psychosis in certain socially important families: Preliminary report. American Journal of Psychiatry, 98, 11-21.

Richards, R., Kinney, D. K., Lunde, I., Benet, M., & Merzel, A. P. C. (1988). Creativity in manic-depressives, cyclothymes, their normal relatives, and control subjects. Journal of Abnormal Psychology, 97 (3), 281-288.

Sandblom, P. (1989). Creativity and disease: How illness affects literature, art, and music. Philadelphia: Lippencott Co.

Strelau, J. (1983). Temperament, personality, activity. New York: Academic Press.

Velten, E. (1968). A laboratory task for induction of mood states. Behavior Research and Therapy, 6, 473-482.

Winer, B. J., Brown, D. R., & Michels, K. M. (1991). Statistical principles in experimental design (3rd edition). Marion, NY: McGraw Hill.

Zuckerman, M., & Lubin, B. (1985). Manual for the Revised Multiple Affect Adjective Checklist. San Diego, CA: Educational and Industrial Testing Service.

APPENDICES

Appendix A

F Values, Error Mean Squares, and Significance Levels for Demographic Variables

Variable	Error Mean Square	F	p
Age	20.17	2.65	.11
Experience in Music	120204.26	49.2	< .000
Duration of Practice	98.04	36.5	< .000
Previous Three Months	9.38	78.3	< .000
Previous Six Months	1.76	17.4	< .000
Frequency of Practice	2.80	1.87	.17
Honesty	69.74	.464	.50
Effort	105.98	.586	.44

Note. Analyses utilized ANOVA at 1, 94 degrees of freedom.

APPENDIX B

Error Mean Squares, F values, and Significance Levels for the GBI

Variable	Error Mean Square	F	p
Total GBI	58.59	.056	.81
Extreme GBI	χ^2 = .094		< .25
DEP Subscale	.01	.000	.99
B/H Subscale	52.51	.348	.56
Extreme DEP	χ^2 = .419		< .60
Extreme B/H	χ^2 = 1.88		< .25
Suicidal Ideation	.09	.106	.74
Constant Suicidal Ideation	χ^2 = .616		< .50

Note. DEP = Depression; B/H = Biphasic/Hypomania.

All Chi Square tests utilized 1 degree of freedom. All other tests utilized ANOVA with 1, 94 degrees of freedom.

APPENDIX C

Error Mean Square, F Value, and Significance Level for Total Scores on the AIM

Error Mean Square	F	p
1.04	.004	.95

Note. ANOVA was used with 1, 94 degrees of freedom.

APPENDIX D

Significance Levels of the Differences of Correlations Between the GBI and the AIM for Musicians and Control Subjects

GBI Variable	Standardized Correlation	p
Total Score	.71	> .05
Depression Subscale	.72	> .05
Biphasic/Hypomania Subscale	.60	> .05
Extreme Scores		
Total	.33	> .05
Biphasic/Hypomania Subscale	.55	> .05
Depression Subscale	.25	> .05

APPENDIX E

Error Mean Squares, F Values, and Significance Levels for Levels of Positive Affect

Measure	Error Mean Square	F	p
	Mood Condition		
EAS			
Happiness	5459.44	8.72	.004
Surprise	2409.56	5.28	.02
MAACL-R			
Positive Affect	146.37	1.06	.31
	Group		
EAS			
Happiness	5459.44	.930	.34
Surprise	2409.56	1.90	.17
MAACL-R			
Positive Affect	146.37	.925	.34

Note. Analyses utilized ANOVA at 1, 92 degrees of freedom.

APPENDIX F

Error Mean Squares, F Values, and Significance Levels Between Mood Conditions for Levels of Negative Affect

Measure	Error Mean Square	F	p
EAS			
Anger	4469.02	.150	.70
Anxiety	5671.56	.193	.66
Disgust	2386.40	.005	.94
Fear	4213.88	1.66	.20
Guilt	1988.94	.034	.86
Sadness	4353.45	.288	.59
MAACL-R			
Hostility	282.15	4.00	.05

Note. Analyses utilized ANOVA with 1, 92 degrees of freedom.

APPENDIX G

Error Mean Squares, F Values, and Significance Levels for Scores on the Pretest

Measure	Error Mean Square	F	p
EAS			
Anger	1768.33	.356	.55
Boredom	1479.12	.112	.74
Fatigue	3565.66	.656	.42
Happiness	1741.16	3.40	.07
Sadness	2069.06	1.32	.26
Tranquility	1853.33	.056	.81

Note. Analyses utilized ANOVA at 1, 92 degrees of freedom.

Appendix H

Error Mean Squares, F Values, and Significance Levels for ANCOVAs on the EAS

Measure	Error Mean Square	df	F	p
EAS				
Happiness				
Group	21313.84	1	5.83	.02
Mood	35800.36	1	9.79	.002
Interaction	1133.46	1	.310	.58
Surprise				
Group	3318.13	1	1.54	.22
Mood	7600.76	1	3.53	.06
Interaction	289.88	1	.135	.71

Note. All ANCOVAs utilized 95 total degrees of freedom.

APPENDIX I

Correlations Between Subscales of the Pretest and the MAACL-R for All Subjects

	Pretest					
MAACL-R	ANG	BOR	FAT	HAP	SAD	TRA
PA	-.30**	-.36**	-.19	.32**	-.34**	.30**
SS	-.10	-.10	-.09	.21*	-.10	-.02
PA/SS	-.25*	-.30**	-.17	.26**	-.29**	.23*
DYS	.32**	.29**	.27**	-.41**	.46**	-.32**
DEP	.24*	.20	.20	-.22*	.46**	-.17
ANX	.35**	.29**	.22*	-.36**	.36**	-.33
HOS	.18	.20	-.39**	.26*	.22*	-.34**

Note. All correlations utilized 94 degrees of freedom.

PA = Positive Affect; SS = Sensation Seeking;

PA/SS = Positive Affect/Sensation Seeking; DYS = Dysphoria;

DEP = Depression; ANX = Anxiety; HOS = Hostility.

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

Appendix J

Error Mean Squares, F Values, and Significance Levels for ANCOVAs on the MAACL-R

MAACL-R	Error Mean Square	df	F	p
PA				
Group	296.83	1	2.58	.11
Mood	181.68	1	1.58	.21
Interaction	27.95	1	.243	.62
PA/SS				
Group	419.07	1	3.60	.06
Mood	338.20	1	2.90	.09
Interaction	18.02	1	.156	.70

Note. All ANCOVAs utilized 95 total degrees of freedom.

PA = Positive Affect;

PA/SS = Positive Affect/Sensation Seeking

Appendix K

Error Mean Squares, F Values, and Significance Levels for Total Scores on the EAS

Test	Error Mean Square	df	F	p
ANOVA	48790.33	1, 92	.055	.82
ANCOVA				
EAS Total				
Group	3178.53	1	.084	.77
Mood	12855.10	1	.338	.56
Interaction	9589.69	1	.252	.62

Note. ANCOVAs utilized 95 total degrees of freedom.

Appendix L

Values of Chi-Square and Significance Levels for Differences Between Significant Correlations and Paired t Scores

Variable	χ^2	p
	Neutral Mood Condition	
r	8.19	< .005
t	3.35	> .05
	Elated Mood Condition	
r	.047	> .05
t	1.26	> .25

Note. χ^2 utilized 1 degree of freedom.

Appendix M

Pretest of Mood State

DIRECTIONS: For each word below, place a slash somewhere on the appropriate line to indicate how you are feeling AT THIS MOMENT.

I do not feel angry 0 _____ 100 I feel extremely angry

I do not feel joyful 0 _____ 100 I feel extremely joyful

I do not feel irritated 0 _____ 100 I feel extremely irritated

I do not feel detached 0 _____ 100 I feel extremely detached

I do not feel peaceful 0 _____ 100 I feel extremely peaceful

I do not feel bored 0 _____ 100 I feel extremely bored

I do not feel unhappy 0 _____ 100 I feel extremely unhappy

I do not feel exhausted 0 _____ 100 I feel extremely exhausted

For each word below, place a slash somewhere on the appropriate line to indicate how you are feeling AT THIS MOMENT.

I do not feel elated 0 _____ 100 I feel extremely elated

I do not feel calm 0 _____ 100 I feel extremely calm

I do not feel tired 0 _____ 100 I feel extremely tired

I do not feel sad 0 _____ 100 I feel extremely sad

Appendix N

The Affective Intensity Measure

DIRECTIONS: The following questions refer to the emotional reactions to typical life-events. Please indicate how YOU react to these events by placing a number from the following scale in the blank space preceding each item. Please base your answers on how YOU react, *not* on how you think others react or how you think a person should react.

NEVER	ALMOST NEVER	OCCASIONALLY	USUALLY	ALMOST ALWAYS	ALWAYS
1	2	3	4	5	6

1. _____ When I accomplish something difficult, I feel delighted or elated.
2. _____ When I feel happy, it is a strong type of exuberance.
3. _____ I enjoy being with other people very much.
4. _____ I feel pretty bad when I tell a lie.
5. _____ When I solve a small personal problem, I feel euphoric.
6. _____ My emotions tend to be more intense than those of most people.
7. _____ My happy moods are so strong that I feel like I'm "in heaven".
8. _____ I get overly enthusiastic.
9. _____ If I complete a task I thought was impossible, I am ecstatic.
10. _____ My heart races at the anticipation of some exciting event.
11. _____ Sad movies deeply touch me.
12. _____ When I'm happy, it's a feeling of being untroubled and content, rather than being zestful and aroused.

NEVER	ALMOST NEVER	OCCASIONALLY	USUALLY	ALMOST ALWAYS	ALWAYS
1	2	3	4	5	6

13. _____ When I talk in front of a group for the first time, my voice gets shaky and my heart races.

14. _____ When something good happens, I am usually much more jubilant than others.

15. _____ My friends might say I'm emotional.

16. _____ The memories I like the most are those of times when I felt content and peaceful, rather than zestful and enthusiastic.

17. _____ The sight of someone who is hurt badly affects me strongly.

18. _____ When I'm feeling well, it's easy for me to go from being in a good mood to being really joyful.

19. _____ "Calm and cool" could easily describe me.

20. _____ When I'm happy, I feel like I'm bursting with joy.

21. _____ Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.

22. _____ When I'm happy, I feel very energetic.

23. _____ When I receive an award, I become overjoyed.

24. _____ When I succeed at something, my reaction is calm contentment.

25. _____ When I do something wrong, I have strong feelings of shame and guilt.

26. _____ I can remain calm, even on the most trying days.

NEVER	ALMOST NEVER	OCCASIONALLY	USUALLY	ALMOST ALWAYS	ALWAYS
1	2	3	4	5	6

27. _____ When things are going good, I feel "on top of the world".

28. _____ When I get angry, it's easy for me to still be rational and not overreact.

29. _____ When I know I have done something very well, I feel relaxed and content, rather than excited and elated.

30. _____ When I do feel anxiety, it is normally very strong.

31. _____ My negative moods are mild in intensity.

32. _____ When I am excited over something, I want to share my feelings with everyone.

33. _____ When I feel happiness, it is a quiet type of contentment.

34. _____ My friends would probably say I'm a tense or "high-strung" person.

35. _____ When I'm happy, I bubble over with energy.

36. _____ When I feel guilty, this emotion is quite strong.

37. _____ I would characterize my happy moods as closer to contentment than to joy.

38. _____ When someone compliments me, I get so happy I could "burst".

39. _____ When I am nervous, I get shaky all over.

40. _____ When I am happy, the feeling is more like contentment and inner calm than one of exhilaration and excitement.

Appendix O

The General Behavior Inventory

GENERAL BEHAVIOR INVENTORY

HERE ARE SOME QUESTIONS ABOUT BEHAVIORS THAT OCCUR IN THE GENERAL POPULATION. THINK ABOUT HOW OFTEN THEY OCCUR FOR YOU. USING THE SCALE BELOW, SELECT THE NUMBER THAT BEST DESCRIBES HOW OFTEN YOU EXPERIENCE THESE BEHAVIORS:

1	2	3	4
NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR ALMOST CONSTANTLY

KEEP THE FOLLOWING POINTS IN MIND:

FREQUENCY: YOU MAY HAVE NOTICED A BEHAVIOR AS FAR BACK AS THE EARLY TEENS, OR YOU MAY HAVE EXPERIENCED IT MORE RECENTLY. IN EITHER CASE, ESTIMATE HOW FREQUENTLY THE BEHAVIOR HAS OCCURRED SINCE YOU FIRST NOTICED IT.

> FOR EXAMPLE: IF YOU FIRST NOTICED A BEHAVIOR WHEN YOU WERE 14, AND YOU HAVE EXPERIENCED IT REPEATEDLY SINCE THEN, MARK YOUR ANSWER "OFTEN" OR "VERY OFTEN - ALMOST CONSTANTLY". HOWEVER,IF YOU HAVE EXPERIENCED A BEHAVIOR DURING ONLY ONE ISOLATED PERIOD IN YOUR LIFE, BUT NOT OUTSIDE THAT PERIOD, MARK YOUR ANSWER "NEVER - HARDLY EVER" OR "SOMETIMES".

DURATION: MANY QUESTIONS REQUIRE THAT A BEHAVIOR OCCUR FOR AN APPROXIMATE DURATION OF TIME (FOR EXAMPLE, "SEVERAL DAYS OR MORE"). THE DURATION GIVEN IS A MINIMUM DURATION. IF YOU USUALLY EXPERIENCE A BEHAVIOR FOR SHORTER DURATIONS, MARK THE QUESTION "NEVER - HARDLY EVER" OR "SOMETIMES".

CHANGEABILITY: WHAT MATTERS IS NOT WHETHER YOU CAN GET RID OF CERTAIN BEHAVIORS IF YOU HAVE THEM, BUT WHETHER THEY HAVE OCCURRED AT ALL. SO EVEN IF YOU CAN GET RID OF THESE BEHAVIORS, YOU SHOULD MARK YOUR ANSWER ACCORDING TO HOW FREQUENTLY YOU EXPERIENCE THEM.

YOUR JOB, THEN, IS TO RATE HOW FREQUENTLY YOU HAVE EXPERIENCED A BEHAVIOR, SINCE YOU FIRST NOTICED IT, FOR THE DURATION DESCRIBED IN THE QUESTION. PLEASE READ EACH QUESTION CAREFULLY, AND RECORD YOUR ANSWER IN THE APPROPRIATE SPACE ON THE COMPUTERIZED ANSWER SHEET PROVIDED. BE SURE TO FILL IN THE ANSWER SPACE COMPLETELY AND TO PENCIL IN THE SPACES FOR YOUR NAME ON THE BACK OF THE ANSWER SHEET. [IF NO COMPUTER SHEET IS PROVIDED, CIRCLE ONE OF THE NUMBERS TO THE LEFT OF EACH QUESTION CORRESPONDING TO YOUR ANSWER ON THE SCALE.]

1	2	3	4
NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR . . ALMOST CONSTANTLY

1 2 3 4 1. Have there been periods in your life when it was almost impossible to make even small decisions, even though this may not be generally true of you?

1 2 3 4 2. Have you found your enjoyment in being with people changes -- from times when you enjoy them immensely and want to be with them all the time, to times when you don't want to see them at all?

1 2 3 4 3. Have you become sad, depressed, or irritable for several days or more without really understanding why?

1 2 3 4 4. Have you experienced periods of several days or more when, although you were feeling unusually happy and intensely energetic (clearly more than your usual self), you also were physically restless, unable to sit still, and had to keep moving or jumping from one activity to another?

1 2 3 4 5. Have there been periods of several days or more when you felt you needed more sleep, even though you slept longer at night or napped more during the day (not including times of exercise, physical illness, or heavy work schedules)?

1 2 3 4 6. Have people said that you looked sad or lonely?

1 2 3 4 7. Have there been periods of several days or more when you were almost constantly active such that others told you they couldn't keep up with you or that you wore them out?

1 2 3 4 8. Have there been periods of several days or more when you could not keep your attention on any one thing for more than a few seconds, and your mind jumped rapidly from one thought to another or to things around you?

1 2 3 4 9. Have there been periods lasting several days or more when you lost almost all interest in people close to you and spent long times by yourself?

1 2 3 4 10. Have you had periods of several days or more when food seemed rather flavorless and you didn't enjoy eating at all?

1	2	3	4
NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR ALMOST CONSTANTLY

1 2 3 4 11. Have there been periods of several days or more when your friends or family told you that you seemed unusually happy or high -- clearly different from your usual self or from a typical good mood?

1 2 3 4 12. Have there been times when your memory or concentration seemed especially poor and you found it difficult, for example, to read or follow a TV program, even though you tried?

1 2 3 4 13. Have there been periods of time when you lost almost all interest in the things that you usually like to do (such as hobbies, school, work, entertainment)?

1 2 3 4 14. Have you had periods of sadness and depression when almost everything gets on your nerves and makes you irritable or angry (other than related to the menstrual cycle)?

1 2 3 4 15. Have there been times of several days or more when you did not feel the need for sleep and were able to stay awake and alert for much longer than usual because you were full of energy?

1 2 3 4 16. Have you had long periods in which you felt you couldn't enjoy life as easily as other people?

1 2 3 4 17. Have you had periods of several days or more when you wanted to be with people so much of the time that they asked you to leave them alone for awhile?

1 2 3 4 18. Have there been times of several days or more when you were so tired and worn out that it was very difficult or even impossible to do your normal everyday activities (not including times of intense exercise, physical illness, or heavy work schedules)?

1 2 3 4 19. Has your mood or energy shifted rapidly back and forth from happy to sad or high to low?

1 2 3 4 20. Have there been periods lasting several days or more when you spent much of your time brooding about unpleasant things that have happened?

1	2	3	4
NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR ALMOST CONSTANTLY

1 2 3 4 21. Have there been times when you felt that you were physically cut off from other people or from yourself, or felt as if you were in a dream, or felt that the world looked different or had changed in some way?

1 2 3 4 22. Have you had periods of extreme happiness and intense energy lasting several days or more when you also felt much more anxious or tense (jittery, nervous, uptight) than usual (other than related to the menstrual cycle)?

1 2 3 4 23. Have there been times of several days or more when you were so sad that it was quite painful or you felt that you couldn't stand it?

1 2 3 4 24. Have you found that your enjoyment in eating changes -- from periods of two or more days when food tastes exceptionally good, clearly better than usual, to other periods of several days or more when food seems rather flavorless and perhaps you don't enjoy eating at all?

1 2 3 4 25. Have there been times of several days or more when you wake up much too early in the morning and have problems getting back to sleep?

1 2 3 4 26. Have you had periods when you were so down that you found it hard to start talking or that talking took too much energy?

1 2 3 4 27. Have there been times of several days or more when, although you were feeling unusually happy and intensely energetic (clearly more than your usual self), you also had to struggle very hard to control inner feelings of rage or an urge to smash or destroy things?

1 2 3 4 28. Have there been periods *other than when you were physically ill* that you had more than one of the following: (a) headaches or feelings of tightness, pressure, or "wooziness" in your head; (b) dizziness; (c) constipation or diarrhea; (d) aches and pains; (e) nausea, vomiting, or stomach aches; (f) blurred vision; (g) trembling or shaking hands; or (h) feeling too hot or too cold?

	1	2	3	4
	NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR ALMOST CONSTANTLY

1 2 3 4 29. Have you experienced periods of several days or more when you were feeling down and depressed, and you also were physically restless, unable to sit still, and had to keep moving or jumping from one activity to another?

1 2 3 4 30. Have there been times lasting several days or more when you felt you *must* have lots of excitement, and you actually did a lot of new or different things?

1 2 3 4 31. Have you had periods of extreme happiness and intense energy (clearly more than your usual self) when, for several days or more, it took you over an hour to get to sleep at night?

1 2 3 4 32. Have there been times when you looked back over your life and could see only failures or hardships?

1 2 3 4 33. Have you experienced times of several days or more when you felt as if you were moving in slow motion?

1 2 3 4 34. Have there been long periods in your life when you felt sad, depressed, or irritable most of the time?

1 2 3 4 35. Has it seemed that you experience both pleasurable and painful emotions more intensely than other people?

1 2 3 4 36. Have there been periods of several days or more when you felt guilty and thought you deserved to be punished for something you had or had not done?

1 2 3 4 37. Have you had times of several days or more when you woke up frequently or had trouble staying asleep during the middle of the night?

1 2 3 4 38. Have you had periods of extreme happiness and high energy lasting several days or more when what you saw, heard, smelled, tasted, or touched seemed vivid or intense?

1 2 3 4 39. Have there been times when you were feeling low and depressed, and you also had to struggle very hard to control inner feelings of rage or an urge to smash or destroy things?

1	2	3	4
NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR ALMOST CONSTANTLY

1 2 3 4 40. Have you found that your feelings or energy are generally up or down, but rarely in the middle?

1 2 3 4 41. Have you had periods of several days or more when it was difficult or almost impossible to think and your mind felt sluggish, stagnant, or "dead"?

1 2 3 4 42. Have there been times when you had a strong urge to do something mischievous, destructive, risky, or shocking?

1 2 3 4 43. Have there been periods of several days or more when your thinking was so clear and quick that it was much better than most other people's?

1 2 3 4 44. Have there been times when you exploded at others and afterwards felt bad about yourself?

1 2 3 4 45. Have there been times of several days or more when you were so down that nothing (not even friends or good news) could cheer you up?

1 2 3 4 46. Have there been times of a couple days or more when you felt that you were a very important person or that your abilities or talents were better than most other people's?

1 2 3 4 47. Have there been times when you have hated yourself or felt that you were stupid, ugly, unlovable, or useless?

1 2 3 4 48. Have you found that your thinking changes greatly -- that there are periods of several days or more when you think better than most people, and other periods when your mind doesn't work well at all?

1 2 3 4 49. Have there been times of a day or more when you had no feelings or emotions and seemed cut off from other people?

1 2 3 4 50. Have you had sad and depressed periods lasting several days or more when you also felt much more anxious or tense (jittery, nervous, uptight) than usual (other than related to the menstrual cycle)?

1	2	3	4
NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR ALMOST CONSTANTLY

1 2 3 4 51. Have there been times when you have done things --
like perhaps driving recklessly, taking a trip on the spur of the moment,
creating a public disturbance, being more sexually active than usual,
getting into fights, destroying property, or getting into trouble with the law --
which you later thought showed poor judgment?

1 2 3 4 52. Have you had periods of sadness and depression when, for several days or more,
it took you over an hour to get to sleep at night,
even though you were very tired?

1 2 3 4 53. Have you had periods lasting several days or more when
you felt depressed or irritable,
and then other periods of several days or more when
you felt extremely high, elated, and overflowing with energy?

1 2 3 4 54. Have there been periods when,
although you were feeling unusually happy and intensely energetic,
almost everything got on your nerves and made you irritable or angry
(other than related to the menstrual cycle)?

1 2 3 4 55. Have there been times when upsetting or bad thoughts kept going through your mind
and you couldn't stop them?

1 2 3 4 56. Have there been times of several days or more when
you really got down on yourself and felt worthless?

1 2 3 4 57. Have there been times when you had blank spells in which your activities were interrupted,
and you did not know what was going on around you?

1 2 3 4 58. Have you had sad and depressed periods of several days or more,
interrupted by periods lasting between an hour to a day when
you felt extremely happy and intensely energetic?

1 2 3 4 59. Have there been periods of several days or more when
you were slowed down and couldn't move as quickly as usual?

1 2 3 4 60. Have you experienced weight changes (increases, decreases, or both)
of five (5) pounds or more in short periods of time (three weeks or less),
not including changes due to physical illness, menstruation, exercise, or dieting?

1	2	3	4
NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR ALMOST CONSTANTLY

1 2 3 4 61. Have there been periods of a couple days or more when sexual feelings and thoughts were almost constant, and you couldn't think about anything else?

1 2 3 4 62. Have you had periods when it seemed that the future was hopeless and things could not improve?

1 2 3 4 63. Have there been periods lasting several days or more when you were so down in the dumps that you thought you might never snap out of it?

1 2 3 4 64. Have you had times when your thoughts and ideas came so fast that you couldn't get them all out, or they came so quickly others complained that they couldn't keep up with your ideas?

1 2 3 4 65. Have there been times of several days or more when you felt very down and depressed during the early part of the day, but then less so during the evening?

1 2 3 4 66. Have there been times when you began many new activities with lots of enthusiasm and then found yourself quickly losing interest in them?

1 2 3 4 67. Have you found that your mood consistently follows the seasons, where you have long periods of depression during the winter but mostly happy periods during the summer?

1 2 3 4 68. Have you had long periods when you were down and depressed, interrupted by brief periods when your mood was normal or slightly happy?

1 2 3 4 69. Have there been times of several days or more when you have struggled to control an urge to cry, have had frequent crying spells, or found yourself crying without really understanding why (other than related to the menstrual cycle)?

1 2 3 4 70. Have there been times of several days or more when almost all sexual interest was lost?

	1	2	3	4
	NEVER OR HARDLY EVER	SOMETIMES	OFTEN	VERY OFTEN OR ALMOST CONSTANTLY

1 2 3 4 71. Have you found yourself at times feeling fearful or suspicious of your environment or people around you?

1 2 3 4 72. Have there been periods of time when you felt a persistent sense of gloom?

1 2 3 4 73. Have there been times when you have felt that you would be better off dead?

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1 2 3 4 5 74. Age: 1) 18-25 2) 26-35 3) 36-45 4) 46-55 5) over 55

1 2 75. Sex: 1) Female 2) Male

1 2 3 4 5 76. Ethnic background: 1) Caucasian 2) Black 3) Hispanic 4) Asian 5) Other

1 2 77. Have you had (or do you still have) a life-threatening or very serious chronic medical illness (including a physical handicap) in the past year?

1) Yes 2) No

1 2 78. Have you had any hormonal or endocrine problems, or taken hormones as a treatment, any time in the last five (5) years (not including birth control pills)?

1) Yes 2) No

1 2 79. Has a close relative of yours died or experienced a life-threatening illness in the past three months?

1) Yes 2) No

Appendix P

The Emotional Assessment Scale

DIRECTIONS: For each word below, place a slash somewhere on the appropriate line to indicate how you are feeling at this moment.

I do not feel surprised 0 ——————————— 100 I feel extremely surprised

I do not feel afraid 0 ——————————— 100 I feel extremely afraid

I do not feel disgusted 0 ——————————— 100 I feel extremely disgusted

I do not feel angry 0 ——————————— 100 I feel extremely angry

I do not feel guilty 0 ——————————— 100 I feel extremely guilty

I do not feel anxious 0 ——————————— 100 I feel extremely anxious

I do not feel sad 0 ——————————— 100 I feel extremely sad

I do not feel delighted 0 ——————————— 100 I feel extremely delighted

For each word below, place a slash somewhere on the appropriate line to indicate how you are feeling at this moment.

I do not feel scared 0 ——— 100 I feel extremely scared

I do not feel astonished 0 ——— 100 I feel extremely astonished

I do not feel repulsed 0 ——— 100 I feel extremely repulsed

I do not feel mad 0 ——— 100 I feel extremely mad

I do not feel ashamed 0 ——— 100 I feel extremely ashamed

I do not feel worried 0 ——— 100 I feel extremely worried

I do not feel disturbed 0 ——— 100 I feel extremely disturbed

I do not feel joyful 0 ——— 100 I feel extremely joyful

For each word below, place a slash somewhere on the appropriate line to indicate how you are feeling at this moment.

I do not feel frightened	0	100	I feel extremely frightened
I do not feel amazed	0	100	I feel extremely amazed
I do not feel sickened	0	100	I feel extremely sickened
I do not feel annoyed	0	100	I feel extremely annoyed
I do not feel humiliated	0	100	I feel extremely humiliated
I do not feel nervous	0	100	I feel extremely nervous
I do not feel hopeless	0	100	I feel extremely hopeless
I do not feel happy	0	100	I feel extremely happy

Appendix Q

The Multiple Affect Adjective Checklist-Revised

1 ☐ active
2 ☐ adventurous
3 ☐ affectionate
4 ☐ afraid
5 ☐ agitated
6 ☐ agreeable
7 ☐ aggressive
8 ☐ alive
9 ☐ alone
10 ☐ amiable
11 ☐ amused
12 ☐ angry
13 ☐ annoyed
14 ☐ awful
15 ☐ bashful
16 ☐ bitter
17 ☐ blue
18 ☐ bored
19 ☐ calm
20 ☐ cautious
21 ☐ cheerful
22 ☐ clean
23 ☐ complaining
24 ☐ contented
25 ☐ contrary
26 ☐ cool
27 ☐ cooperative
28 ☐ critical
29 ☐ cross
30 ☐ cruel
31 ☐ daring
32 ☐ desperate
33 ☐ destroyed
34 ☐ devoted
35 ☐ disagreeable
36 ☐ discontented
37 ☐ discouraged
38 ☐ disgusted
39 ☐ displeased
40 ☐ energetic
41 ☐ enraged
42 ☐ enthusiastic
43 ☐ fearful
44 ☐ fine
45 ☐ fit
46 ☐ forlorn
47 ☐ frank
48 ☐ free
49 ☐ friendly
50 ☐ frightened
51 ☐ furious
52 ☐ lively
53 ☐ gentle
54 ☐ glad
55 ☐ gloomy
56 ☐ good
57 ☐ good-natured
58 ☐ grim
59 ☐ happy
60 ☐ healthy
61 ☐ hopeless
62 ☐ hostile
63 ☐ impatient
64 ☐ incensed
65 ☐ indignant
66 ☐ inspired
67 ☐ interested
68 ☐ irritated
69 ☐ jealous
70 ☐ joyful
71 ☐ kindly
72 ☐ lonely
73 ☐ lost
74 ☐ loving
75 ☐ low
76 ☐ lucky
77 ☐ mad
78 ☐ mean
79 ☐ meek
80 ☐ merry
81 ☐ mild
82 ☐ miserable
83 ☐ nervous
84 ☐ obliging
85 ☐ offended
86 ☐ outraged
87 ☐ panicky
88 ☐ patient
89 ☐ peaceful
90 ☐ pleased
91 ☐ pleasant
92 ☐ polite
93 ☐ powerful
94 ☐ quiet
95 ☐ reckless
96 ☐ rejected
97 ☐ rough
98 ☐ sad
99 ☐ safe
100 ☐ satisfied
101 ☐ secure
102 ☐ shaky
103 ☐ shy
104 ☐ soothed
105 ☐ steady
106 ☐ stubborn
107 ☐ stormy
108 ☐ strong
109 ☐ suffering
110 ☐ sullen
111 ☐ sunk
112 ☐ sympathetic
113 ☐ tame
114 ☐ tender
115 ☐ tense
116 ☐ terrible
117 ☐ terrified
118 ☐ thoughtful
119 ☐ timid
120 ☐ tormented
121 ☐ understanding
122 ☐ unhappy
123 ☐ unsociable
124 ☐ upset
125 ☐ vexed
126 ☐ warm
127 ☐ whole
128 ☐ wild
129 ☐ willful
130 ☐ wilted
131 ☐ worrying
132 ☐ young

Appendix R

Demographic Questionnaire

Please answer the following questions. This information will be used only for statistical analyses, and will be kept confidential.

Age: ____ **Sex:** _____ **Major:** _____

Class standing according to number of credits earned (circle one):

Freshman Sophomore Junior Senior Masters Doctoral

1. Have you played a musical instrument in the past three months?

Yes _____ No _____

If you answered "No" to question #1, please proceed directly to question #2.

If you answered "Yes" to question #1, please continue.

a. What type of instrument do you play (if you play more than one, circle the one you play most frequently)?

String Woodwind Brass Percussion

b. How long have you played?

_____ years _____ months

c. How long have you taken private instruction?

_____ years _____ months

d. On average, how frequently do you play (mark only one)?

____ Every day
____ Three or four times each week
____ Once or twice a week
____ One to three times a month
____ Once every three months

e. On average, how long do you play at a time (mark only one)?

____ Fifteen minutes
____ Half of an hour
____ Forty-five minutes
____ An hour
____ An hour and a half
____ Two hours
____ More than two hours

You may now skip to question #3.

2. Have you played a musical instrument in the past? Yes ____ No ____

If you answered "No" to question #2, please proceed directly to question #3.

If you answered "Yes" to question #2, please continue.

a. What type of instrument did you play (if you played more than one, circle the one you played most frequently)?

String Woodwind Brass Percussion

b. How long did you play?

_____ years _____ months

c. How long has it been since you last played?

_____ years _____ months

d. How long did you take private instruction?

_____ years _____ months

e. On average, how frequently did you play (mark only one)?

____ Every day
____ Three or four times each week
____ Once or twice a week
____ One to three times a month
____ Once every six months

f. On average, how long did you play at a time (mark only one)?

____ Fifteen minutes
____ A half hour
____ Forty-five minutes
____ An hour
____ An hour and a half
____ Two hours
____ More than two hours

3. I have responded honestly to all of the questions in this research study. (Place a mark on the line below to indicate your present feelings.)

Strongly disagree 0 _____ 100 Strongly agree

4. I have given my best effort on every question in this research study. (Place a mark on the line below to indicate your present feelings.)

Strongly disagree 0 _____ 100 Strongly agree

Appendix S

Instructions for the Neutral Mood Induction

INSTRUCTIONS

I. I would like for you to imagine yourself washing a car and then rinsing it with water from a garden hose.

I would like for you to take this incident and project it in front of your mind's eye as if you were watching it on TV, letting the "movie" run through from beginning to end. While you are watching, I would like for you to attach to it the same feelings you had at that time and relive it as if it were happening right now.

II. Now I want you to think of the last time you went grocery shopping. Try to see yourself going down each aisle.

Think about it, project it in front of your mind's eye, and feel now exactly what you felt then.

III. I want you to think of the last time you did your laundry. Try to see yourself sorting your clothes, putting them into the washer, and lastly, putting your clothes into the dryer.

Think about it, project it in front of your mind's eye, and feel now exactly what you felt then.

Appendix T

Instructions for the Elated Mood Induction

INSTRUCTIONS

I. I would like for you to think of some happy incident where everything went right - one where you felt loved, or successful, or pleased, or accomplished, or somehow special, or gratified.

I would like for you to take this incident and project it in front of your mind's eye as if you were watching it on TV, letting the "movie" run through from beginning to end. While you are watching, I would like for you to attach to it the same feelings you had at that time - feelings of being loved, successful, or special - and relive it as if it were happening right now.

II. I want you to think of another experience in your life that was even happier than the one you just thought of - an experience where you felt even more loved, or successful, or pleased, or accomplished - a really special incident where you felt happy or gratified.

Think about it, project it in front of your mind's eye, and feel now exactly what you felt then.

III. Now I want you to feel the best you possibly can. I want you to think of the happiest thing that ever happened in your whole life - the one experience that is different from all the rest - one where your spirits really soared, you felt on top of the world, like you had everything together and going for you, like you could do no wrong, everything you did was perfect, and you were a complete success.

Think about it, project it in front of your mind's eye, and feel now exactly what you felt then.