Hemispheric functioning and depression/

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HEMISPHERIC FUNCTIONING AND DEPRESSION

A Thesis Presented
by
JUDITH NISSENBAUM

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

September 1981
Department of Psychology
HEMISPHERIC FUNCTIONING AND DEPRESSION

A Thesis Presented
by
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ABSTRACT

Hemispheric Functioning and Depression

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Evidence from brain injured patients as well as psychiatric patients suggests that depression may be associated with dysfunction of the right hemisphere of the brain. Little research in this area, however, has been accomplished with subclinically depressed populations. In the present study, hemispheric functioning was assessed by two methods: lateral eye movement direction and bilateral skin conductance asymmetry. The validity of each of these measures as an indicator of lateralized hemispheric functioning was tested by observing the within-subject correspondence of the two measures during the experimental task, which was administered to two types of subclinically depressed subjects and a group of non-depressed subjects. Differences in hemispheric functioning between sexes as well as between non-depressed and depressed groups were measured.

Results showed no relationship between lateral eye movement direction and bilateral skin conductance asymmetry. This finding casts doubt on the validity of either measure.
as a gross indicator of hemispheric functioning, and underscores the need to further investigate the complex nature of lateralized brain organization. Because of the lack of correlation between the two measures of hemispheric functioning, no relationship between depression and hemispheric functioning could be demonstrated. There was substantial correlational evidence suggesting the validity of two subtypes of subclinical depression: dependency depression and self-critical depression. Within these depressive subtypes, sex differences were observed in patterns of correlation with a number of personality measures as well as skin conductance measures. Results are discussed in terms of refining and augmenting our understanding of different kinds of depression for both females and males.
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CHAPTER I

INTRODUCTION

In the wake of R. W. Sperry's work with a group of commissurotomized epileptic patients during the 1960s (see Sperry, 1974), research on lateralized hemispheric functions in the human brain has burgeoned impressively. Using a variety of research techniques with both brain damaged and normal populations, researchers have been increasing and refining available knowledge about the different contributions to cognitive functioning of the two brain hemispheres. Most cognitive activity seems to involve complex interactions between the two hemispheres, with each hemisphere playing a dominant role for particular aspects of any given cognitive activity. In summary, functions found to be dominant in the left hemisphere are speech and writing along with other temporal, sequential functions; mathematical calculation, and other analytic kinds of cognitive activity. The right hemisphere is thought to specialize in pictorial imaging, spatial construction, non-verbal ideation, musical pitch distinctions, and color distinctions.

In addition to specific cognitive behaviors, different emotions and personality characteristics have been associated with differential hemispheric function-
ing by some researchers. For instance, Schwartz, Davidson, and Maer (1975) have offered evidence that the emotions are processed primarily by the right hemisphere. Other researchers have suggested that both hemispheres play a role in emotionality, and that each hemisphere may dominate in processing specific emotions. Harman and Ray (1977) reviewed findings of brain lesion studies and unilateral sodium amytal injections, observing that right-side trauma induces euphoric responses, but left-side trauma evokes catastrophic-depressive reactions. The authors concluded that the hemispheres may play complementary roles in processing affect. Gur (1977) suggested that the different emotional styles which may predominate as personality characteristics are manifestations of differential lateral brain operations, and may be related to which hemisphere is more highly developed in a given individual.

A logical concomitant of the progress made in clarifying the nature of lateralized brain functions has been a growing interest in the roles the two hemispheres may play in psychological disorders. There are two main categories of research in this area. Analogue experiments have involved populations with known organic lesions, where symptoms appear which are similar to those of certain psychiatric patients who have no demonstrable organic damage. For instance, schizophrenic-like symptoms are frequently
manifest in patients with left temporal lobe lesions (Flor-Henry, 1974). Other experiments have directly observed psychiatric patients with no known organic lesions, using such techniques for assessing hemispheric functioning as EEG measures, reaction times, or tachistoscopic presentations. Accumulated evidence indicates that left hemisphere dysfunction is typical for large numbers of patients diagnosed as thought disordered or schizophrenic (Gur, 1978), with other evidence suggesting that right hemisphere dysfunction may be associated with depression (Wexler, 1980). The nature of the possible right hemisphere dysfunction in depression is not entirely clear, however. Some researchers (Gruzelier and Venables, 1974; Myslobodsky and Horesh, 1978) have theorized that the right hemisphere becomes overactivated. Flor-Henry (1979) has hypothesized complex interhemispheric processes in depression: he postulated that while the right hemisphere plays a predominant role, an additionally important component in depressive disorders involves disruption of normal transcallosal neural inhibition of each hemisphere by the other.

Two particular problems have contributed to the difficulty of elucidating the nature of these complex processes. Satisfactory techniques for demonstrating relative hemispheric functioning have yet to be developed, and those techniques currently in use yield evidence which is often inconsistent and difficult to interpret. This issue will
be touched upon again in a later section of this chapter.

The second problem area which seriously affects attempts to understand hemispheric function with relation to depression centers on the concept of depression itself. Many theorists working in the area of depression are moving away from conceptualizing depression as a unitary phenomenon. As yet, however, there is little agreement as to what might be the most useful ways of delineating and categorizing different diagnostic and behavioral subtypes of depression (Kendall, 1976; Depue and Monroe, 1978). Some researchers, for instance, have concentrated on differences between reactive and endogenous depressions (Kendall, 1976), on a psychotic/neurotic continuum or dichotomy (Fowles and Gersh, 1979), on a unipolar/bipolar distinction (Depue and Monroe, 1978), or on differences in symptom patterns, such as agitated/retarded (Overall and Zisook, 1980). Additionally, there is a substantial body of evidence pointing to important sex differences in both the frequency and nature of depressive experiences (Weissman and Klerman, 1977; Nissenbaum, 1981).

Most research to date on hemispheric functioning and depression has been done with patients diagnosed as having major depressive disorders. Control groups have usually consisted of schizophrenics, normals, and/or patients with psychiatric disorders other than depression (see Wexler, 1980, for a review). There has been little if any inves-
tigation of possible differences in laterality among subtypes of depression, or within populations with subclinical or minor depressions. Yet subclinical depressions occur with such frequency as to warrant investigation in their own right (Paykel, 1972).

Blatt, D'Afflitti, and Quinlan (1976) have theorized that subclinical depression is not a phenomenon separate from clinical depression. They furthermore have suggested that categorizing depression according to degree of severity is less useful than categorizing it by differences in subjective experiences. The authors have devised and administered a 66-item "Depressive Experiences Questionnaire" (DEQ) to a normal student population, and have identified two main dimensions of subclinical depression. One dimension was associated with high scores on what the authors have termed a Dependency factor: items concerned fear of abandonment and loss, loneliness, helplessness, and dependency. The other depression dimension was associated with high scores on a Self-criticism factor: items concerned feelings of guilt and insecurity, perceived failure to meet expectations, and negative self-evaluation. The authors conceptualized the two factors as reflecting two different developmental levels. The dependency factor was related to a more primitive, anaclitic dimension of depression, while the self-criticism factor was related to a developmentally more advanced, introjective dimension.
It might be hypothesized that the dependency depression factor would be associated with a more passive, retarded symptom picture as opposed to more anxious, agitated states for self-critical depression. To date, however, there has been no research on this question.

A third factor emerged in the Blatt, et al. analysis, consisting of a factor associated with high scores on items indicative of good adjustment—what the authors termed the Efficacy factor.

Using the Blatt et al. questionnaire for categorizing depressive types, the current research investigated hemispheric differences in subclinical depression in a college population, and therefore did not directly address the question of the relationship between severe and mild depression. In either or both of these two categories of subclinical depression, however, differences which parallel those differences already observed in severely depressed patients could be indicative that levels of severity of depression represent differences in degree rather than in kind. In the current research it was hypothesized that groups scoring highest on either depression factor would show greater hemispheric asymmetry than a group scoring highest on the efficacy factor.

Measures of hemispheric functioning. Many different techniques have been used on a variety of populations in the
assessment of lateralized brain function. The impressive results of Sperry and others with commissurotomized patients were obtained by carefully controlling visual, aural, and tactile stimuli so that they were perceived by only one of the separated hemispheres. Because the patients in these studies must be assumed to have had abnormal brain organization prior to their surgery (they had uncontrollable epilepsy), results are limited and not necessarily generalizable to normal populations.

Populations with other kinds of organic brain deficits have also been studied. Studies of lateralized brain operations in stroke patients or accident victims reflect specific locations of function. Yet there are problems with these populations as well. Hemispheric capacities can only be inferred from the nature of the deficits, and few functions can be clearly associated with a single locus or even a single hemisphere. Other studies of lateralized functioning have used patients who have undergone brain surgery, unilateral electroconvulsive shock, or unilateral sodium amytal injections (whereby one hemisphere or the other is temporarily anesthetized).

For the study of non-brain-damaged, normal populations, less intrusive measures than these must be used. A number of researchers have used power-spectrum EEG. Some of these studies show promising results (see Flor-Henry, 1979), although the possibility of muscle movement
artifacts, as well as difficulty in interpreting results, must be taken into account.

Measurements of accuracy and reaction time in response to selectively presented tachistoscopic, dichotic listening, and tactile stimuli are widely used (see Wexler, 1980, for a review), and have the advantage of being unintrusive and relatively non-stressful for normal, non-hospitalized populations. Again, however, care must be used in interpreting results from these methods, evidence from which can only be inferential.

Direction of lateral eye movements (LEM) as a measure of hemispheric functioning has the considerable advantage over many other tests of being extremely simple and practical to use. Yet the very simplicity which recommends this measure reflects its limitation in that it can be only an extremely gross indicator of what is certainly a highly complex process. With this caveat in mind, the current research has employed a second measure of laterality—bimanual skin conductance measures—in addition to lateral eye movements. It was hypothesized that these two independent measures of hemispheric activity would be congruent within subjects, thereby providing evidence for the validity of each measure.

Lateral eye movements. Bakan (1968) reviewed evidence that lateral eye movements indicate greater activity in the
hemisphere contralateral to the direction of gaze. A number of researchers have attempted to relate different patterns of lateral eye movements—and by implication functional hemispheric asymmetry—to personality characteristics. Duke (1968) observed lateral eye movements of subjects responding to a number of reflective questions and found that the direction of eye movements was consistent enough to classify given individuals as left movers or right movers. Gur and Gur (1975) selected groups of left movers, right movers, and mixed (bidirectional) movers. The selections were made on the basis of an extensive number of varied questions asked of each subject: when subjects showed significantly greater numbers of eye movements to one side, they were designated accordingly. All were then given questionnaires to determine their defensive strategies. Differences were highly significant. Left movers scored higher in defensive mechanisms that included repression and denial, and they reported many more somatic complaints. Right movers scored higher on "projection" and "turning against others." Left movers reported more internal sources of anxiety and right movers reported more external sources.

Two studies have found greater numbers of left lateral eye movements in depressed patients than in normals (Myslobodsky and Horesh, 1978; Schweitzer, 1979). These authors differed, however, in their interpretations of the
findings. Schweitzer concluded that greater numbers of lateral eye movements in one direction indicate overactivation of the contralateral hemisphere, while Myslobodsky and Horesh pointed out that underactivation of the ipsilateral hemisphere could not be ruled out.

In a recent comprehensive critique of research using lateral eye movements as a measure of hemispheric laterality, Ehrlichman and Weinberger (1978) cautioned against interpreting lateral eye movements as clear indicators of hemispheric asymmetry. In addition to citing conflicting research findings, they pointed out that there is as yet no direct substantiation of the relationship between direction of eye movements and hemispheric activity. The authors suggested that one methodological approach to this problem could be to use other laterality measures in correlation with lateral eye movement patterns.

Bilateral electrodermal activity. Evidence concerning measures of asymmetrical electrodermal activity in humans is somewhat controversial (Myslobodsky and Rattok, 1977). Results from a number of studies, however, indicate the potential usefulness of bimanual electrodermal measures in studying psychological functioning. Gruzelier and Venables (1974) found asymmetrical bilateral orienting responses in depressed patients, such that there was a high level of left hand responding, with little right hand responding. The
authors cited evidence for electrodermal activity as an ipsilateral hemispheric response, and concluded that depressives have underactivated right hemispheres. Myslobodsky and Horesh (1978) also found higher left hand than right hand electrodermal activity in depressives, but these authors cited evidence that electrodermal activity is a contralateral hemispheric response. They, too, however, concluded that the higher left hand activity supports the theory of the dysfunctional right hemisphere in depressives, arguing that the right hemisphere is overactivated.

LaCroix and Comper (1979) have offered evidence for skin response as a contralateral inhibitory, rather than excitatory, response. Additionally, they showed that response amplitude is the specific measure affected by lateralized hemispheric differences, while tonic level was not apparently affected. LaCroix and Comper pointed out that electrodermal activity is probably regulated by more than one cerebral process, and does not reflect a single general process.

Summary

In the current research project, hemispheric functioning was assessed by using two practical, non-intrusive measures: direction of lateral eye movements and bimanual skin conductance. While each of these methods remains controversial as a single measure of hemispheric function-
ing, simultaneous comparisons of the two measures were expected to provide evidence supporting the validity of each as an indicator of lateralized function. If, as has been suggested in recent research, both measures do in fact reflect differential hemispheric activation, any given set of lateralized responses on one measure would be accompanied by corresponding lateralized responses on the other measure.

Wexler (1980) reviewed evidence that psychopathology can often be associated with disruption of normal brain organization, especially of normal lateralized hemispheric functioning. Individuals showing no evidence of psychological disorder should show balanced or symmetrical lateralized functioning. Individuals showing symptoms of psychopathology, on the contrary, may show a variety of possible hemispheric abnormalities, depending on the nature of the disorder. Recent research has provided some evidence that disorders of the right hemisphere may be associated with depression, yet little work has been done in this area with regard to possible differences in hemispheric functioning among subtypes of depression. Additionally, most of the research has been accomplished with severely depressed clinical populations, with little investigation of the extensive population of subclinically depressed individuals. Using the Blatt et al. (1976) Depressive Experiences Questionnaire to determine the level and type
of depression, the current research project assessed hemispheric functioning in three groups of college students: a group scoring highest on the dependency depression factor, a group scoring highest on the self-critical depression factor, and a group scoring highest on the efficacy factor. Examination of hemispheric differences associated with the two types of subclinical depression in a college population may improve our understanding of dysfunctional brain organization in commonly occurring emotional disorders.

Sex differences in depression, both in observed frequency (Weissman and Klerman, 1977; Amenson and Lewinsohn, 1981) and in reported manifestations (Chevron, Quinlan, and Blatt, 1978) have become an important aspect of recent depression research. The question of sex differences is also relevant to investigations of hemispheric functioning, since it has been reported that male and female brain organization may differ. Flor-Henry (1979), for example, reviewed evidence that females have less highly lateralized brain organization than do males. In the current study a variety of traditional personality and mood measures are used in order to provide correlational data with regard to possible sex differences both in dimensions of depression and in hemispheric functioning. Data from these additional measures will also be used, first to validate and delineate some distinguishing characteristics of the two types of
subclinical depression, and second, to test the possibility that other emotional factors besides degree and type of depression may influence hemispheric functioning.

**Hypotheses**

1. A positive relationship will be found within subjects between direction of lateral eye movements and simultaneous bimanual skin conductance measures, reflecting lateralized hemispheric activation.

2. Subjects with highest scores on the efficacy factor of the DEQ, will tend to be bidirectional in their lateral eye movements and to show balanced left-right skin conductance activity. The two depressed groups, as determined by factor scores on the DEQ, will show greater asymmetry than will the efficacy group in hemispheric activity as reflected in lateral eye movements and bimanual skin conductance.

3. Males will show greater differences in hemispheric functioning than will females. Gender differences between the two subtypes of depression will be examined, although no predictions are tendered as to the nature of those differences.
CHAPTER II

METHOD

Subjects. Subjects were 60 right-handed undergraduate volunteers enrolled in psychology courses at a large North-eastern state university. Volunteers responded to a brief description of the experiment on posted sign-up sheets, and all subjects received extra course credits for their participation in the experiment. Of these, 30 were females and 30 were males, in addition to six female and six male pilot subjects.

Experimenter. The experimenter was a female graduate student, assisted by two undergraduate research assistants who monitored the polygraph recorder. The research assistants received training in the operation of the polygraph for a two week period, at the end of which the training was completed with the running of twelve pilot subjects.

Subject Selection Instruments

Handedness questionnaire. Although right-handed volunteers had been requested, an 11-item handedness questionnaire (Humphrey, 1951) was administered in order to insure that all subjects were right-handed. If nine of the eleven items on this questionnaire were reported to be done with the right hand, subjects were designated as right-handed.
All volunteers for this study met this criterion for right-handedness.

**Depressive Experiences Questionnaire.** The Blatt, D'Afflitti, and Quinlan (1976) Depressive Experiences Questionnaire consists of 66 items, with responses to be made on a seven point scale ranging from "strongly disagree" (1) to "strongly agree" (7). Items are presented in both positive and negative directions. This questionnaire yields three scale scores: Efficacy (non-depressed), Dependency depression, and Self-critical depression. Dividing their subject sample of 500 into two equal subsamples, Blatt et al. found a high degree of stability in the factor structure. Coefficients of congruence computed for each factor for the two samples were all over .900.

In the current study, factor scores for all three factors were computed for all subjects, using the factor loadings derived by Blatt et al. Three experimental groups--the Efficacy group, the Self-critical depressed group, and the Dependent depressed group--were formed by assigning subjects to that group for which they had the highest factor score.

**Personality Variables**

**Self-rating Depression Scale.** The Zung Self-rating depression Scale (Zung, 1965) consists of 20 items in both posi-
tive and negative directions. The original instrument is rated on a four point scale ranging from "a little of the time" to "most of the time." Items include cognitive, affective, and somatic symptoms of depression. The scale has been used extensively in depression research, as it has a reported .74 correlation with clinical diagnoses of depression (Zung, 1965). For use with subclinical populations the rating scale has been modified to include a fifth choice, so that it ranges from "none of the time" to "most of the time." This modified scale, which is used in the current research, has been applied successfully in other research with college populations (e.g., Nugent, 1977).

Internal-external control of reinforcement. This 29-item forced choice inventory was developed by Rotter (1966) to assess the degree to which individuals perceive contingencies between their own behavior and subsequent events. Subjects are identified as to their expectancies about internal (personal responsibility, "master of my own fate") versus external (luck, chance, powerful others) control of reinforcement. As reported by Phares (1976), the scale shows adequate reliability. The validity of the construct is reviewed by Lefcourt (1976), Phares (1976), and Strickland (1977).

Eysenck Personality Inventory. This is a widely used
forced choice, 57-item instrument (Eysenck and Eysenck, 1968), whose validity and reliability have been demonstrated with a variety of populations (Eysenck and Eysenck, 1968). The inventory consists of three scales: extraversion-introversion, neuroticism-stability, and response distortion (lying). The neuroticism scale has been shown to correlate significantly with measures of depression (Eysenck and Eysenck, 1968).

Emotion Rating Scale. This scale was devised by DeWitt (1977) to measure both depth and control of six different emotions: joy, guilt, anger, sadness, loneliness, and anxiety. Each of the two dimensions is to be rated on four different bipolar scales, each consisting of two anchor words (such as "uncontrolled, controlled") separated by a 100-mm. line. Subjects place a mark on the line at the point between the two opposite words which they think best represent their experience of a given emotion along the scale. The four scales for each of the two dimensions were averaged for each of the six emotions, yielding one control score and one depth score for each emotion. In addition, all depth and all control scores were averaged, yielding a mean depth and a mean control score over all emotions. DeWitt (1977) found that left-gazers reported experiencing anger and joy with greater depth than did right-gazers, while right-gazers reported experiencing
loneliness and guilt with greater depth than did left-gazers.

**Multiple Affect Adjective Check List.** The short form of this adjective check list (Zuckerman and Lubin, 1965) was given to assess current mood state. It yields three scores: depression, hostility, and anxiety. The discriminant validity and high reliability of this instrument have been reported by Zuckerman, Lubin, and Robins (1965).

**Measures of Hemispheric Laterality**

The experimental procedure involved the presentation of ten reflective questions to each subject. The design of the questions was such that they would not elicit any specific lateralized function, but rather would call upon more general levels of functioning. In this way it was hoped that each subject's responses would reflect his/her preferred mode of hemispheric processing.

**Lateral eye movements.** Immediately following the presentation of each question, the direction of the subject's first lateral eye movement was noted by the experimenter, subjects having been instructed to gaze directly at the experimenter while the questions were being read. While there is an almost universal tendency for individuals to avert their gaze after being asked a question and before answering, on those few occasions where subjects did not
avert their gaze or where the eye movement direction was up or down rather than to the right or left, the experimenter so noted and that particular response was not included in the analysis.

**Bimanual skin conductance.** Skin conductance measures were obtained by passing a constant .5 volts across Beckman Ag/AgCl skin electrodes which were filled with Beckman Electrolyte Gel and attached to the thenar and hypothenar areas of each hand by means of Beckman electrode collars. A Beckman Type R411 dynograph recorder was used with two Type 9844 skin conductance couplers (Lykken and Venables, 1971). The recording of skin conductance was done by a research assistant in a room adjacent to the experiment room, with an intercom system enabling the assistant to monitor the experimenter's presentation of questions. In order to assess the relationship between skin conductance and lateral eye movements the following method for analyzing skin conductance was used: Skin conductance levels for each hand were obtained for the five-second time segment immediately following the presentation of each of the ten questions (to correspond to the first lateral eye movement following each question). The low point and high point (in μ mos) for each five-second time segment were ascertained and converted to log conductance values. The tonic level for each hand for each subject was derived by
averaging the low point log conductance values for the ten five-second time segments. The amplitude for each hand for each subject was derived by subtracting the low-point log conductance value from the high point log conductance value for each of the five-second time segments and averaging these differences.

Design

The design of this study was a 3 x 2 (depression group by sex) factorial design. Each of 30 male and 30 female subjects was assigned to the Self-critical depressed, the Dependent depressed, or the non-depressed (Efficacy) group on the basis of their scores on the Blatt et al. DEQ. All subjects went through the experimental procedure, and their group assignment was not known to the experimenter until after all subjects had completed the experiment and the questionnaires were scored.

Experimental Procedure

Subjects were run individually in sessions which took approximately one hour. The experimenter first briefly described the experiment to the subject, then obtained his/her signature on an informed consent form. The subject was then led into a small experiment room, seated in a comfortable chair, and given the first packet of
questionnaires to fill out. This packet contained the handedness questionnaire, the MAACL, the Blatt et al. DEQ, and the Zung SDS. The experimenter left the room, instructing the subject to notify her when the questionnaires were completed. When the subject was ready, the experimenter brought in the electrodes and attached them to the palms of both hands, explaining the procedure and answering the subject's questions about the skin conductance measure. When the electrodes were in place the subject was asked to sit and relax for a few moments while the polygraph technician made appropriate adjustments.

When the technician was ready the experimenter re-entered the experiment room and sat down directly facing the subject across a table. Subject and experimenter were seated exactly halfway between the two side walls of the room, and the wall behind the experimenter was bare and uniform in color. This arrangement assured that the subject would be facing a completely symmetrical visual field.

When the experimenter had ascertained that the subject was comfortable and ready to begin, the experimenter read the following instructions:

"Now I'm going to ask you the series of questions. I'd like you to think about each question, and then answer it briefly. You may or may not know answers to some of the questions, but as I told you that doesn't really matter--what we're really interested in is the thinking process itself, and that's
why I want you to take a few seconds to reflect after I've asked the question—even if you feel you could answer it right away. I'll probably remind you to take a little time to think before you answer. What I'll ask you to do is to look at me while I'm reading each question so that I know I have your attention, and then think about the question and answer it as well as you can."

The experimenter then asked several practice questions in order to allay any initial anxiety and to make sure that the subject would become accustomed to waiting at least five seconds before responding. Subjects were not aware that the actual experimental questions were preceded by the practice questions. The experimenter presented 16 questions in sequence; however, only the final ten questions were used for the data analysis. For each question the experimenter, who was holding a clipboard and appeared to be jotting notes on the question form, was noting the subject's initial lateral eye movement direction after the reading of each question.

Upon completion of all the questions, the experimenter removed the electrodes from the subject's hands and brought in the second packet of questionnaires. This packet included the Rotter Locus of Control form, the Eysenck Personality Inventory, and the DeWitt Emotion Rating Scale. When the subject was finished, the experimenter collected the packet, then thanked the subject and answered whatever questions the subject wished to ask.
CHAPTER III

RESULTS

Depressive Experiences Questionnaire

Fifteen males and 15 females had higher scores on the efficacy scale than on either depression scale. Nine of each sex had their highest scores on the Dependent depressed scale, and Self-critical depressed scores were highest for the remaining six males and six females. The resulting groups will be referred to as the Efficacy group, the Dependent Depressed group, and the Self-critical Depressed group.

Lateral Eye Movements

On the basis of a 70% consistent looking criterion, 22, or 37%, of all subjects (ten males and twelve females) were classified as bidirectional gazers. Twenty-one, or 35% (ten males and eleven females) were left-gazers and the remaining 17, or 28% (ten males and seven females) were right-gazers. Sex differences were not significant.

Although 14 of the 22 bidirectional gazers were in the Efficacy group, the overall distribution did not show significant relationships between level or type of depression as assessed by the DEQ and direction of gaze ($\chi^2 = 3.35$, p > .10). The distribution of LEM direction across experi-
mental groups is shown in Table 1.

**Skin Conductance**

No overall sex differences were found on any skin conductance measures. For simplicity of analyses, skin conductance measures were collapsed across sex. No significant relationships were observed between direction of gaze and any skin conductance measures, either for individual questions or for groups categorized by preferred direction of gaze. Over all subjects and all ten questions, left hand tonic and amplitude levels were slightly higher than right hand tonic and amplitude, but these differences were not significant. For all subjects there were significant correlations between right and left hands for both conductance and amplitude measures, as expected.

When left lateral eye movements and right lateral eye movements were analyzed separately for differences between right and left hands, no differences were found either for all subjects or for groups categorized by direction of gaze.

One-way analyses of variance were performed on all skin conductance measures, with level and type of depression (according to the three DEQ groupings) as the single factor. Left hand skin conductance amplitude was the only skin conductance measure which showed a significant
Table 1
Distribution of Preferred Direction of Gaze over Depressive Experiences Questionnaire Groups

<table>
<thead>
<tr>
<th>Preferred gaze direction</th>
<th>Efficacy</th>
<th>Dependent Depressed</th>
<th>Self-critical Depressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bidirectional gazers</td>
<td>14</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Left gazers</td>
<td>8</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Right gazers</td>
<td>8</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>18</td>
<td>12</td>
</tr>
</tbody>
</table>
difference \((F = 3.94, p < .03)\). Mean amplitude for the Dependent Depressed group was higher than that of the other two groups (see Table 2). Additionally, for the Self-critical Depressed group, the mean tonic and amplitude levels for the left hand were consistently lower than right hand levels, while for the Dependency Depressed group the difference was greater and in the opposite direction--that is, left hand levels were higher than right hand levels. Although this observation was not statistically significant, for left-minus-right hand amplitude difference this result approached significance \((F = 2.32, p < .10)\).

**Personality Variables**

Differences on a number of the personality variables were found among the depression groups, using one-way analyses of variance. As expected, the Efficacy group scored significantly lower, or less depressed \((F = 8.73, p < .001)\), on the Zung Self-rating Depression Scale than did both the depressed groups (see Table 3). The Efficacy group was also more internal \((F = 3.22, p < .05)\), than the depressed groups as measured by the Rotter I-E Scale.

On the Eysenck Personality Inventory, the three groups showed differences on both the extraversion-introversion scale and on the neuroticism-stability scale. While the
Table 2
Left Hand Skin Conductance: Log Amplitude
Means and Standard Deviations for DEQ Groups

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy</td>
<td>.018</td>
<td>.010</td>
</tr>
<tr>
<td>Dependent Depressed</td>
<td>.024</td>
<td>.010</td>
</tr>
<tr>
<td>Self-critical Depressed</td>
<td>.015</td>
<td>.007</td>
</tr>
</tbody>
</table>
Table 3

Zung Self-rating Depression Scale: Means and Standard Deviations for DEQ Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy</td>
<td>16.33</td>
<td>8.36</td>
</tr>
<tr>
<td>Dependent Depressed</td>
<td>23.33</td>
<td>8.53</td>
</tr>
<tr>
<td>Self-critical Depressed</td>
<td>26.75</td>
<td>6.28</td>
</tr>
</tbody>
</table>
Self-critical Depressed group scored lower, or more introverted, on the extraversion-introversion scale (see Table 4) this result was only marginally significant ($F = 3.03, p < .06$). On the neuroticism-stability scale depressed grouping had a significant effect ($F = 4.94, p < .01$), with the Self-critical Depressed group scoring highest (most neurotic), the Efficacy group lowest, and the Dependent Depressed group scores falling between the other two (see Table 5). Additionally, the neuroticism-stability scale of the Eysenck Personality Inventory was the only measure which showed a significant effect for preferred direction of gaze ($F = 3.59, p < .04$), with bidirectional gazers scoring lower (more stable) than either left- or right-gazers (see Table 6).

Again using the DEQ depression groups as the independent factor in one-way analyses of variance, the following effects were found with the DeWitt Emotion Rating Scale scores as dependent variables: significant effects were found on depth of loneliness ($F = 3.99, p < .03$) and on overall experienced depth ($F = 3.92, p < .06$). In all of these results, the Self-critical Depressed group reported greater depth of the emotional experience than did the other two groups (see Table 7).
Table 4

Eysenck Personality Inventory:

Means and Standard Deviations of the
Extraversion-introversion Scale for the DEQ Groups

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy</td>
<td>13.53</td>
<td>3.92</td>
</tr>
<tr>
<td>Dependent Depressed</td>
<td>14.00</td>
<td>3.07</td>
</tr>
<tr>
<td>Self-critical Depressed</td>
<td>10.92</td>
<td>3.32</td>
</tr>
</tbody>
</table>
Table 5
Eysenck Personality Inventory:
Means and Standard Deviations of the
Neuroticism-stability Scale for the DEQ Groups

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy</td>
<td>8.23</td>
<td>4.73</td>
</tr>
<tr>
<td>Dependent Depressed</td>
<td>10.89</td>
<td>4.60</td>
</tr>
<tr>
<td>Self-critical Depressed</td>
<td>12.75</td>
<td>3.52</td>
</tr>
</tbody>
</table>
Table 6

Eysenck Personality Inventory:
Means and Standard Deviations of the Neuroticism-Stability Scale for Preferred Direction of Gaze

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bidirectional gazers</td>
<td>8.13</td>
<td>5.20</td>
</tr>
<tr>
<td>Left gazers</td>
<td>11.80</td>
<td>3.86</td>
</tr>
<tr>
<td>Right gazers</td>
<td>10.31</td>
<td>4.38</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------</td>
<td>-------------------</td>
</tr>
<tr>
<td><strong>Depth of Guilt</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>50.43</td>
<td>27.58</td>
</tr>
<tr>
<td>Dependent Depressed</td>
<td>44.00</td>
<td>25.76</td>
</tr>
<tr>
<td>Self-critical Depressed</td>
<td>68.27</td>
<td>21.61</td>
</tr>
<tr>
<td><strong>Depth of Loneliness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>46.67</td>
<td>22.15</td>
</tr>
<tr>
<td>Dependent Depressed</td>
<td>44.94</td>
<td>26.61</td>
</tr>
<tr>
<td>Self-critical Depressed</td>
<td>67.73</td>
<td>18.89</td>
</tr>
<tr>
<td><strong>Overall Depth</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>57.57</td>
<td>11.03</td>
</tr>
<tr>
<td>Dependent Depressed</td>
<td>55.13</td>
<td>13.59</td>
</tr>
<tr>
<td>Self-critical Depressed</td>
<td>67.20</td>
<td>9.35</td>
</tr>
</tbody>
</table>
Depressive Experiences Questionnaire Scale Scores

Intercorrelations: All subjects. Using the three scale scores for all subjects, intercorrelations among the DEQ factors were generated (Table 8). For all subjects, the efficacy factor showed a significant negative correlation with the self-criticism factor and a negative but non-significant correlation with the dependency factor. The two depression factors showed a highly significant correlation.

Correlations between DEQ scale scores and skin conductance measures: All subjects. Consistent with the findings for the Dependent Depressed group, the dependency factor for all subjects was highly correlated with left hand amplitude (Table 9), such that the higher the scores on the dependency scale were, the higher the left hand amplitude readings were. There was a significant correlation between the dependency factor and greater left-minus-right hand amplitude difference. Further examination of Table 9 shows significant negative correlations between the efficacy factor and the mean tonic levels for both hands.

Correlations between DEQ scale scores and personality variables: All subjects. Table 12 shows correlations of the three DEQ factor scores for all subjects with the other mood and personality measures used in this study.
Table 8
DEQ Scale Scores:
Pearson Product-moment Intercorrelations

<table>
<thead>
<tr>
<th></th>
<th>Efficacy</th>
<th>Dependency Depression</th>
<th>Self-critical Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Subjects (N = 60)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency Depression</td>
<td>-.16</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Self-critical Depression</td>
<td>-.28*</td>
<td>.47**</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Males (N = 30)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency Depression</td>
<td>.07</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Self-critical Depression</td>
<td>-.31*</td>
<td>.36*</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Females (N = 30)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency Depression</td>
<td>-.37</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Self-critical Depression</td>
<td>-.25</td>
<td>.53**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
## TABLE 9

Pearson Product-moment Correlations: Log Skin Conductance with DEQ Scale Scores

**All subjects (N = 60)**

<table>
<thead>
<tr>
<th></th>
<th>Right Hand</th>
<th>Left Hand</th>
<th>Mean Tonic Difference: Left minus Right</th>
<th>Mean Amplitude Difference: Left minus Right</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Tonic</td>
<td>Mean Amplitude</td>
<td>Mean Tonic</td>
<td>Mean Amplitude</td>
</tr>
<tr>
<td><strong>Efficacy</strong></td>
<td>-.25**</td>
<td>.03</td>
<td>-.22**</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.02</td>
</tr>
<tr>
<td><strong>Dependency</strong></td>
<td>-.13</td>
<td>.12</td>
<td>-.06</td>
<td>.30***</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td>.19*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.22**</td>
</tr>
<tr>
<td><strong>Self-critical</strong></td>
<td>.12</td>
<td>-.02</td>
<td>.12</td>
<td>-.12</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td>.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.12</td>
</tr>
</tbody>
</table>

* p < .10
** p < .05
*** p < .01
Correlations between the three DEQ scales and the Zung Self-rating Depression Scale were significant in the expected directions. Similarly, correlations with the Eysenck Neuroticism-stability Scale were as expected. Both the efficacy factor and the self-criticism factor correlated significantly with Rotter's I-E Scale in the expected directions.

Of the two anxiety measures in this study, the MAACL (a state measure) correlated significantly with the self-criticism factor, and the DeWitt Depth of Anxiety Scale (more easily interpretable as a trait measure) correlated significantly with the dependency factor.

**Sex differences: Intercorrelations among DEQ scale scores.** As is shown in Table 8, the major difference between males and females was a significant negative correlation between the efficacy factor and the dependency factor for females only.

**Sex differences: Correlations between DEQ scale scores and skin conductance measures.** As can be seen in Tables 10 and 11, all significant correlations between DEQ scale scores and skin conductance measures were accounted for by the males (with the exception of the left-minus-right hand tonic and amplitude differential, where the dependency factor for both males and females showed positive correlations, statistically significant only when all 60
TABLE 10
Pearson Product-moment Correlations:
Log Skin Conductance with DEQ Scale Scores

Females (N = 30)

<table>
<thead>
<tr>
<th></th>
<th>Right Hand</th>
<th></th>
<th>Left Hand</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Tonic</td>
<td>Mean Amplitude</td>
<td>Mean Tonic</td>
<td>Mean Amplitude</td>
<td>Mean Tonic Difference: Left minus Right</td>
<td>Mean Amplitude Difference: Left minus right</td>
</tr>
<tr>
<td>Efficacy</td>
<td>-.06</td>
<td>.14</td>
<td>-.02</td>
<td>-.04</td>
<td>.17</td>
<td>-.19</td>
</tr>
<tr>
<td>Dependency</td>
<td>-.10</td>
<td>-.01</td>
<td>-.05</td>
<td>.20</td>
<td>.19</td>
<td>.20</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-critical</td>
<td>-.05</td>
<td>-.03</td>
<td>-.18</td>
<td>-.22</td>
<td>-.04</td>
<td>-.18</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .10
** p < .05
*** p < .01
TABLE 11

Pearson Product-moment Correlations:
Log Skin Conductance with DEQ Scale Scores

Males (N = 30)

<table>
<thead>
<tr>
<th></th>
<th>Right Hand</th>
<th></th>
<th>Left Hand</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Tonic</td>
<td>Mean Amplitude</td>
<td>Mean Tonic</td>
<td>Mean Amplitude</td>
<td>Mean Tonic Difference: Left minus Right</td>
<td>Mean Amplitude Difference: Left minus Right</td>
</tr>
<tr>
<td>Efficacy</td>
<td>-.41**</td>
<td>-.06</td>
<td>-.36**</td>
<td>.07</td>
<td>.03</td>
<td>.21</td>
</tr>
<tr>
<td>Dependency Depression</td>
<td>-.18</td>
<td>.32**</td>
<td>-.09</td>
<td>.45***</td>
<td>.19</td>
<td>.23</td>
</tr>
<tr>
<td>Self-critical Depression</td>
<td>.33**</td>
<td>-.01</td>
<td>.47***</td>
<td>-.02</td>
<td>.31**</td>
<td>-.02</td>
</tr>
</tbody>
</table>

* p < .10
** p < .05
*** p < .01
subjects were analyzed together). Mean tonic level for both hands was significantly negatively correlated with the efficacy factor and significantly positively correlated with the self-criticism factor for males only. For males mean amplitude in both hands correlated significantly with the dependency factor. Again for males mean tonic for both hands, as well as left-minus-right tonic differential, correlated significantly with the self-criticism factor.

Sex differences: Correlations between DEQ scale scores and personality variables. There were sex differences in patterns of correlation between DEQ scale scores and the other psychological measures (Tables 12, 13, and 14). The efficacy factor correlated positively with experienced depth of anger on the DeWitt Emotion Rating Scale for all subjects; it was the females, however, who accounted for the significance of this correlation.

The dependency factor for males correlated significantly with high (extraverted) scores on the Eysenck Personality Inventory extraversion-introversion scale, while for females high dependency scores correlated significantly with low (introverted) scores on the same Eysenck scale. Additionally, high dependency factor scores for males correlated with low depth of sadness ratings on the DeWitt scale, while the opposite was true for females.
TABLE 12
Pearson Product-moment Correlations: Personality Variables with DEQ Scale Scores

All subjects (N = 60)

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>Depression</th>
<th>-.13</th>
<th>-.14</th>
<th>.10</th>
<th>-.32**</th>
<th>-.33**</th>
<th>.16</th>
<th>-.25*</th>
<th>-.07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency Depression</td>
<td>.01</td>
<td>-.22*</td>
<td>.11</td>
<td>.37**</td>
<td>.16</td>
<td>-.08</td>
<td>.42**</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>Self-critical Depression</td>
<td>.33**</td>
<td>.17</td>
<td>.26*</td>
<td>.69**</td>
<td>.28*</td>
<td>-.18</td>
<td>.67**</td>
<td>-.23*</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
TABLE 12 (continued)

<table>
<thead>
<tr>
<th></th>
<th>Joy</th>
<th>Guilt</th>
<th>Sadness</th>
<th>Anger</th>
<th>Loneliness</th>
<th>Anxiety</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>.15</td>
<td>.27*</td>
<td>-.25*</td>
<td>-.05</td>
<td>.08</td>
<td>.20</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency Depression</td>
<td>-.02</td>
<td>-.02</td>
<td>-.13</td>
<td>.16</td>
<td>-.01</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>Self-critical Depression</td>
<td>.24*</td>
<td>.11</td>
<td>-.08</td>
<td>.28*</td>
<td>-.01</td>
<td>.02</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
TABLE 13
Pearson Product-moment Correlations:
Personality Variables with DEQ Scale Scores

Males (N = 30)

<table>
<thead>
<tr>
<th>MAACL</th>
<th>Depression</th>
<th>Hostility</th>
<th>Anxiety</th>
<th>Zung Self-rating Depression</th>
<th>Rotter Locus of Control</th>
<th>Extraversion-introversion</th>
<th>Neuroticism-Stability</th>
<th>Lie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy</td>
<td>-.07</td>
<td>-.02</td>
<td>.09</td>
<td>-.31*</td>
<td>-.35*</td>
<td>.11</td>
<td>-.31*</td>
<td>.07</td>
</tr>
<tr>
<td>Dependency Depression</td>
<td>-.10</td>
<td>-.40*</td>
<td>.33*</td>
<td>.33*</td>
<td>-.15</td>
<td>.33*</td>
<td>.28</td>
<td>.02</td>
</tr>
<tr>
<td>Self-critical Depression</td>
<td>.36*</td>
<td>-.08</td>
<td>.25</td>
<td>.68**</td>
<td>.21</td>
<td>-.01</td>
<td>.72**</td>
<td>-.17</td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
### TABLE 13 (continued)

<table>
<thead>
<tr>
<th>DeWitt Emotion Rating Scale</th>
<th>Joy</th>
<th>Guilt</th>
<th>Sadness</th>
<th>Anger</th>
<th>Loneliness</th>
<th>Anxiety</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Depth</td>
<td>Control</td>
<td>Depth</td>
<td>Control</td>
<td>Depth</td>
<td>Control</td>
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<tr>
<td><strong>Efficacy</strong></td>
<td>.32*</td>
<td>.29</td>
<td>-.46**</td>
<td>-.01</td>
<td>-.14</td>
<td>-.29</td>
<td>.10</td>
</tr>
<tr>
<td><strong>Dependency Depression</strong></td>
<td>-.25</td>
<td>.06</td>
<td>-.30</td>
<td>.11</td>
<td>-.06</td>
<td>-.42*</td>
<td>-.23</td>
</tr>
<tr>
<td><strong>Self-critical Depression</strong></td>
<td>-.25</td>
<td>.18</td>
<td>-.10</td>
<td>.40*</td>
<td>-.01</td>
<td>-.26</td>
<td>-.10</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01
TABLE 14
Pearson Product-moment Correlations:
Personality Variables with DEQ Scale Scores

Females (N = 30)

<table>
<thead>
<tr>
<th></th>
<th>MAACL</th>
<th></th>
<th></th>
<th>Eysenck Personality Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depression</td>
<td>Hostility</td>
<td>Anxiety</td>
<td>Zung Self-rating Depression</td>
</tr>
<tr>
<td>Efficacy</td>
<td>-.19</td>
<td>-.26</td>
<td>.12</td>
<td>-.36*</td>
</tr>
<tr>
<td>Dependency Depression</td>
<td>.06</td>
<td>-.17</td>
<td>-.12</td>
<td>.41*</td>
</tr>
<tr>
<td>Self-critical Depression</td>
<td>.31</td>
<td>.32*</td>
<td>.29</td>
<td>.72**</td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
<table>
<thead>
<tr>
<th></th>
<th>Joy</th>
<th>Guilt</th>
<th>Sadness</th>
<th>Anger</th>
<th>Loneliness</th>
<th>Anxiety</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Control</td>
<td>Control</td>
<td>Control</td>
<td>Control</td>
<td>Control</td>
<td>Control</td>
</tr>
<tr>
<td>Efficacy</td>
<td>.05</td>
<td>.23</td>
<td>-.09</td>
<td>.08</td>
<td>-.22</td>
<td>-.07</td>
<td>.06</td>
</tr>
<tr>
<td>Dependency</td>
<td>.07</td>
<td>-.05</td>
<td>-.06</td>
<td>.07</td>
<td>.09</td>
<td>.43**</td>
<td>.07</td>
</tr>
<tr>
<td>Self-critical</td>
<td>-.27</td>
<td>.07</td>
<td>-.09</td>
<td>.06</td>
<td>.05</td>
<td>.01</td>
<td>.06</td>
</tr>
</tbody>
</table>

*p < .05  
**p < .01
CHAPTER IV
DISCUSSION

Measures of Hemispheric Laterality

Contrary to expectation, no relationship was found between lateral eye movements and bimanual electrodermal measures. The lack of relationship emphasizes the need for considering hemispheric processing as a complex set of independent but perhaps interrelated functions. Alternatively, lateral gazing behavior may, as suggested by Ehrlichman and Weinberger (1978), reflect factors other than differential hemispheric functioning, such as interpersonal transactions, subcortical mechanisms, or other aspects of brain organization.

These or still other interpretations may also obtain for skin conductance measures. If lateralized hemispheric activity is only one aspect among many which may influence these measures, further research is necessary in order to directly ascertain differential hemispheric functions. In the meantime, the findings of asymmetry in either lateral eye movements or skin conductance measures must be interpreted with extreme caution.
**Lateral Eye Movements**

The only significant effect for preferred direction of gaze was found with the neuroticism-stability scale of the Eysenck Personality Inventory, where bidirectional gazers scored lower (more stable, less neurotic) than either the right or left gazing groups. If lateral gaze preference can be taken as a crude indicator of hemispheric activation, this finding can be seen as evidence that flexibility and integration in hemispheric processing—the ability to put both hemispheres to use as the task demands—is related to overall emotional adjustment. This is consistent with evidence that has emerged in the eye movement literature: when relationships have been observed between gaze preference and emotional functioning, these occur with general overall measures of adjustment and not with specific measures such as depression or anxiety (e.g., Gur and Gur, 1975).

**Skin Conductance**

For subjects in the three experimental groups in this study there was no significant evidence that bimanual electrodermal activity reflects differential hemispheric functioning as related to level of depression. Right and left hand skin conductance measures were in general highly correlated and synchronous, although there was correla-
tional evidence that suggested some hemispheric differences with relation to the Blatt et al. (1976) DEQ scale scores. For the experimental groups from this subclinical population, however, unlike reports of hospitalized psychiatric populations, overall hemispheric integration and inter-hemispheric connections appear not to have been disrupted or seriously impaired. It is true that a non-significant but consistent tendency was observed wherein the Self-critical Depressed group showed lower left-than-right hand amplitude levels in comparison with the Dependent Depressed group, which showed greater right-than-left hand amplitude. If these subclinical depressions are continuous with but less severe than clinical depressions, it could be hypothesized that more seriously depressed groups would show the same electrodermal patterns but in greater degree. In order to investigate this possibility, it is clearly important to differentiate these types of depression for clinical populations.

The nature of the theoretical difference between the two depressed groups is consistent with the tendency for right hand activity in the Self-critical Depressed group to be higher than left hand activity (implying greater left hemisphere activity). The left hemisphere does verbal and analytic processing, and this would be the hemisphere most likely to dominate in the Self-critical Depressed group, which is achievement oriented, self-
analytic, and self-evaluating.

The one significant difference involving electrodermal activity among the experimental groups was for left hand amplitude \((F = 3.94, p < .025)\). The Dependent Depressed group showed higher left hand amplitude than either of the other groups. (It should be pointed out that this finding does not reflect differential hemispheric activity, even though it was for the left hand only. The right hand differences among groups were proportional to the left hand, but not great enough in magnitude to achieve significance.) It is of interest to note that this physiological measure was the only variable in this study which differentiated the Dependent Depressed group from the other two groups. Blatt et al. (1976) found that the dependency factor on the DEQ correlated most highly with the somatic-vegetative items on the Zung Scale, while the self-critical factor showed the highest correlations with the psychological items. This is consistent with the present finding that the Dependent Depressed group can be differentiated from the others on a physiological variable, but the fact that the higher skin conductance amplitude suggests greater arousal rather than retardation for this group is inconsistent with Blatt et al., and warrants further investigation.
Personality Variables

Consistent with the findings of Blatt et al. (1976) the findings in the current research for the Self-critical Depressed group showed greater similarity to traditional findings for depressed groups on two other variables (see Tables 2 and 5). This group had the highest mean depression scores on the Zung Self-rating Depression Scale, and the highest (most neurotic) scores on the neuroticism-stability scale of the Eysenck Personality Inventory. Additionally, the Self-critical Depressed group showed marginally significantly lower (more introverted) scores on the extraversion-introversion scale of the Eysenck Personality Inventory (see Table 4). Interestingly, the Dependent Depressed group showed no tendency at all in this direction, even though Eysenck (1968) found that depression in general showed a negative correlation with extraversion.

The findings on the DeWitt Emotion Rating Scale indicated that the Self-critical Depressed group experienced significantly greater depth of guilt and loneliness as well as greater overall depth of emotion (see Table 7) than both of the other groups. It is notable that, again, the Dependency Depressed group showed no difference on any of these measures from the Efficacy group. Because the validity of the Dependent Depressed grouping is demon-
Stratified on other variables in this study, it is of interest to conjecture about the lack of differentiation between this group and the Efficacy group on both the extraversion-introversion scale of the Eysenck Personality Inventory and the DeWitt Emotion Rating scales. Blatt et al. (1976) found that the dependency factor correlated with a tendency toward defensive denial. While this could explain the present findings, it leaves the question of why the denial should manifest itself on some of the self-report measures and not on others. It is possible that the extraversion-introversion scale and experienced depth of guilt and loneliness feelings indeed reflect dimensions on which different types of depression can be differentiated.

**Depressive Experiences Questionnaire: Scale Scores**

Blatt et al. (1976) noted that there is no theoretical reason that the two dimensions of depression identified by the DEQ need to be mutually exclusive. The authors suggested that clinically depressed populations especially may include many individuals showing features of both types of depression. It is of interest, then, that in this sample of college students there was a high correlation between the two depression factors. It is for this reason that it is particularly important to examine the correlations between the scale scores and
other factors in this study, in order to attempt to differentiate relevant aspects of each of these two dimensions of depression.

The dependency depression factor was associated with the possibly greater right hemisphere activity, indicated by the significant correlation with the left-minus-right hand amplitude difference. That this association did not reach significance for the Dependency Depressed group may be because of the high correlation between the two depression factors. If both dimensions of depression exist simultaneously in a number of given individuals, the elevated right hemisphere activity for the dependency factor could be counteracted by a tendency for the self-criticism factor to be associated with higher left hemisphere activity. It can be seen from Table 9 that, while not significant, the correlation between the self-criticism factor and left-minus-right hand amplitude difference was negative.

With regard to the negative correlation between the efficacy factor and mean tonic levels for both hands, it will be recalled that tonic level was not a significant variable when subjects were grouped according to their highest scale scores. Here, however, the efficacy factor shows a direct relationship with lower overall skin conductance levels. If the depression factors can be assumed to be related to some level of anxiety, this finding would
be interpretable in that light. While the depression factors were indeed related to some anxiety measures, this explanation is complicated by the fact that in this study no self-report anxiety measure is correlated with higher skin conductance levels. The meaning of the inconsistent correlations between the two depression factors and the two measures of anxiety (MAACL and DeWitt depth of anxiety) is not clear, but they do indicate that it would be useful to investigate how individual items contributing to anxiety correlate with the different dimensions of depression.

Sex Differences: DEQ Scale Scores

For females only there was a significant negative correlation between the efficacy factor and the dependency factor. This suggests that dependent feelings of depression are more likely to be dysfunctional for females, while there is no necessary relationship for males between dependent depressed feelings and good or bad general adjustment.

For males, the correlations between the dependency factor and skin conductance amplitude, and between the self-criticism factor and tonic skin conductance provided the most striking evidence in this study for the validity of the two different depression dimensions. Unfortunately, while other studies (e.g., LaCroix and Comper, 1979)
have noted that tonic amplitude electrodermal activity can be multidetermined, a clear understanding of the specific underlying processes is not yet available.

The finding that for females, level or type of depression as determined by the DEQ was not associated with differences in skin conductance measures underscores the importance of investigating depression as a separate set of phenomena for the two genders. Other telling indications of sex differences can be seen in correlations between DEQ scale scores and personality variables (see Tables 12, 13, and 14). For example, there were significant correlations for males between the dependency factor and extraversion and between the dependency factor and low depth of sadness ratings. These suggest that denial and externalization may be associated with the dependency dimension of depression for males, but not for females; yet in looking only at correlations for all subjects (Table 12) without examining separate results for each gender, no relationship whatever would be apparent for these variables.

Summary

No relationship was found between lateral eye movement direction and bilateral skin conductance asymmetry in this study. In fact, lateral eye movement direction was found to be related to only one other variable—
Eysenck neuroticism-stability scale, which is a very general measure of adjustment. It will be recalled that this analysis showed bidirectional gazers scoring lower (more stable) than both left and right gazers, thus failing to suggest any actual differences in lateralized hemispheric functioning.

Although there is a substantial body of research which appears to relate direction of eye movements with a variety of personality characteristics and cognitive functions, the possible relevance of these relationships to differential hemispheric functioning must be re-assessed, as suggested by Ehrlichman and Weinberger (1979).

This study did show some correlational evidence for a relationship between asymmetric bilateral skin conductance and type of depression. Without other independent measures of differential hemispheric functioning, however, the interpretation of these data remains problematic. It is still of importance to find more direct indicators of hemispheric activity, and to provide greater validity for indirect measures by using more than one.

A number of findings in this study indicate the importance of differentiating aspects of depression with regard to both subtype and gender. Correlational findings yield promising evidence of the validity of the two dimensions of depression (dependency and self-criticism) under
investigation here. High correlations between these dimensions, however, suggest that caution must be used in applying the depression subtypes diagnostically. Rather, the possibility of observing either or both of these types of depression in a given individual should be acknowledged. The functional meaning of this conclusion for the understanding of depression or for the development of appropriate therapies can only be delineated by further research.
REFERENCES


Gur, R. E. Motoric laterality imbalance in schizophrenia. *Archives of General Psychiatry*, 1977, 34, 33-37.
Gur, R. E. Left hemisphere dysfunction and left hemisphere overactivation in schizophrenia. *Journal of Abnormal Psychology*, 1978, 87, 226-238.


Paykel, E. S. Correlates of a depressive typology. Archives of General Psychiatry, 1972, 27, 203-209.


APPENDIX A

SAMPLE QUESTIONNAIRES
Handedness Questionnaire

Instructions: Note which hand, left or right, you habitually use, or prefer to use, for the acts listed below.

<table>
<thead>
<tr>
<th>LEFT</th>
<th>RIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
</tr>
<tr>
<td></td>
<td>5.</td>
</tr>
<tr>
<td></td>
<td>6.</td>
</tr>
<tr>
<td></td>
<td>7.</td>
</tr>
<tr>
<td></td>
<td>8.</td>
</tr>
<tr>
<td></td>
<td>9.</td>
</tr>
<tr>
<td></td>
<td>10.</td>
</tr>
<tr>
<td></td>
<td>11.</td>
</tr>
</tbody>
</table>
Multiple Affect Adjective Check List
(Short Form)

Below you will find words which describe different kinds of moods and feelings. For each word, decide whether or not it describes how you feel now. If it does, circle it; if it doesn't, don't mark it at all. Some of the words may sound alike, but we want you to mark all the words that describe your feelings. Work rapidly.

1. active  22. discouraged  43. panicky
2. adventurous  23. displeased  44. polite
3. afraid  24. fearful  45. powerful
4. agreeable  25. fine  46. rejected
5. aggressive  26. forlorn  47. satisfied
6. alive  27. frank  48. shaky
7. alone  28. frightened  49. stubborn
8. amiable  29. gay  50. suffering
9. amused  30. gloomy  51. sunk
10. angry  31. healthy  52. sympathetic
11. awful  32. hopeless  53. tender
12. bashful  33. impatient  54. tense
13. blue  34. kindly  55. terrible
14. bored  35. lonely  56. timid
15. calm  36. lost  57. tormented
16. cautious  37. low  58. understanding
17. cooperative  38. mad  59. unhappy
18. cruel  39. merry  60. upset
19. daring  40. mild  61. warm
20. devoted  41. miserable  62. wilted
21. disagreeable  42. nervous  63. worrying
Self-rating Depression Scale

Please mark the following items as they pertain to you. Mark every item by checking the box which best describes how you feel.

<table>
<thead>
<tr>
<th></th>
<th>None of the time</th>
<th>A little of the time</th>
<th>Some of the time</th>
<th>A good part of the time</th>
<th>Most of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I feel down-hearted and blue.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Morning is when I feel the best.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>I have crying spells or feel like it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I have trouble sleeping at night.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I eat as much as I used to.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>I still enjoy sex.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>I notice that I am losing weight.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I have trouble with constipation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Self-rating Depression Scale (continued)

9. My heart beats faster than usual.

10. I get tired for no reason.

11. My mind is as clear as it used to be.

12. I find it easy to do the things I used to do.

13. I am restless and can't keep still.


15. I am more irritable than usual.

16. I find it easy to make decisions.

17. I feel that I am useful and needed.

18. My life is pretty full.

19. I feel that others would be better off if I were dead.

20. I still enjoy the things I used to do.
Depressive Experiences Questionnaire

Listed below are a number of statements concerning personal characteristics and traits. Read each item and decide whether you agree or disagree and to what extent. If you strongly agree, circle 7; if you strongly disagree, circle 1; if you feel somewhere in between, circle any one of the numbers between 1 and 7. The midpoint, if you are neutral or undecided, is 4.

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I set my personal goals and standards as high as possible.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Without support from others who are close to me, I would be helpless.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I tend to be satisfied with my current plans and goals, rather than striving for higher goals.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sometimes I feel very big, and other times I feel very small.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>When I am closely involved with someone, I never feel jealous.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I urgently need things that only other people can provide.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I often find that I don't live up to my own standards or ideals.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I feel I am always making full use of my potential abilities.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>The lack of permanence in human relationships doesn't bother me.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>10. If I fail to live up to expectations, I feel unworthy.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Many times I feel helpless.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I seldom worry about being criticized for things I have said or done.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. There is a considerable difference between how I am now and how I would like to be.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. I enjoy sharp competition with others.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I feel I have many responsibilities that I must meet.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. There are many times when I feel &quot;empty&quot; inside.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I tend not be satisfied with what I have done.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. I don't care whether or not I live up to what other people expect of me.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I become frightened when I feel alone.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I would feel like I'd be losing an important part of myself if I lost a very close friend.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. People will accept me no matter how many mistakes I have made.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. I have difficulty breaking off a relationship that is making me unhappy.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Depressive Experiences Questionnaire (continued)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.</td>
<td>I often think about the danger of losing someone who is close to me.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>24.</td>
<td>Other people have high expectations of me.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>25.</td>
<td>When I am with others, I need to devalue or &quot;under-sell&quot; myself.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>26.</td>
<td>I am not very concerned with how other people respond to me.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>27.</td>
<td>No matter how close a relationship between two people is, there is always a large amount of uncertainty and conflict.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>28.</td>
<td>I am very sensitive to others for signs of rejection.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>29.</td>
<td>It's important for my family that I succeed.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>30.</td>
<td>Often, I feel I have disappointed others.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>31.</td>
<td>If someone makes me angry, I let him (her) know how I feel.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>32.</td>
<td>I constantly try, and very often go out of my way, to please or help people I am close to.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>33.</td>
<td>I have many inner resources (abilities, strengths)</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>34.</td>
<td>I find it very difficult to say &quot;No&quot; to the requests of friends.</td>
<td>7 6 5 4 3 2 1</td>
</tr>
</tbody>
</table>
### Depressive Experiences Questionnaire (continued)

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.</td>
<td>I never really feel secure in a close relationship.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>The way I feel about myself frequently varies: There are times when I feel extremely good about myself and other times when I see only the bad in me and feel like a total failure.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>Often, I feel threatened by change.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>Even if the person who is closest to me were to leave, I could still &quot;go it alone.&quot;</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>One must continually work to gain love from another person: that is, love has to be earned.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>I am very sensitive to the effects my words or actions have on the feelings of other people.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>I often blame myself for things I have done or said to someone.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>I am a very independent person.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>I often feel guilty.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>I think of myself as a very complex person, one who has &quot;many sides.&quot;</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>I worry a lot about offending or hurting someone who is close to me.</td>
<td>7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>---</td>
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<td>----------------</td>
<td>------------------</td>
</tr>
<tr>
<td>46.</td>
<td>Anger frightens me.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>47.</td>
<td>It is not &quot;who you are,&quot; but &quot;what you have accomplished&quot; that counts.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>48.</td>
<td>I feel good about myself whether I succeed or fail.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>49.</td>
<td>I can easily put my own feelings and problems aside, and devote my complete attention to the feelings and problems of someone else.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>50.</td>
<td>If someone I cared about became angry with me, I would feel threatened that he (she) might leave me.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>51.</td>
<td>I feel uncomfortable when I am given important responsibilities.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>52.</td>
<td>After a fight with a friend, I must make amends as soon as possible.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>53.</td>
<td>I have a difficult time accepting weaknesses in myself.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>54.</td>
<td>It is more important that I enjoy my work than it is for me to have my work approved.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>55.</td>
<td>After an argument, I feel very lonely.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>56.</td>
<td>In my relationships with others, I am very concerned about what they can give to me.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
<tr>
<td>57.</td>
<td>I rarely think about my family.</td>
<td>7 6 5 4</td>
<td>3 2 1</td>
</tr>
</tbody>
</table>
Depressive Experiences Questionnaire (continued)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>58. Very frequently, my feelings toward someone close to me vary: there are times when I feel completely angry and other times when I feel all-loving towards that person.</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>59. What I do and say has a very strong impact on those around me.</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>60. I sometimes feel that I am &quot;special.&quot;</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>61. I grew up in an extremely close family.</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>62. I am very satisfied with myself and my accomplishments.</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>63. I want many things from someone I am close to.</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>64. I tend to be very critical of myself.</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>65. Being alone doesn't bother me at all.</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
<tr>
<td>66. I very frequently compare myself to standards or goals.</td>
<td>7 6 5 4 3 2 1</td>
<td>7 6 5 4 3 2 1</td>
</tr>
</tbody>
</table>
Social Reaction Inventory

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. Find the number of the item on the answer sheet and black-in the space under the number 1 or 2 which you choose as the statement more true.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

1.a. Children get into trouble because their parents punish them too much.
    b. The trouble with most children nowadays is that their parents are too easy with them.

2.a. Many of the unhappy things in people's lives are partly due to bad luck.
    b. People's misfortunes result from the mistakes they make.

3.a. One of the major reasons why we have wars is because people don't take enough interest in politics.
    b. There will always be wars, no matter how hard people try to prevent them.

4.a. In the long run people get the respect they deserve in this world.
    b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
Social Reaction Inventory (continued)

5.a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6.a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7.a. No matter how hard you try some people just don't like you.
   b. People who can't get others to like them don't understand how to get along with others.

8.a. Heredity plays the major role in determining one's personality.
   b. It is one's experiences in life which determine what they're like.

9.a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10.a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11.a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
   b. Getting a good job depends mainly on being in the right place at the right time.

12.a. The average citizen can have an influence in government decisions.
    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13.a. When I make plans, I am almost certain that I can make them work.
    b. It is not always wise to play too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14.a. There are certain people who are just no good.  
   b. There is some good in everybody.

15.a. In my case getting what I want has little or nothing to do with luck.  
   b. Many times we might just as well decide what to do by flipping a coin.

16.a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.  
   b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17.a. As far as world affairs are concerned, most of us are the victims of forces we cannot understand, nor control.  
   b. By taking an active part in political and social affairs the people can control world events.

18.a. Most people don't realize the extent to which their lives are controlled by accidental happenings.  
   b. There really is no such thing as "luck."

19.a. One should always be willing to admit mistakes.  
   b. It is usually best to cover up one's mistakes.

20.a. It is hard to know whether or not a person really likes you.  
   b. How many friends you have depends upon how nice a person you are.

21.a. In the long run the bad things that happen to us are balanced by the good ones.  
   b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22.a. With enough effort we can wipe out political corruption.  
   b. It is difficult for people to have much control over the things politicians do in office.

23.a. Sometimes I can't understand how teachers arrive at the grades they give.  
   b. There is a direct connection between how hard I study and the grades I get.
24. A good leader expects people to decide for themselves what they should do.
   b. A good leader makes it clear to everybody what their jobs are.

25. Many times I feel that I have little influence over the things that happen to me.
   b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. People are lonely because they don't try to be friendly.
   b. There's not much use in trying too hard to please people, if they like you, they like you.

27. There is too much emphasis on athletics in high school.
   b. Team sports are an excellent way to build character.

28. What happens to me is my own doing.
   b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. Most of the time I can't understand why politicians behave the way they do.
   b. In the long run the people are responsible for bad government on a national as well as on a local level.
Emotional Experiences Inventory

Instructions:

On each of the following pages you will be given an emotion, grief for example. First, think for a moment and try to recall what it is like for you to experience grief.

Then, using the first group of scales provided, rate how you feel when you experience grief. This may be very different from how you act. For example, you might act very spontaneous but in your thoughts and feelings you could feel a great deliberateness. We are interested in your thoughts and feelings.

Using the second group of scales, rate the effect the emotion has upon you. Again, using the example of grief, the effect upon you might be very strong ... causing you to feel very weak. We are interested in the effect of the emotion upon you. In this case the effect would have been strong.

For each of the scales, place a dash along the line in the place which best describes your feelings.
Example:

Please rate on the scales below how you feel when you experience grief. Rate your thoughts and feelings; these may be different from your overt behavior.

uncontrolled / controlled
deliberate / spontaneous
reflective / impulsive
irrational / logical

Using the scales below, rate how grief affects you. In its action upon you, grief is:

weak / strong
powerful / powerless
little / big
deep / shallow
Emotional Experiences Inventory (continued)

Please rate on the scales below how you feel when you are angry. Rate your thoughts and feelings; these may be different from your overt behavior.

uncontrolled .................................................. controlled
deliberate ...................................................... spontaneous
reflective ....................................................... impulsive
irrational ...................................................... logical

Using the scales below, rate how anger affects you. In its action upon you, anger is:

weak ............................................................... strong
powerful .......................................................... powerless
little ............................................................... big
deep ............................................................... shallow

Please rate on the scales below how you feel when you are sad. Rate your thoughts and feelings; these may be different from your overt behavior.

uncontrolled .................................................. controlled
deliberate ...................................................... spontaneous
reflective ....................................................... impulsive
irrational ...................................................... logical

Using the scales below, rate how sadness affects you. In its action upon you, sadness is:

weak ............................................................... strong
powerful .......................................................... powerless
little ............................................................... big
deep ............................................................... shallow
Emotional Experiences Inventory (continued)

Please rate on the scales below how you feel when you are joyful. Rate your thoughts and feelings; these may be different from your overt behavior.

uncontrolled  ___________________________  controlled
deliberate  ___________________________  spontaneous
reflective  ___________________________  impulsive
irrational  ___________________________  logical

Using the scales below, rate how joyfulness affects you. In its action upon you, joyfulness is:

weak  ___________________________  strong
powerful  ___________________________  powerless
little  ___________________________  big
deep  ___________________________  shallow

* * * * * * * * * * * * * * * * * * * * * * * * * * *

Please rate on the scales below how you feel when you are feeling guilty. Rate your thoughts and feelings; these may be different from your overt behavior.

uncontrolled  ___________________________  controlled
deliberate  ___________________________  spontaneous
reflective  ___________________________  impulsive
irrational  ___________________________  logical

Using the scales below, rate how guilt affects you. In its action upon you, guilt is:

weak  ___________________________  strong
powerful  ___________________________  powerless
little  ___________________________  big
deep  ___________________________  shallow
Emotional Experiences Inventory (continued)

Please rate on the scales below how you feel when you are lonely. Rate your thoughts and feelings; these may be different from your overt behavior.

<table>
<thead>
<tr>
<th>uncontrolled</th>
<th>controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>deliberate</td>
<td>spontaneous</td>
</tr>
<tr>
<td>reflective</td>
<td>impulsive</td>
</tr>
<tr>
<td>irrational</td>
<td>logical</td>
</tr>
</tbody>
</table>

Using the scales below, rate how loneliness affects you. In its action upon you, loneliness is:

<table>
<thead>
<tr>
<th>weak</th>
<th>strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>powerful</td>
<td>powerless</td>
</tr>
<tr>
<td>little</td>
<td>big</td>
</tr>
<tr>
<td>deep</td>
<td>shallow</td>
</tr>
</tbody>
</table>

Please rate on the scales below how you feel when you are anxious. Rate your thoughts and feelings; these may be different from your overt behavior.

<table>
<thead>
<tr>
<th>uncontrolled</th>
<th>controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>deliberate</td>
<td>spontaneous</td>
</tr>
<tr>
<td>reflective</td>
<td>impulsive</td>
</tr>
<tr>
<td>irrational</td>
<td>logical</td>
</tr>
</tbody>
</table>

Using the scales below, rate how anxiety affects you. In its action upon you, anxiety is:

<table>
<thead>
<tr>
<th>weak</th>
<th>strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>powerful</td>
<td>powerless</td>
</tr>
<tr>
<td>little</td>
<td>big</td>
</tr>
<tr>
<td>deep</td>
<td>shallow</td>
</tr>
</tbody>
</table>
Eysenck Personality Inventory

1. Do you often long for excitement? Yes No
2. Do you often need understanding friends to cheer you up? Yes No
3. Are you usually carefree? Yes No
4. Do you find it very hard to take no for an answer? Yes No
5. Do you stop and think things over before doing anything? Yes No
6. If you say you will do something do you always keep your promise, no matter how inconvenient it might be to do so? Yes No
7. Does your mood often go up and down? Yes No
8. Do you generally do and say things quickly without stopping to think? Yes No
9. Do you ever feel "just miserable" for no good reason? Yes No
10. Would you do almost anything for a dare? Yes No
11. Do you suddenly feel shy when you want to talk to an attractive stranger? Yes No
12. Once in a while do you lose your temper and get angry? Yes No
13. Do you often do things on the spur of the moment? Yes No
14. Do you often worry about things you should not have done or said? Yes No
15. Generally do you prefer reading to meeting people? Yes No
16. Are your feelings rather easily hurt? Yes No
17. Do you like going out a lot? Yes No
Eysenck Personality Inventory (continued)

18. Do you occasionally have thoughts and ideas that you would not like other people to know about?  Yes  No
19. Are you sometimes bubbling over with energy and sometimes very sluggish?  Yes  No
20. Do you prefer to have few but special friends?  Yes  No
21. Do you daydream a lot?  Yes  No
22. When people shout at you, do you shout back?  Yes  No
23. Are you often troubled about feelings of guilt?  Yes  No
24. Are all your habits good and desirable ones?  Yes  No
25. Can you usually let yourself go and enjoy yourself a lot at a gay party?  Yes  No
26. Would you call yourself tense or "highly-strung"?  Yes  No
27. Do other people think of you as being very lively?  Yes  No
28. After you have done something important, do you often come away feeling you could have done better?  Yes  No
29. Are you mostly quiet when you are with other people?  Yes  No
30. Do you sometimes gossip?  Yes  No
31. Do ideas run through your head so that you cannot sleep?  Yes  No
32. If there is something you want to know about, would you rather look it up in a book than talk to someone about it?  Yes  No
Eysenck Personality Inventory (continued)

33. Do you get palpitations or thumping in your heart?  
    Yes  No

34. Do you like the kind of work that you need to pay close attention to?  
    Yes  No

35. Do you get attacks of shaking or trembling?  
    Yes  No

36. Would you always declare everything at the customs, even if you knew that you could never be found out?  
    Yes  No

37. Do you hate being with a crowd who play jokes on one another?  
    Yes  No

38. Are you an irritable person?  
    Yes  No

39. Do you like doing things in which you have to act quickly?  
    Yes  No

40. Do you worry about awful things that might happen?  
    Yes  No

41. Are you slow and unhurried in the way you move?  
    Yes  No

42. Have you ever been late for an appointment or work?  
    Yes  No

43. Do you have many nightmares?  
    Yes  No

44. Do you like talking to people so much that you would never miss a chance of talking to a stranger?  
    Yes  No

45. Are you troubled by aches and pains?  
    Yes  No

46. Would you be very unhappy if you could not see lots of people most of the time?  
    Yes  No

47. Would you call yourself a nervous person?  
    Yes  No

48. Of all the people you know are there some whom you definitely do not like?  
    Yes  No
49. Would you say you were fairly self-confident?  
Yes | No

50. Are you easily hurt when people find fault with you or your work?  
Yes | No

51. Do you find it hard to really enjoy yourself at a lively party?  
Yes | No

52. Are you troubled with feelings of inferiority?  
Yes | No

53. Can you easily get some life into a rather dull party?  
Yes | No

54. Do you sometimes talk about things you know nothing about?  
Yes | No

55. Do you worry about your health?  
Yes | No

56. Do you like playing pranks on others?  
Yes | No

57. Do you suffer from sleeplessness?  
Yes | No
Ten Reflective Questions

1. What do you think is the cause of the current energy crisis?

2. People differ in their views about capital punishment; can you think of a reason in favor of, and a reason against capital punishment?

3. In your own words, give the meaning of the saying, "a rolling stone gathers no moss."

4. What do you think are the most important factors in deciding on a place to live?

5. What made you decide on your current major? Or if you haven't decided, what kinds of interests do you have that will influence your choice?

6. What kinds of books do you like to read for pleasure, and why?

7. What is your interpretation of the saying, "a stitch in time saves nine."

8. Describe three characteristics that apply to the kind of movies you enjoy most.

9. What kind of personality traits do you like best in a friend?

10. What are your reactions to this experiment?