

THE EFFECTS OF DEPRESSION ON INTERPRETING FACIAL EXPRESSIONS

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# THE EFFECTS OF DEPRESSION ON INTERPRETING FACIAL EXPRESSIONS

A Thesis

Presented for the

Master of Science

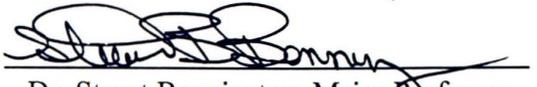
Austin Peay State University

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To the Graduate Council:

I am submitting herewith a thesis written by Jeffrey W. Pyles entitled "The Effects of Depression on Interpreting Facial Expressions." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agency Counseling.



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Dr. Stuart Bonnington, Major Professor

We have read this thesis and recommend its acceptance:



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Accepted for the Council:



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Dean of the Graduate School

## DEDICATION

This thesis is dedicated to my son

Michael Alexander Pyles.

May he one day realize why his father missed the first three years of his life.

## ACKNOWLEDGMENTS

I would like to express my sincere thanks to all the psychology professors at this institution. They have taught me more than their respective subjects. They taught me about myself. I would like to express my gratitude to Dr. Stuart Bonnington, my mentor. His support throughout my career as a graduate student has led to my trust in my knowledge, my growth, and my self introspection. I would like to express my sincere thanks to Dr. LuAnnette Butler, my teacher, my advisor, my counsel, part-time parent, and sometimes my travel agent. Dr. Butler has helped me keep my sanity in trying times, has always given me good advice, and reassured me when things seemed too great. I would also like to thank Dr. Maureen McCarthy. Her patience has redefined the word. Without her help and understanding, graduate school would have been just another layover in life. It is professors like these whom I wish to emulate in the professional world. I hope that I am able to reflect their concern, knowledge, understanding, and empathy.

I would like to acknowledge my family for seeing me through the past three years. I would like to thank my wife for giving me the opportunity to expand my knowledge base. Who else would allow their husband to move 350 miles away to study in a field dominated by women. I would like to thank my father who gave me the unquenchable thirst for knowledge. My thanks goes to my stepmother, Marian, who taught me to appreciate a life of academia. I would like to show gratitude to my mother who, for many reasons, gave me the interest in psychology. I want to express my thanks to my mother-in-law, who was, in many ways, my biggest supporter. I am indebted to my best friend, Kathy. She has always been there for me. It is she who dragged me, kicking and screaming, through graduate school, and always making sure my helmet was on straight.

## ABSTRACT

Research has indicated that depression effects the way many interpret facial expressions. This study uses a nonclinical sample of college students and wide range of depression scores to study the effects of depression on facial expression interpretation. The Beck Depression Inventory-II and a non-standardized facial expression test were used to evaluate participants. T-tests were used to analyze three hypotheses. This study found no significance, contrary to previous research. However, it is possible that this research may have found a distinction between levels of depression and misinterpretation of facial expressions.

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# CHAPTER I

## INTRODUCTION

Communication between people is a complex dynamic, both verbal and nonverbal. As individuals are aware of their surroundings in a public place, they look into the faces of people they see. At a glance, they believe they can recognize how those people are feeling. There are many instances in which facial expressions cannot be interpreted correctly. Brain damage can effectively disengage the systems that allow people to associate a facial expression with an emotion (Golomb & Sejnowski, 2000). People with Huntington's disease and people suffering from obsessive compulsive disorder show some inability in recognizing facial expressions of disgust (Sprenkelmeyer, Rausch, Eysel, & Przuntek, 1998). People with lesions on the amygdala are impaired in recognizing basic emotions and recognizing similarity among emotional expressions. The facial expression of fear is particularly difficult for them to recognize (Hamann & Adolphs, 1999; Sprenkelmeyer, et al., 1998). Surprise, fear, anger, and disgust are confused by those who suffer from mental retardation (Leung & Singh, 1998). The Mental Health Research Institute of Victoria (2000) states that those with schizophrenia have difficulties interpreting facial expressions as well.

Research (Lewinsohn, Gotlib, & Seely, 1997; Lewinsohn, et al., 1994; Libet & Lewinsohn, 1973) indicates that those who suffer depression are less socially skillful than those who do not suffer depression. Some researchers (Giannini, Folts, Melemis, Giannini, & Loiselle, 1995; Zuroff & Colussy, 1986) attribute the poor social skills of those who suffer depression to a deficit in interpretations of facial expressions. Giannini et al. studied

twenty-five outpatient participants who met the criteria for Major Depression and twenty-five control participants for the interpretation of nonverbal facial cues. Results indicate that those who suffered from depression were significantly less accurate in this task than their matched controls. Zuroff and Colussy compared 29 inpatients who suffered from schizophrenia or depression to 15 hospital employees. This study evaluated the ability to match facial expressions to the correct emotions. The conclusion was that both inpatient groups were less accurate in this test.

## CHAPTER II

### EMOTIONS AND FACIAL EXPRESSIONS

#### Emotions

Do human emotions cause facial expressions or do facial expressions cause emotion? According to Izard (1971) there are three major theories behind the study of the evolution of facial expressions: 1) Facial expressions are obtained from sensory reactions, 2) Facial expressions were obtained by necessity through the evolutionary course, and 3) Facial expressions are the result of electro-mechanical laws of neuromuscular function.

In the first theory, Izard (1971) explains that expression is a natural reaction to stimuli and since the face is the primary site of sensory organs, "it becomes the chief vehicle of expression" (p. 53). Izard (1977) restates a theory of emotion by William James in 1884, "the perception of the bodily changes brought about by the stimulus situation," and explains this as the individual's awareness of the sensations that are produced by the incident (p. 55). The second theory explained by Izard (1971) states that some facial expressions are responses that serve to communicate to other animals. This communicative component must be present prior to natural selection's shaping a response into a part of the display (p. 55). Although experiencing an emotion is a personal event, it becomes a social and public display (Izard, 1977). Izard (1971) explains the third theory as a functional aspect of the facial mechanisms essential in the displaying of basic facial expressions (p.55).

According to Izard (1988), there are three major functions of emotional

expression. Expressions help to activate and regulate our emotional responses. They are a form of communication to others about our feelings and our intentions. They elicit emotional responses in others (Izard, 1988).

### Universality of Facial Expression

A number of researchers have questioned whether there is a set of facial expressions that are universally recognized (Ekman, Friesen, & Ellsworth, 1972; Izard, 1971; Cüceloglu, 1970). There is considerable research that supports this hypothesis that facial expressions do have a universality (Ekman et al.; Izard; Cüceloglu). Many cultures have been studied, including preliterate groups with no contact with Western society prior to the study. The same emotions were judged for the same facial behaviors by observers from fourteen different cultures or nations (Ekman et al.).

Ekman et al. (1972) describes a study in which children and adults were given three photographs of a face and told a story which involved an emotion. The participants were then asked to point to the photograph that best depicts the emotion in the story. The participants in this study were from New Guinea and had to meet certain criteria to participate: they had seen no movies or magazines; they neither spoke nor understood English or Pidgin; they had not lived in any Western settlement or government or towns; and they had never been employed by a Caucasian. Ninety-two percent of the participants picked a smiling face and regarded that as happy. Sadness, anger, and disgust were

pointed out at an approximately 80 percent rate. Fear from a surprise was picked at a low rate, 43 percent.

Izard (1971) reports a study in which the stimuli contained two emotions. This stimuli, the Complex Emotion Recognition Task (CERT), was given to approximately the same number of French and American college students. In this experiment, cross-cultural similarity was not expected and the results confirmed this suspicion. The results of this study suggest that only fundamental emotions of expressions are limited universally.

Cüceloglu's (1972) study used sixty facial expressions produced from four eyebrow, three eye, and five mouth pictures. Twenty males each from United States, Japan, and Turkey were asked to name the emotions shown in the picture. Once the participants named the expressions, the forty most consistent names were used in the next step of the study. The participants were then asked to rate the sixty faces according to the forty names given previously. Participants rated the facial expressions on a Likert scale ranging from very similar to very different. It was found that although there are different names used for facial expressions, there are similarities in different cultures among facial expressions and the emotional state.

Both Ekman et al. (1972) and Izard (1971) agree that with the data collected on the numerous studies there is clear proof of innateness and universality of at least what they refer to as the fundamental emotions: interest-excitement, joy-enjoyment, surprise-startle, distress-anguish, disgust-contempt, anger-rage, shame-humiliation, fear-terror.

## CHAPTER III

### DEPRESSION AND FACIAL EXPRESSIONS

Depression has been defined in numerous ways. Depression can be interpreted as a reaction to life events. It may also be explained as a spectrum of disorders from mild, transient mood states to the incapacitation of major depression. Sarason and Sarason (1996) define depression as a temporary mood that may mildly interfere with one's effective behavior or a long-lasting, downward negative mood, usually temporary, that perceptibly interferes with one's ability to act effectively.

#### Non-clinical Depression

Depression is a word that is commonly used in periods of bereavement, the loss of a relationship, or a loss of something personal, i.e., a job. However, at these times it is expected for one to be in a depressed state. Temporary situations have caused these feelings which generally diminish. This state of depression is viewed as a reaction to life stress and is not generally considered as a mood disorder (Sarason & Sarason, 1996 p. 267).

## Spectrum of Depression

Clinical depression can manifest itself in many ways: Major Depressive Disorder, Dysthymia, Cyclothymic as well as others (American Psychiatric Association Diagnostic and Statistical Manual fourth edition (DSM-IV), 1994). These are disorders that must meet minimum time requirements of as little as four days (Hypomanic) to as long as two years (Dysthymic Disorder) by the DSM-IV. "Some of the symptoms of depressive disorder include dissatisfaction and anxiety; changes in appetite, sleep and psychomotor functions, loss of interests and energy; feelings of guilt; thoughts of death; and diminished concentration" (Sarason & Sarason, 1996 p. 271).

## Major Depressive Disorder

The disorder of major depression is indicated by a depressed mood or a loss of pleasure for at least a two week period. Other symptoms, five of which must accompany the primary symptom include: a state of depression most of the day as observed by others or the sufferer, lack of pleasure or interests, significant weight loss not due to dieting, sleeping troubles, retardation or agitation of psychomotor function, guilt or worthlessness, diminished concentration or indecisiveness, or preoccupation with death -- suicidal ideation, a suicide attempt, or a specific plan for suicide. These symptoms must cause distress or impairment in important areas of functioning such as social or occupational.

These symptoms cannot be better explained by other disorders (American Psychiatric Association, 1994 p. 327; Sarason & Sarason, 1996 p. 274).

Major depression can be diagnosed at any age but is more common in the mid-twenties. Variations of this depression occur. One person may display symptoms infrequently and have periods of years without an episode. Another person may have a multitude of episodes, while another may have episodes that become more frequent. Episodes may last a lifetime, become less severe, or completely disappear (American Psychiatric Association, 1994 p. 341).

Major Depression may be brought on by a severe stressor. A loss of a loved one or a divorce may precipitate such reactions (American Psychiatric Association, 1994 p. 341). It is suggested in the DSM-IV that psychosocial events may be a significant trigger in the primary or secondary episode but play a much less important role in subsequent incidents.

### Dysthymic Disorder

A mild form of depression is dysthymic disorder. Dysthymia is less incapacitating than other forms of depression. However, Dysthymia tends to be chronic and can last for years. The length of time can last from two years to twenty (Sarason & Sarason, 1996 p. 72).

Symptoms for Dysthymia include at least two of the following: appetite change, sleep pattern change, low energy or fatigue, low self-esteem, poor concentration or difficulty in decision making, and feelings of hopelessness. Those who suffer Dysthymia

may describe low interest and self-criticism and may see themselves as incompetent or uninteresting. These symptoms cannot be better explained by other disorders (American Psychiatric Association, 1994; Sarason & Sarason, 1996 p. 72).

The course of dysthymic disorder has an early start. Often it starts in childhood, adolescence or early adulthood. Usually Dysthymia is diagnosed along with major depression. It is the major depression that generally precipitates seeking treatment. If the Dysthymia predates the major depression, there is a likelihood of recurrence of major depression (American Psychiatric Association, 1994).

### Bipolar I Disorder

Episodes of mania accompany a form of depression, usually major depression in Bipolar I. Mania is described as a flight of ideas, heightened mood, and elevated psychomotor activity. Infrequently, some may have several episodes of mania before reaching a depressive state (Sarason & Sarason, 1996 p 296). According to the DSM-IV (1994), there are six types of Bipolar I disorder: single manic episode, most recent episode hypomanic, most recent episode manic, most recent episode mixed, most recent episode depressed, most recent episode unspecified.

In the following Bipolar I Disorders, all have the criteria that the symptoms cannot be better explained by other disorders (American Psychiatric Association 1994). The single manic episode disorder is depicted by the presence of only one manic episode with no past major depressive episodes or mixed episodes. A single episode is a change in

“polarity from depression or an interval of at least two months without manic symptoms” (American Psychiatric Association 1994 p. 351).

Most recent episode hypomanic symptoms are: currently in or recently in a hypomanic episode, a manic episode previously, the mood symptoms are caused by “significant distress or impairment in a social or occupational” function (American Psychiatric Association 1994 p. 356).

Most recent episode manic has the following symptoms: currently in or a recent manic episode and one episode of major depression, manic episode, or mixed episode previously (American Psychiatric Association 1994).

The most recent episode mixed is characterized by currently in (or recently) in a mixed episode and previously one episode of major depression, manic episode, or mixed episode (American Psychiatric Association 1994).

Most recent episode depressed symptoms are: currently in or recently in a major depressive episode and previously one episode of manic episode or mixed episode (American Psychiatric Association 1994).

For most recent episode unspecified, the symptoms change: all criteria, excluding duration, are met for a manic, hypomanic, mixed, or major depressive episode; a history of at least one episode of manic or mixed disorder; the symptoms cause distress or impairment of social or occupational functions. The mood symptoms are not due to any treatment or drug use or a medical condition (American Psychiatric Association 1994, Sarason & Sarason, 1996 p. 297).

Because Bipolar is a recurrent condition, most people who have had at least one

episode will have future episodes. The condition will follow a particular pattern unique to the individual. Most episodes will occur following or preceding an episode of major depression. Changes in sleeping and waking patterns, such as a time zone change, may precipitate or make an episode worse for those who suffer manic, mixed, or hypomanic (American Psychiatric Association 1994).

### Bipolar II Disorder

Bipolar II disorder is characterized by at least one occurrence of a major depressive episode that occurs with at least one episode of hypomania. Occasionally, hypomanic episodes alone do not interfere with social or occupational functioning, but the impairment is caused by the major depression. Those who suffer from Bipolar II may not recognize the pattern or erratic behavior; however, others around them will. Information from persons close to the sufferer can be pivotal in correctly diagnosing Bipolar II disorder (American Psychiatric Association 1994).

The symptoms of Bipolar II disorder are as follows: currently in or a history of a major depression episode and currently in or a previous episode of a hypomanic episode, there has never been an occurrence of manic episodes, symptoms cause distress or an impairment of social or occupational functions. These criteria must not be better explained by other disorders (American Psychiatric Association 1994).

As in Bipolar I disorder, Bipolar II hypomania episodes will occur following or preceding an episode of major depression. The condition will follow a particular pattern

unique to the individual. Changes in sleeping and waking patterns, such as a time zone change, may precipitate or make an episode worse for those who suffer manic, mixed, or hypomanic. The interval of episodes tend to decrease with age. “Psychotic symptoms do not occur in hypomanic episodes, and they appear less frequent in the major depressive episodes in Bipolar II Disorder than is the case for Bipolar I Disorder” (American Psychiatric Association 1994 p. 361). Rarely (5-15%) a manic episode (or a mixed episode) will develop during Bipolar II disorder. However, if this does arise, the diagnosis is changed to Bipolar I disorder (American Psychiatric Association 1994).

### Cyclothymic Disorder

Cyclothymic disorder is a chronic, fluctuating mood disorder that involves several periods of hypomania and depressive symptoms. The hypomania symptoms are not sufficient to meet the criteria for manic episode, nor are the depressive symptoms sufficient to meet the criteria for major depressive episode. Manic or mixed episodes may occur after two years during Cyclothymic disorder; in this case a comorbid diagnosis of Cyclothymic disorder and Bipolar I is issued. Similarly, after two years, major depressive episode disorder may occur. Bipolar II and Cyclothymic disorder are diagnosed in this case (American Psychiatric Association 1994; Sarason & Sarason, 1996 p. 296).

Cyclothymic disorder symptoms include: a presence of numerous hypomania episodes with numerous episodes of depression for at least two years, not be without symptoms for more than two months at a time, as well as no manic, major depressive, or

mixed episodes during the two year period (American Psychiatric Association 1994).

Cyclothymic disorder generally starts in adolescence or early adulthood. If the onset is late in adult life, it may suggest a medical condition such as multiple sclerosis. There is a low to medium risk (15-50%) of the individual developing Bipolar I or Bipolar II disorder (American Psychiatric Association 1994; Sarason & Sarason, 1996 p 296).

### Deficiencies in Facial Expression

Research (Berenbaum, 1992; Jaeger, Borod, & Peselow, 1983; Katsikitis & Pilowsky, 1991; Katz, et al., 1993) shows that people who suffer from depression have a limited range of emotional expression. People who suffer depression are less likely to be able to demonstrate positive emotions on demand (Jaeger et al.) and were more likely to show anger and contempt than those who do not suffer from depression (Berenbaum).

When smiling was concentrated on, Katsikitis and Pilowsky (1991) found significant correlations between the depression score and smiling activity. They measured lip and eye movement and found that the higher the score on the depression scale, the less movement in these areas was recorded. Katz et al. (1993) found little eye contact, slow movement, heads held in a downward position, and slow and soft speech. However, slow movement was combined with agitation. In Berenbaum's (1992) study, it was documented that those who suffered depression are "willing to smile when it is appropriate to do so" (p. 935).

Similar research (Sloan, Strauss, Quirk, & Sajatovic, 1997) where facial expressions of the participants were measured, shows those who suffer from depression showed more negative facial emotion in response to negative stimuli than those who do not suffer depression. However, there was no difference in response to positive stimuli, but neither group showed much facial change to this stimuli. There is at least one problem with this particular study, insomuch that the stimuli, International Affective Picture System (IAPS), if given in a random order (the study does not state this), would be difficult to react to each picture individually. Included in this stimuli were positive pictures that included smiling children and appetizing food. Negative stimuli that were included were mutilated human bodies and animals. It may have been difficult for either subject group to respond to the positive stimuli after seeing the negative stimuli.

In a study by Madal and Palchoudhury (1985), responses to facial expressions were studied by those who suffer depression. Their study concluded that depressed patients were likely to be more descriptive of sadness in the faces. The depressed patients were accurately able to discriminate sadness in faces but were not accurate in other emotions.

Subsequent research has been found to support the Madal and Palchoudhury (1985) study (Bouhuys, Bloem, & Groothuis, 1995; Bouhuys, Geerts, Mersch, & Jenner, 1996; Hale, Jansen, Bouhuys, & Van Den Hoofdakker, 1998; Mikhailova, Vladimirova, Iznak, Tsusulkovskaya, & Sushko, 1996). These studies show that people who suffer from depression, at least, have a sensitivity to negative facial expressions. However, Rubinow and Post (1992) found that there was a deficit in recognition of facial affect particularly

those of sadness, happiness and interest. Mikhailova et al. (1996) found that those who suffered depression made more errors in reading facial affect in all stimuli than those who did not suffer from depression, although Mikhailova et al. state that their finding may be due to procedural differences.

Bouhuys et al. (1995) found that when people feel more depressed, they are more likely to see rejection or sadness in ambiguous faces. It was also found that those who were more depressed saw more fear in facial expressions that displayed “less intensive” emotions. It is also reported that the subject group saw less happiness and less invitation in faces that clearly show a clear emotional expression.

Hale et al. (1998) also found that people who suffer depression were more likely to judge facial expressions, both clear and ambiguous, as more negative than did a control group (non-depressive). This finding is explained by Hale et al. that this interpretation may stem from depression sufferers focusing on the “negative aspects of their social surroundings.”

Current research studying the effects of depression and its effects of interpreting facial expression has only been conducted on outpatient psychiatric patients. Hale et al. (1998) used a criteria of a minimal score of 17 or higher on the BDI due to its “fully symptomatic criterion.” However, not all those who suffer from depression may score that high on the BDI-II. A score of 14, according to Beck et al. (1996), is indicative of mild depression. This study will be employing a non-clinical population and may be more representative of a general population than the Hale et al. study.

# CHAPTER IV

## CURRENT STUDY

### Purpose of the Study

The purpose of this study was to understand how those who suffer with depression view facial expressions differently from those who do not suffer from depression. The two forms of measurement were the Beck Depression Inventory-II and a non-standardized facial expression test.

The hypotheses for this study were:

- 1) participants who reported more symptoms of depression will rate the positive faces as more negative than participants who are less depressed;
- 2) participants who reported more symptoms of depression will rate the ambiguous faces as more negative than participants who are less depressed;
- 3) participants who reported more symptoms of depression will rate the negative faces as more positive than participants who are less depressed.

# CHAPTER V

## METHODOLOGY

### Procedure

Participants were recruited by making an announcement during class time. After introduction of the researcher, the professor left the room to avoid any coercion. The students were informed of the purpose of the research. Participants were told research was conducted to study mood and facial expressions, and were informed of the risks and benefits. Those who chose to participate were given the informed consent (See Appendix A) to read and sign. No one declined to participate. Participants were instructed to open the packet and to remove only the facial expression test (See Appendix B). Instructions were given to the participants on how to complete the test and given time to do so. No time limit was imposed. When all participants were finished with the facial expression test, they were instructed to remove the BDI-II from the envelope, read the directions carefully, and to complete the form. Upon completion of the BDI-II, the participants were requested to fill out a demographic questionnaire (See Appendix C). Participants were then asked to place all items back into the envelope and seal it. A debriefing statement was read to the participants informing them of the slight deception concerning the word mood and that depression was actually being studied. Any questions were fully discussed. Pamphlets on depression were included in every test packet and participants were made aware of the counseling center on campus. The average time to complete the entire packet was approximately 30 minutes.

## Participants

Participants for this study were undergraduate students from Austin Peay State University. One hundred and fifty-nine participants were surveyed. Responses from six participants were discarded due to incomplete data or suspect data.

The average score on the BDI-II of all participants ( $N = 102$ ) was 10.7 ( $SD = 9.14$ ) with a range of 0 to 40. Males average score on the BDI-II was 9 ( $SD = 7.94$ ), while the females averaged 11.04 ( $SD = 9.37$ ). A score of fourteen (Beck et al., 1996) is indicative of mild depression. Based on Beck's standard, this group of participants did not register as mildly depressed.

Participants were divided into two groups on the basis of their scores on the BDI-II. The least depressed group (i.e., nondepressed group) consisted of individuals from the lowest one-third of the scores on the BDI-II ( $n = 51$ ). The nondepressed group scored an average of 2.8 ( $SD = 1.94$ ) (See Figure 5-1). The more depressed group (i.e., depressed group) consisted of the highest one-third of the scores on the BDI-II ( $n = 51$ ). The depressed group had an average of 18.6 ( $SD = 6.15$ ) on the BDI-II (See Figure 5-2). The depressed group average score was above the minimum criteria of 17 and considered to be classified as major depression.

Participants in the middle third of the scores ( $n = 51$ ) were removed from the study, leaving 102 participants. Only the data from the top and bottom third of the BDI-II scores were used to ensure a viable segregation between those who are clearly not in a depressive state and those who are bordering on that state.

## Demographics

The average age of the nondepressed group was 25 (SD = 8.77). The ethnicity of the nondepressed group (see Table 5-1) comprised of 66% Caucasian, 23.5% African-American, 3.9% Hispanic, 1.9% Asian, 3.9% did not classify themselves in any group.

The average age of the depressed group was 23 (SD = 5.46). The ethnicity of the depressed group comprised of 82.3% Caucasian, 11.7% African-American, 1.9% Hispanic, 1.9% other, 1.9% did not answer. Overall of the 102 participants, 74.5% were white, 17.6% were African-American, .9% were Asian, others were .9% and 2% refrained from answering. Overall, the average age of the participants was 24.3 (SD = 7.30) with the age range of 18 to 51. Seventeen males and 85 females participated in the study. Average age for males was 24 (SD = 7.70) and females was 24 (SD = 7.27).

Table 5-1. Demographic Information

Demographic Category	Depressed	Nondepressed
Gender		
Male	7	10
Female	44	41
Race*		
Caucasian	42	34
African-American	6	12
Asian	0	1
Hispanic	1	2
American Indian	0	0
Others	1	0

\*2 abstained from answering the ethnicity question in the Depressed group    N = 102

\*1 abstained from answering the ethnicity question in the nondepressed group

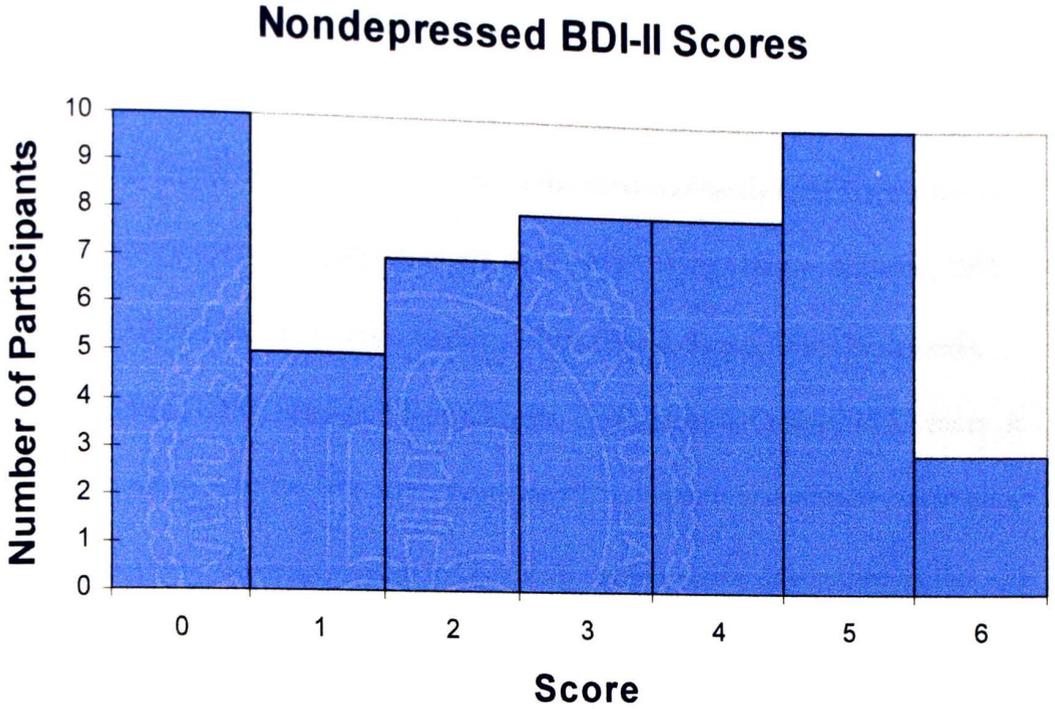
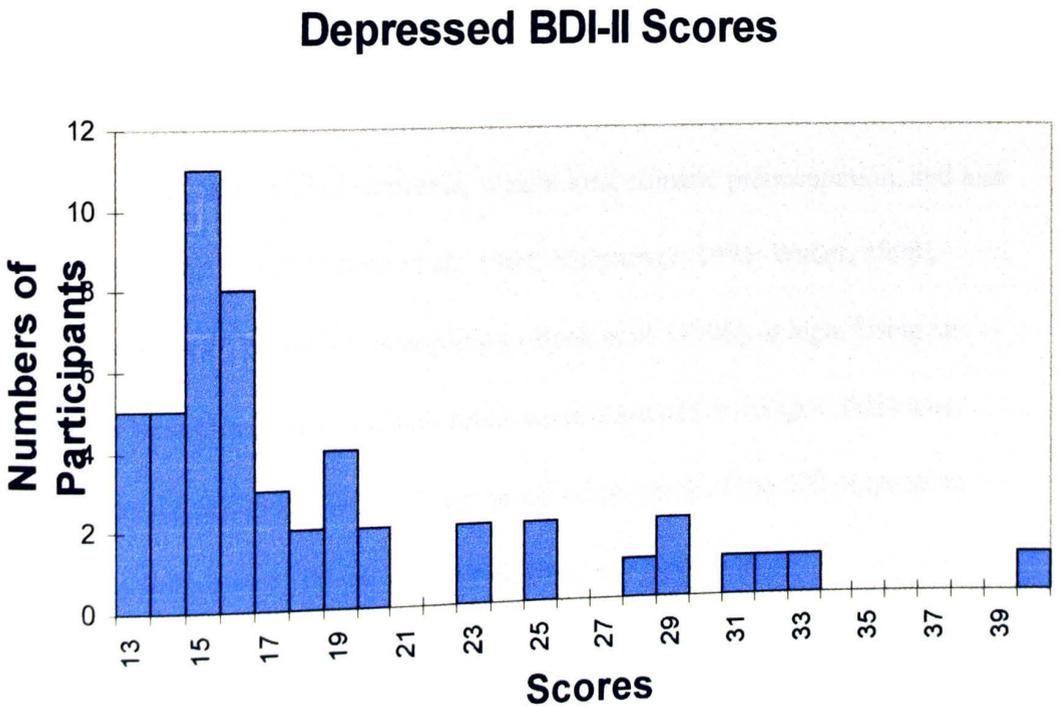


Figure 5-1 Nondepressed BDI-II Scores



## Materials

### Beck Depression Inventory-II

The Beck Depression Inventory is one of the most commonly used inventories of depression in adolescents and adults (Bennett, et al., 1997; Byrne, Baron, & Balev, 1996, 1998; Carlson, 1998; Martinsen, Friis, Hoffart, 1995; Pace & Trapp, 1995; Piotrowski, 1996; Richter, et al., 1997; Schotte, Maes, Cluydts, De Donker, & Cosyns, 1997; Steer, & Clark, 1997; Sundberg, 1992). The BDI-II contains 21 symptoms and attitudes rated on a four-point scale (0-3). Severity of an individual's depression can be determined by this inventory (Bennett et al., 1997; Byrne et al., 1998; Byrne et al., 1996; Byrne & Baron, 1993; Carlson, 1998; Conoley, 1992; Groth-Marnat, 1997; Pace & Trapp, 1995; Santor, Ramsey, & Zuroff, 1994; Stehouwer, 1994; Sundberg, 1992; Waller, 1998). The inventory measures the following: sadness, pessimism/discouragement, sense of failure, dissatisfaction, guilt, expectation of punishment, self-dislike, self accusation, suicide ideation, crying, irritability, social withdrawal, indecisiveness, body image distortion, work retardation, insomnia, fatiguability, anorexia, weight loss, somatic preoccupation, and loss of libido (Groth-Marnat, 1997; Santor et al., 1994; Stehouwer, 1994; Waller, 1998).

The reliability of the BDI-II, according to Beck et al. (1996), is high. Using an approximate one week time lapse, the test-retest correlation of  $r = .93$  ( $p < .001$ ) was found significant by Beck et al. (1996). The internal consistency of the 500 outpatients was a coefficient alpha  $r = .92$  (Beck et al. 1996; Pace & Trapp, 1995).

The content validity can be confirmed by comparing the test with the DSM-III

statistical manual to find that six of the nine criteria are met (Conoley, 1992; Groth-Marnat, 1997). In demonstrating the construct validity of the BDI-II, it was administered with the BDI-IA, the BDI-II predecessor; the correlation found between these two versions was  $r = .93$  with a mean difference of 2.96 where the BDI-II recorded the higher score (Beck et al., 1996). The BDI has been shown to have discriminant validity as well. It has been found that the test can discriminate between major depression and dysthymic disorder and subdivided the population into minor, major, and melancholic/psychotic depressive disorders (Martinsen et al., 1995; Schotte et al, 1997). Bennett et al. (1997) found that the instrument can distinguish between those who suffered from depression and those who suffered from disruptive behavior or anxiety only or those with no diagnosis.

### Facial expression test

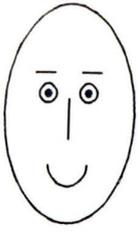
All participants were asked to judge twelve facial expressions. The twelve facial expressions were used in studies by Bouhuys et al. (1996; 1995) and Hale et al. (1998; 1997). This test was developed by Bouhuys et al. as a modified version of the test created by Cüceloglu (1970; 1972). Few studies have used this test due to its non-standardization. Each of the facial expressions is a line drawing, measuring 1.5 inches in width and 2 inches in length, uses four eyebrow types, three mouth types, one eye type and one nose type (see Fig 5-3). Of the twelve expressions, three are ambiguous (3, 4, and 5) and send mixed messages (equal amounts of positive and negative emotions) to the receiver. The nine remaining faces consist of three positive and six negative expressions. These nine are the

most commonly used expressions and therefore should be easily recognized.

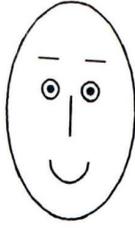
On the facial expression questionnaire, one facial expression was used per page along with seven Likert scales. The Likert scales were used to measure descriptive words that denote emotions (i.e. fear, happiness, anger, sadness, disgust, rejection, and invitation). Fear, happiness, anger, sadness, disgust have a strong cross cultural impact according to research (Cüceloglu, 1970). A good cross cultural understanding of the descriptive words is imperative to the understanding of a diverse ethnic population and therefore removes a confound.

Using drawn faces for this study address confounds that are likely to appear when using photographed faces. In photographs, race may play an influential aspect of how facial expressions are read (Cüceloglu, 1970). While a number of facial expressions are congruent across cultural boundaries, it is possible that one may interpret more into a facial expression due to beliefs of a particular ethnic background. Status and intelligence may also be a confounding factor, depending how the observer reads the face (Cüceloglu, 1970).

People inherently look at faces and judge the attractiveness of that person (Boylan, 2000). Boylan's research indicates that symmetry can dictate whether one is perceived as attractive. A multi-cultural study of sexual attraction found that symmetry is an important part of attraction (Goodwin, 2000). Thus, using drawn faces eliminates possible confounds of attraction and a positive or negative evaluation.



1



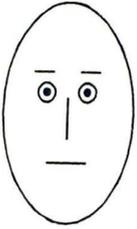
2



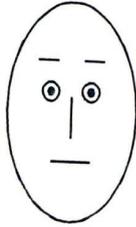
3



4



5



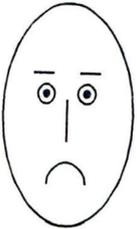
6



7



8



9



10



11



12

Figure 5-3. Facial expressions used in test. 3, 4, 5 are ambiguous expressions.

## CHAPTER VI

### RESULTS

Prior to running t-tests, the five negative emotional words (see Appendix B for more detailed information) were summed and then averaged for each facial expression. The two positive emotional words were averaged in the same manner. There were two averaged scores for each facial expression, a positive and a negative.

The first hypothesis that participants who suffer more from depression will rate the positive faces as more negative than participants who are less depressed was not supported. A t-test was conducted using the mean of the negative emotional words that pertained to positive face number one (see Figure 5-3). When tested, the depressed group did not score significantly higher than the nondepressed group  $t(100) = -0.495, p > .05$ . When the t-test on positive face two was conducted on the negative emotional words, again the depressed group did not score significantly higher than the nondepressed group  $t(100) = -0.472, p > .05$ .

The second hypothesis, participants who suffer more from depression will rate the ambiguous faces (Face 3-5) as more negative than participants who are less depressed was not supported either. A t-test was conducted on the mean of the negative emotional words for ambiguous face number three and was found not significant  $t(100) = -0.363, p > .05$ . A t-test was conducted on the mean of the negative emotional words for ambiguous face number four and was found not significant  $t(100) = -0.269, p > .05$ . For ambiguous face number five, a t-test was also conducted on the mean of the negative emotional words and was found not significant  $t(100) = -0.371, p > .05$ . Although the overall t-tests were not

significant, there appeared to be some salience with face four. When the positive emotional words were tested, the score from the depressed group approached significance  $t(100) = -0.490, p > .056$ . The depressed group mean ( $M = 3.33, SD = 1.30$ ) was slightly higher than the nondepressed group ( $M = 2.84, SD = 1.25$ ) indicating that the depressed group was rating the face as more positive, but not significantly.

Also hypothesized, participants who suffer more from depression will rate the negative faces (Face 6-12) as more positive than participants who are less depressed was not significant. Seven t-tests were performed on the seven positive emotional words.

There was no significance in the following: Face six --  $t(100) = -0.645, p > .05$ .; Face seven --  $t(100) = -0.244, p > .05$ .; Face eight --  $t(100) = -0.442, p > .05$ .; Face nine --  $t(100) = -0.313, p > .05$ .; Face ten  $t(100) = -0.307, p > .05$ .; Face eleven --  $t(100) = -0.277, p > .05$ .; Face twelve --  $t(100) = -0.378, p > .05$ .

## CHAPTER VII

### DISCUSSION

Research (Berenbaum, 1992; Jaeger, Borod, & Peselow, 1983; Katsikitis & Pilowsky, 1991; Katz, et al., 1993) shows that having a limited range of emotional expression is common of people who suffer from depression. Other research (Bouhuys et al., 1995; Hale et al., 1998; Mikhailova et al., 1996; Rubinow & Post, 1992) has indicated that people who suffer depression are more likely to misinterpret facial expressions than those who do not suffer from depression.

The main focus of this study was to determine whether college level students who showed signs of depression were more likely to misinterpret facial expressions. Other studies (Bouhuys et al., 1996; Hale et al., 1998) have primarily investigated a clinical population. Bouhuys et al. (1996), studied depressed outpatient participants six weeks after admission. Hale et al. (1998), studied depressed individuals seeking outpatient treatment, their partners, and controls. It was the intent of this researcher to study a nonclinical population with the goal of increasing generalizability.

Although the current study did not show significance with depression and misinterpretation of facial expressions, it is possible that this is due to a lower level of depression reported. In one previous study (Hale et al., 1998), the mean value for the depressed group was much greater ( $M = 28$ ;  $SD = 5.6$ ) than the average in this study ( $M = 18.6$ ;  $SD = 6.15$ ). Hale et al. used a criteria of a minimal score of 17 on the BDI due to its “fully symptomatic criterion.” Whereas in this study, the lowest score was 13, just below the minimum criterion of 14 for mild depression (Beck et al., 1998). A conclusion from

this study may be drawn indicating that misinterpretation of facial expression may not occur at all levels of depression.

### Limitations

As with previous research, a major limitation of the current study was the population utilized. Although this researcher attempted to use a generalizable population, it must be noted that there are still apparent limitations. Dealing with a college population controlling for previous classes which may have included human interaction classes or other classes that study nonverbal communication would have been impractical. By studying these topics, students could be more likely to understand how exactly perception plays an intricate role in nonverbal communication. It is possible that despite suffering from depression, students who have a working knowledge of facial expressions would be more likely to decipher such expressions based from their knowledge base rather than their true cognitive interpretation.

Due to the nature of the facial expression assessment, it was required to run multiple t-tests. The number of t-tests used in this study have greatly increased the error rate.

Although it is the most widely used depression scale (Bennett, et al., 1997; Byrne, Baron, & Balev, 1996, 1998; Carlson, 1998; Martinsen, Friis, Hoffart, 1995; Pace & Trapp, 1995; Piotrowski, 1996; Richter, et al., 1997; Schotte, Maes, Cluydts, De Donker, & Cosyns, 1997; Steer, & Clark, 1997; Sundberg, 1992), there are some limitations to the

BDI-II as well. According to Beck (1996), a score of 17 on the BDI-II generated a 93% true-positive rate for major depression. With the minimal score of 13 used in this study to indicate depression, this possibly increased the number of false-positives for depression in this sample. Yet, by using this low score, a full spectrum of depression could be studied. It was the intent of this researcher to, in fact, study a full spectrum of depression. It should also be noted that scores of zero and one were counted under the nondepressed group. Beck et al. (1996) stated that these low scores should be treated with some suspicion, as these participants may be faking-good. This phenomenon is seen when the participant chooses an answer viewed as more positive rather than a negative, possibly more truthful answer.

An overpowering limitation includes the fact that the facial expression test has not yet been normed on any population and therefore cannot be determined reliable. As noted in previous studies (Bouhuys et al., 1996), the ecological validity due to its schematic and iconic character and is somewhat questionable. Although there are many limitations of this facial expression test, it is important to note the rationale for using this assessment. In Cüceloglu's 1970 study designed to develop the Facial Expression Test, participants were asked to construct abstract drawings of faces. Findings indicated that although the drawings were abstract, emotion in facial expressions could be determined by the use of its components. For these reasons, this test was used to counteract other confounds that are controllable.

## Recommendations

In future studies, it would be recommended that three populations be researched: clinical, college, and general community. It is further recommended that these populations be matched by gender and BDI-II score. This would aid in generalizability across the population and would also reduce the main confounding factor in previous studies.

The number of t-tests used in this study increased the error rate. Because there were two components of each facial expression, it was necessary to run individual t-tests. This allowed each component to be compared by itself. It would be highly recommended in further study to use a more powerful, but much more elaborate statistical test, such as a multivariate analysis.

## Conclusion

More than 19 million people in 1998 are said to suffer from depression (National Institute of Mental Health, 2000). Considering the high rate of depression among the general population, it is necessary to find effective interventions to deal with these numbers. This study establishes a model for future research by better understanding the way individuals interpret facial expressions along the broad spectrum of depression. A valuable contribution of this research in this area is in its sample size. Previous studies (Bouhuys et al., 1996; Hale et al., 1998) used a smaller sample size compared to the present study.

Misinterpretation of facial expressions can cause a multitude of social problems. It has been stated (Albright, 1999) that depression can obstruct interpersonal growth and the realization of developmental milestones. Relationships may fail due to miscommunication. The misinterpretation of facial expressions may effect one's dating life, friendships, and be a disadvantage in the workplace. With early identification and intervention when depression is at a subclinical level, a more successful outcome may result. This knowledge may be useful by integrating a program into elementary and high school conflict resolution classes. Interpreting nonverbal communication is vital to communication; therefore, individuals who grow up in an environment where facial expressions are limited or they themselves cannot interpret expressions could be at a disadvantage when compared with their peers.

Gibson (2000) claims a relationship exists between level of depression and an individual's attributional style. Depressed individuals generally have a pessimistic attributional style that negative events are stable, global, and internal but believing positive events as inconsistent and external (Gibson, Dixon & Ahrens, 1992). Depression sufferers focus on the negative aspects of their social surroundings (Hale et al. 1998).

It is this researcher's belief that the attributional style held by those who suffer depression lead them to irrational thought patterns due to the misinterpretation of facial expressions. It has been noted in research (Hayes, Castonguay, & Goldfried, 1996; Hollon, Shelton, & Davis, 1993; Pace & Dixon, 1993; Wood, Harrington, & Moore, 1996) that by reconstructing the cognitive process of those who suffer depression minimizes the effect of the impairment. By helping those who suffer from depression

better interpret facial expressions, strengthening social and communication skills is possible.

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## APPENDIXES

## **Consent to Participate in a Research Study Austin Peay State University**

You are being asked to participate in a research study. This form is intended to provide you with information about this study. You may ask the researchers below about this study or you may call the Office of Grants and Sponsored Research, Austin Peay State University (931) 221-7881 with questions about the rights of research participants. Please read the following material carefully. It explains the purpose of this study, the procedures used, and the risks and benefits of participating.

### **1. PRINCIPAL INVESTIGATOR**

Jeffrey Pyles, Graduate Student, Austin Peay State University, Psychology Department, Clarksville, TN (931) 647-8498

### **FACULTY SUPERVISOR**

Dr. Stuart Bonnington, Professor, Psychology Department, Austin Peay State University, (931) 221-7233

### **2. PURPOSE OF THIS RESEARCH**

The purpose of this study is to investigate the effects of mood and facial expressions.

### **3. PROCEDURES FOR THIS RESEARCH**

You are being asked to participate in a research study. If you agree to participate in the study, you will be given two instruments to complete. All data collected from this study will be kept confidential to the extent provided by law. The only people that will have access to the original instruments will be Jeffrey Pyles, the principal investigator, and his faculty supervisor, Dr. Stuart Bonnington from the university. The data will be kept in a locked file with the only the principal investigator and the faculty supervisor having access to it. If anytime during the study you decide not to participate, your data will be destroyed. If data are published, it will be done so in a way that will not reveal your identity.

### **4. POTENTIAL RISKS AND BENEFITS TO YOU**

Risks include the possibility that filling out these instruments will affect your mood. In some cases, instructors may issue extra credit to those who participate in research. However, this is done at the instructors discretion. If proof of participation is needed, please ask for a verification slip and deliver that to your instructor.

### **5. INFORMED CONSENT STATEMENT**

Please read the following statements carefully. They describe your rights and responsibilities as a research participant.

I agree to participate in the present study conducted by Jeffrey W. Pyles, graduate student at Austin Peay State University in the Department of Psychology, under the direct supervision of Dr. Stuart Bonnington, faculty member at Austin Peay State University in the Department of Psychology.

I have been informed orally and in writing of the purpose of this study, the risks and benefits of the study, and how the information I provide will be managed.

I understand that no identifying marks will be connected with the data I provide. The data I provide, before and after coding, will be kept in a secure location and will be properly destroyed after its intended use.

I understand that I may withdraw from participation at anytime without any punishment or prejudice. Any data completed prior to my withdrawal will be withdrawn and properly destroyed.

By signing this from, I understand that I willingly consent to participate in the present study. I acknowledge that I have been provided a copy of this form to keep in my records.

---

Name (Please Print)

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Signature

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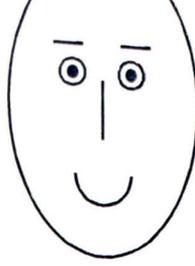
Date

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Witness

## Facial Expression Test

On the following pages you will find a facial expression on each page. On each page, you will find seven different scales. Rate each expression on all seven scales to the best of your ability. Once you have answered all seven scales, go on to the next page. Do not return to previous pages. Your first impression is important.



Does not  
express the emotion

1

2

3

Neutral

4

**Fear**

5

Expresses the  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Happiness**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Anger**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Sadness**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Disgust**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Rejection**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Invitation**

5

Expresses the express  
emotion very strongly

6

7



Does not  
the emotion

1

2

3

Neutral

4

**Fear**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Happiness**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Anger**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Sadness**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Disgust**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Rejection**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Invitation**

5

Expresses the express  
emotion very strongly

6

7



Does not  
the emotion

1

2

3

Neutral

4

**Fear**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Happiness**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Anger**

5

Expresses the express  
emotion very strongly

6

7

Does not  
the emotion

1

2

3

Neutral

4

**Sadness**

5

Expresses the express  
emotion very strongly

6

7

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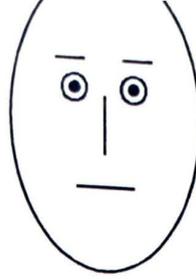
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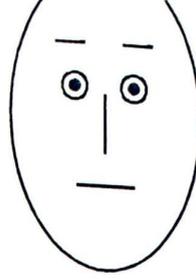
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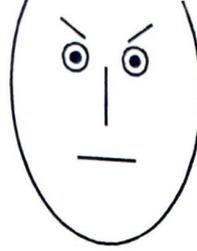
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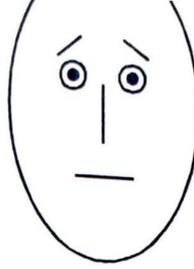
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## Demographics

This section is for demographic purposes only. No information will be released except on a general basis.

1. Your age as of your last birthday \_\_\_\_\_
2. Your sex: Male \_\_\_\_\_ Female \_\_\_\_\_
3. Your ethnicity: Caucasian \_\_\_\_\_ African-American \_\_\_\_\_  
Asian \_\_\_\_\_ Hispanic/Latino \_\_\_\_\_  
Pacific Islander \_\_\_\_\_  
American Indian (including Inuit) \_\_\_\_\_

## VITA

Jeffrey William Pyles was born in Middletown, Ohio in September 1967. He attended John XXIII parochial Elementary School and graduated from Bishop Fenwick High School in June 1986. He enrolled in Miami University (Ohio) the following year and found his varying interests a distraction and left school in 1987. After his marriage in 1993, Jeffrey reentered college at Miami University with more focus. He graduated in 1997 with a Bachelor of Arts majoring in Psychology. In August 1998, he entered graduate studies in Guidance and Counseling at Austin Peay State University in Clarksville, Tennessee, concentrating on Agency Counseling. While at Austin Peay, he counseled middle school children and worked with Kathy Saucier, the pioneer of a parenting program, Solutions for Families. He received his Masters of Science degree in December, 2000.