A TRAINING PROGRAM TO IMPROVE EMOTION

RECOGNITION IN SCHIZOPHRENICS

By

M. LEE BERRYMAN

Bachelor of Arts
Baylor University
Waco, Texas
1985

Master of Science
Oklahoma State University
Stillwater, Oklahoma
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Thesis Approved:

Kenneth D. Sandvold
Thesis Adviser

Jid H. Thomas

William H. Rambo

Alfred Carlozzi

Norman N. Durham
Dean of the Graduate College

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A long line of evidence implicates perceptual problems on the

part of schizophrenics. This is especially true for schizophrenics'

difficulty in recognizing facial emotions. One of the earliest studies

of this phenomenon was by Dougherty, Bartlett, and Izard (1974).

They presented photos of what they considered to be the eight

fundamental emotions (excitement, joy, surprise, sadness, disgust,

anger, shame, and fear) to a group of schizophrenic in-patients and a

group of controls. Each subject was asked to give a free-response

description and then to choose one of eight feeling labels provided.

The results indicated that with the exception of joy, schizophrenics

were considerably less accurate than controls, especially on the

emotions of excitement, sadness, and shame.

Other studies have supported the basic findings of this early

study. Muzekari and Bates (1977) showed that schizophrenics were

significantly less accurate than normals in identifying emotions from

both posed photographs of the face and nonverbal videotape scenes.

Cutting (1981) found that acute schizophrenics disagreed with

remitted psychotics and psychotic depressives in judging the

friendliness and meanness of photographic faces, but agreed with

these control groups in judging their age. Finally, Zuroff and Colussy

(1986) found that schizophrenics were less accurate at labeling

facial emotions than normals; also they were more likely to be

incorrect when labeling an expression as positive or neutral.

Furthermore, even when different methods are used and different variables are examined, the general finding of Dougherty et al. (1974) is upheld. Instead of the common labeling task, Mandal (1986) required his schizophrenic subjects to judge the similarity of two photos of facial affect. Still, schizophrenics differed markedly from normal controls and depressed controls, especially when schizophrenics judged happiness and sadness as having a high degree of similarity. Pilowsky and Bassett (1980) measured a great many more variables, such as failure to comment on the affect of a photo, bizarre responses to the photos, and comments on the mental state of the person in the photo. Parallel results were discovered with schizophrenics making significantly more bizarre responses to neutral, anger, sadness, and fear photos, and making significantly fewer comments about affect and the mental states of actors, than did controls. Finally, Feinberg, Rifkin, Schaffer, and Walker (1986) found that schizophrenics not only had more difficulty than depressives and normal controls processing facial stimuli when presented right side up, but also had difficulty when the facial stimuli was inverted. Indeed it seems that a great deal of research backs the basic premise that schizophrenics differ markedly from normal controls in the accurate perception of facial emotions.

Having substantiated the premise that differences do exist between schizophrenics and normals in the accuracy of facial emotion

recognition, it is important to rule out the possibility of any factors which may confound this difference. Three important factors are gender, race, and age. In the area of gender differences, there is conflicting evidence. Kozel (1969) found that women were better at perceiving happiness, fear, disgust, and sadness than their male counterparts. Drag and Shaw (1967) found similar results and suggested that the greater accuracy of women is a function of practice and their characteristic role in society. Despite these studies, a greater amount of evidence suggests that there are no differences either between normal males and females (Black, 1969; Howell & Jorgenson, 1970; Ekman & Friesen, 1971), or between schizophrenic males and females (Muzekari & Bates, 1977; Walker, Marwit, & Emory, 1980) in their ability to accurately judge facial emotions.

Evidence of racial differences in the ability to recognize facial emotions is far less conclusive. In Black's (1969) study, Afro-American subjects were superior judges of facial emotions as compared to Caucasian subjects. Kozel and Gitter (1968) found similar results. On the other hand, Eckman and Friesen (1971), who have done a great deal of research in this area, concluded that the association between particular facial patterns and discrete emotions is universal. A separate study by Kozel (1969) also suggests no significant differences between whites and blacks in the ability to recognize facial emotions. Unfortunately, no race studies have been

done specifically on schizophrenics.

According to Walker et al. (1980), differences in emotion recognition do seem to be a function of age. Normals tend to increase in accuracy from childhood to adolescence, leveling off beyond this point. Schizophrenics tend to improve in facial recognition ability from childhood to adolescence (13-19 years), and then decrease in accuracy from adolescence to adulthood (20-50 years). Despite the similar patterns between schizophrenics and normals in childhood and adolescence, schizophrenics are significantly deficient at each age level when compared to normals.

Just as the sex, race, and age of the perceivers can be confounding factors in the accurate perception of facial emotions, these factors in the posers can also influence people's ability to correctly label emotions. First, according to Black (1969), female posers were judged with greater accuracy than male posers. In the same study, he found Caucasian expressers superior to their Afro-American counterparts, while Afro-Americans contributed to more erroneous perceptions of emotion. Contrarily, Kozel (1969) discovered that black expressers were perceived with significantly greater accuracy by white perceivers, whereas white expressers enacting happiness and fear were judged with the same degree of accuracy by white and black perceivers. Finally, in the area of age effects, Malatesta and Fiore (1987) suggested in their study that it is more difficult to correctly interpret facial emotions in elderly people

(70 years) because the facial lines and wrinkles may mimic emotional states.

If one accepts the basic idea of a perceptual deficit and the elimination of major confounding variables, then the next question must be why such a deficit exists. In a review of the literature, it appears that the inability of schizophrenics to correctly label facial emotions is simply part of a more general psychological deficit. Buss and Lang (1965) did an excellent review of the five theories which attempt to explain the general psychological deficit found in schizophrenia. The first theory, the social censure theory, states that schizophrenics are abnormally sensitive to criticism and that this sensitivity accentuates their difficulty differentiating cues in the environment. In its support is the fact that in some experiments a deficit has been found to increase when censure stimuli are introduced (Rodnick & Garmezy, 1957; Garmezy, 1952; Webb, 1955; Bleke, 1955). However, other research has found no difference in the censure response of schizophrenics and normals (Smock & Vancini, 1962; Alvarez, 1957). Furthermore, data interpreted in support of the censure theory can often be explained in other terms, such as the way groups were defined or the saliency of the cues that were given (Smock & Vancini, 1962). The strongest contradictory evidence, however, is that on a great variety of tasks, social censure actually reduced the difference between schizophrenics and normals rather than increased it. This held true for both the implementation of

praise and punishment (Benton, Jentsch, & Wahler, 1960; Olson, 1958; Shankweiler, 1959; Johannsen, 1962) and the induction of negative reinforcement (Rosenbaum, Mackavey, & Grisell, 1957; Cavanaugh, 1958; Brown, 1961). As a general theory, Buss and Lang (1965) conclude, the social censure approach is not sufficiently comprehensive and involves a major inconsistency- that some schizophrenics actually improved with censure rather than worsen.

The second theory proposes that schizophrenics are especially sensitive to, and therefore disrupted by affective stimuli. This assumption has been verified in many experiments, which have demonstrated poorer performance by schizophrenics with affective stimuli than with neutral stimuli. The difficulty with this evidence is that so many stimuli have been labeled affective that the term is no longer precise. Indeed, studies have utilized for affective stimuli anything from TAT picture cards (Baxter & Becker, 1962; Lebow & Epstein, 1963) to verbal and nonverbal expressions of emotion (Pilowsky & Bassett, 1980; Walker, McGuire, & Better, 1984), to human versus nonhuman stimuli (Davis & Harrington, 1957; Whiteman, 1954; Brodsky, 1961). However, as Buss and Lang (1965) point out, if the term affective is defined so loosely, the theory lacks precision; and if its definition is restricted, then the reliability of the phenomenon must be questioned. Therefore, this theory is left immobilized by this problem in definition, and cannot go forward until it is resolved.

Another group of theorists have argued that the psychological deficit that exists in schizophrenia is attributable not to an oversensitivity to affective stimuli, but to a lack of motivation, or a lack of interest in meeting the task requirements and pleasing the experimenter. Some of these theorists have used the finding that schizophrenics respond to physical punishment (Cohen, 1956; Rosenbaum, Mackavey, & Grisell, 1957) as support for this theory. In other words, if schizophrenics are able to approach normal functioning when reinforced with pain termination, but not with social reinforcers, then a lack of social motivation is implied. However, an overwhelming number of studies support the premise that schizophrenics do respond to social motivation (Spohn & Wolk, 1963; Wing & Freudenberg, 1961; Stotsky, 1957; Benton, Jentsch, & Wahler, 1960). In fact, Buss and Lang (1965) purport that when the motivational factors did fail, it seemed less due to schizophrenics unresponsiveness or lack of motivation than to the lack of clear supplementary cues given them. It seems that schizophrenics are unable to instruct themselves, and so can only improve their performance when additional information regarding their mistake is given (Ladd, 1960). Buss and Lang conclude that schizophrenics do not suffer from an inability to respond to social motivators.

The fourth theory attempting to explain the psychological deficits in schizophrenia is the regression theory. The regression theory assumes that there is a fixed sequence of developmental

learning and concept formation, and that psychopathology represents a retracing of these developmental steps. Therefore, schizophrenics are more cognitively regressed than normals, and appear more on the level of children. Studies do indicate some similarities between schizophrenics' concepts and those of children, such as tendencies toward more primitive concepts, concreteness, and deviance from adult concepts (Arieti, 1955; Choderkoff & Mussen, 1952; Flavell, 1956; Harrington & Ehrmann, 1954). However, there are also marked differences between the concepts of children and those of schizophrenics. That is, the concepts of schizophrenics are usually more abstract, bizarre, and eccentric than those of children (Chapman & Taylor, 1957; Fey, 1951; Lothrop, 1960; McGaughran, 1954; McGaughran & Moran, 1956, 1957; Williams, 1962). Furthermore, it is not sufficient to demonstrate similarities between children and schizophrenics. It must be shown that schizophrenics retrace a developmental sequence when they become ill and later relearn these developmental tasks as they move towards health. Goldman (1962) has been the only researcher to attempt to demonstrate this process with little success. Therefore, the regression theory remains tenuous at best.

The fifth and final theory reviewed by Buss and Lang (1965) is the interference theory. This theory suggests that a schizophrenic's ongoing response suffers from interference from irrelevant, external cues and from internal stimuli which consist of deviant thoughts and

associations. These irrelevant and distracting stimuli prevent him from maintaining a clear focus on the task at hand, and the result is a psychological deficit. The theory continues that the stimuli can interfere in one of two ways. Either the schizophrenic is overinclusive in which case he allows the irrelevant stimuli to intrude (Zaslow, 1950; Moran, 1953; Loviband, 1954; Chapman & Taylor, 1957; Payne & Hewlett, 1960), or he becomes overexclusive in an attempt to defend against the distracting internal stimuli (Seth & Beloff, 1959; Chapman, 1961). This theory in both its forms has a large amount of evidence to support it. Further, it can account for most of the findings of the other theories. For example, the theory which explains deficits in terms of the schizophrenic's reactivity to affective stimuli can also be explained by the interference theory, since affective stimuli have been shown to elicit more associations than neutral stimuli (Deering, 1963), and the greater the number of associations, the greater the interference. Thus, affective stimuli are not necessarily aversive to schizophrenics, but they simply encourage more irrelevant information. Buss and Lang's (1965) conclusion is that, although more study is needed, the interference theory has the most promise as a comprehensive explanation of the psychological deficits found in schizophrenics.

Although it seems clear that facial emotion recognition difficulties on the part of schizophrenics is only a part of a more generalized psychological deficit, three theories have set out to

specifically explain schizophrenics' emotion recognition difficulties.
Not surprisingly, two of the three theories come directly out of the
five theories reviewed by Buss and Lang (1965). The first theory is
an extension of the original interference theory first noted by
Cameron (1938). The extension purports that with regard to facial
expressions, schizophrenics will have a tendency to include irrelevant
and extraneous elements of the face. Therefore, the key details which
serve as signals to which facial emotion is being expressed are
missed or confused with uninformative details, and the emotion is
either not perceived, or is confused with another emotion.

The second theory, which is put forth by Walker and his
colleagues (1980), is a corollary of the earlier theory that
schizophrenics are more sensitive to affective stimuli common in
social situations. This theory states that because of this sensitivity,
schizophrenics avoid social situations whenever possible. This
withdrawal from society, which is a well documented symptom of
schizophrenia (Walker, et al., 1980; Goldfarb, 1970), reduces the
schizophrenic's opportunity to participate and observe social and
emotional behavior. Thus, over time, they become poor at recognizing
and interpreting nonverbal cues, the most important of which are
facial expressions. A logical extension of this theory is that the
longer the schizophrenic is socially withdrawn, the greater his/her
perceptual deficit becomes. This is, in fact, what Walker et al.
(1980) found in their cross-sectional study of facial recognition.

Schizophrenic children were more accurate in recognizing emotions than adults who had a longer history of the disorder.

The third and most recent theory was proposed by Feinberg et al. (1986), who suggest that the deficits in emotion recognition may be just a part of a more generalized impairment in the processing of complex visual stimuli. This conclusion was partially based on their finding that schizophrenics had difficulty processing inverted faces as well as correctly oriented ones. Their belief was that an inverted face represented only a complex group of stimuli as opposed to the familiar, emotionally-laden aspects of a correctly oriented face. A number of studies substantiate the existence of information processing difficulties in schizophrenics (Miller, Saccuzzo, & Braff, 1979; Saccuzzo & Braff, 1981; Braff & Saccuzzo, 1981; Spaulding, Rosenzweig, & Huntzinger, 1980). In addition Asarnow and MacCrimmon (1981) have suggested that this general information processing deficit can be broken down and studied as four specific problems: a slower rate of information processing (Saccuzzo, Hirt, & Spencer, 1974; Braff & Saccuzzo, 1982), dysfunctions in stimulus intensity modulation (Asarnow, Cromwell, & Rennick, 1978), deficient iconic storage, and problems transferring information from a spatial array into a sequential verbal response (Knight, Sherer, & Putchat, 1978). Clearly, this is a new theory, but one which is attracting a great deal of new interest and research.

None of the three specific explanations of facial recognition

deficits in schizophrenics precludes the practicality of a treatment procedure. In fact, whether the problem is a result of a cognitive deficit or a social deficit, it has been suggested that a well designed program could improve the recognition accuracy of schizophrenics as compared to normals. Izard (1971) has, in fact, claimed that a treatment program which includes teaching identification and practice of discrete facial emotions would be beneficial. In addition, Pilowsky & Bassett (1980), after finding differences in accuracy between schizophrenics and normals, suggested that patients with schizophrenia might respond to training in recognition of facial emotions.

These claims make sense since other studies have shown that schizophrenics can benefit from well designed training programs. For example, in a related area, researchers have shown social skills training to be very effective with schizophrenics. Wallace and his colleagues (Wallace, Nelson, Liberman, Aitchison, Lukoff, Elder, & Ferris, 1980) did an extensive review of studies that attempted social skills training with schizophrenics. In their work, they point out that two types of experimental methodology- single subject designs and group comparisons- have been used to evaluate the effectiveness of social skills training. Wallace and his associates further conclude that irregardless of the method used to evaluate outcome or the outcome measures employed, both the single subject designs (Bellack, Hersen, & Turner, 1976; Edelstein & Eisler, 1976;

Eisler, Hersen, & Miller, 1974; Foy, Eisler, and Pinkston, 1975;

Frederiksen, Jenkins, Foy, & Eisler, 1976; Hersen & Bellack, 1976;

Hersen, Turner, Edelstein, & Pinkston, 1975; Williams, Turner, Watts,

Bellack, & Hersen, 1977; Matson & Stephens, 1978; Liberman, Lillie,

Falloon, Vaughn, Harpin, Leff, Hutchinson, Ryan, & Stoute, 1978) and

the group comparison designs (Argyle, Trower, & Bryant, 1976;

Falloon, Lindley, McDonald, & Marks, 1977; Finch & Wallace, 1977;

Goldsmith & McFall, 1975; Monti, Fink, Norman, Curran, Hayes, &

Caldwell, 1979; Percell, Berwick, & Beigel, 1974; Field & Test, 1975;

Goldstein, Martens, Hubben, Van Belle, Schaaf, Wiersima, & Goldhart,

1973; Longin & Rooney, 1975; Liberman, Mueser, & Wallace, 1986)

demonstrated the effectiveness of social skills training in

schizophrenic patients. For a more detailed review see Appendix A.

Despite the great amount of evidence supporting a significant

deficit in the ability of schizophrenics to recognize facial emotions,

and the evidence supporting the potential effectiveness of a training

program designed to improve this ability, no attempts have been made

to assess any type of training program specifically designed to

decrease this deficit. This is a surprising fact given the great

impact a successful intervention program could have. If

schizophrenics could be trained to correctly recognize facial

emotions, they would be able to better understand what others were

communicating to them, both verbally and nonverbally. Thus, they

would be able to interact with others more appropriately, thereby

gaining a better chance to develop a social support network and to function independently in society.

Even though a program does not yet exist for schizophrenics, a training program has been developed by Eckman and Friesen (1975) to improve emotion recognition in a normal population. Their program involves a discussion of the experience of each emotion, followed by a detailed description of the appearance of each emotion by focusing on facial cues. These basic techniques have also been purported to improve facial emotion recognition in brain-injured patients who have a great deal of difficulty in this area (Zeiner, 1987). An attempt was made here to improve schizophrenics' recognition of the emotions happiness and sadness, using the same basic treatment program suggested by Eckman and Friesen (1975) and a pretest-postest verbal labeling task. Two specific hypotheses were put forward. The first hypothesis claimed that the treatment programs employed would improve the schizophrenics' ability to recognize the facial emotions of happiness and sadness. The second hypothesis stated that the training program would be more effective than the practice program, substantiating the idea of a perceptual deficit, either from interference (Buss & Lang, 1965) or an information processing deficit (Feinberg et al, 1986), and not just a lack of practice due to social withdrawal (Walker et al., 1980). The hope of this research is that it will lead to the development of an effective intervention program which will improve schizophrenics' ability to relate and communicate

with others, and that it will also increase our understanding of why specific perceptual deficits exist.

Method

<u>Subjects</u>

Eighteen subjects were recruited from the Transitional Living Facility of Red Rock Comprehensive Mental Health Center in Oklahoma City, Oklahoma. All subjects were volunteers and were informed of all the risks and benefits of participation in the study (see Appendix B). Subjects were diagnosed as having schizophrenic disorder using the Diagnostic and Statistical Manual of Mental Disorders, third edition-revised (DSM-III-R, 1987) by a treatment team, including a psychiatrist, a psychologist, and a social worker. Patients with schizoaffective or schizophreniform disorders were excluded from the study. The mean age of the subjects was 35.7 years (SD = 6.90).

The same treatment team that was responsible for diagnosing the subjects also worked to give each subject his/her global assessment of functioning rating. The global assessment of functioning scale (GAF scale) attempts to quantify people on the basis of their psychological, social, and occupational functioning on a hypothetical continuum of mental health to mental illness. Studies have verified its reliability and validity (Endicott, Spitzer, Fleiss, & Cohen, 1976). It has a range of scores from 1--persistent danger of severely hurting self or others, to 90--absent or minimal symptoms, and good functioning in social and occupational functioning. A complete list of

the GAF scale scores and what they mean is contained in Appendix C. The subjects in this study were rated using the GAF scale every three months, and were rated before the onset of the study. The mean GAF scores for all subjects was 36.4 (SD= 4.48).

Subjects were randomly divided into one of three groups: a training group, a practice group, or a control group. Random sampling was continued until each group had approximately the same number of men and women, and Caucasian and Afro-Americans. The result of this extended random sampling was that each group contained five Caucasians and one Afro-American. Also each group contained five men and one women, except for the control group which contained four men and two women.

Materials

A total of seventy-three slides was used in the study. Of these slides, forty-five were selected from Ekman and Friesen's collection of research slides, *Pictures of Facial Affect* (Ekman, 1976). These slides can best be described as 35mm black and white slides which portray adult male and female Caucasian actors expressing the emotions of happiness (17 slides), sadness (14 slides), and neutrality (14 slides). Twenty-four of these slides were used for the pretest, postest, and follow-up trials. Eight slides, four males and four females, were selected from each of the three emotions from the total list of slides in those categories. Then they were placed in random order. This same order was used for each trial. The other

twenty-one research slides -- nine "happy," six "sad," and six "neutral"-- were used as practice slides in the training and practice groups. There were no actors that were shown expressing the same emotions of happiness, sadness, and neutrality, in both the pretest slides and those used for training and practice. A more complete description of these slides as well as substantiation of their reliability is contained in Appendix D.

Six of the total seventy-three were professionally made from Ekman and Friesen's (1975) book, *Unmasking the Face.* These slides broke down the facial emotion of sadness into its component parts-- forehead/brow, eyes, and mouth-- and were used with the training group only. Both actors, a male and female, were used only in the training slides and did not appear in any of the test slides.

The final twenty-two slides were 35mm color slides taken of male and female graduate students and faculty at Oklahoma State University. All of these participants were Caucasian, except for one male who was Hispanic. Each of the posers, seven male and four female, were coached on how to portray the emotions of happiness and sadness, and then pictures were taken of each. These slides were used as additional practice slides in both the training and practice groups and were not used as test slides.

Magazine clippings were used as one of the instructional tools in the practice group. These clippings were selected ahead of time by the experimenter out of the following magazines: *U.S. News and World*

Report, Life, Vogue, Glamour, True Romance, Secrets, and *Albuquerque Living.* The clippings were of people expressing both happiness and sadness, and included children, teenagers, and adults of Caucasian, Afro-American, African, and Hispanic origin.

A videotape was made for the use of the practice group. The experimenter taped three hours of daytime dramas from the CBS station. Afterward the tape was reviewed for scenes which involved the emotions of happiness and sadness. These scenes were saved and nonuseful scenes were edited out. Commercials were also edited. The scenes included in the final tape involved issues such as a young mother's concerns about her pregnancy, happy newlyweds, and a husband's concern about his estranged wife. A Magnavox videotape recorder and a twenty-four inch color television were used for viewing purposes.

Polaroid SX-70 Land camera was used to photograph each of the members of the training group attempting to express both happiness and sadness. It was also used with the practice group, but not the control group. A slide projector was used for each of the three groups.

Procedure

Pretest. The pretest involved administering 24 slides of three emotional states on a blank wall in front of the subjects. The series of slides included eight photos portraying a happy state, eight of a sad state, and eight of a neutral state, or neither a happy nor sad

state. The order of the slides was randomized. The subjects were then asked (see Appendix E) to circle on their response sheets (see Appendix F) the word which best described the emotion the person on the slide was expressing. Each slide was displayed for approximately 10 seconds. Subjects were tested in their respective groups, either training, practice, or control, in the Transitional Living Facility of Red Rock Comprehensive Mental Health Center. After the pretest, the number of errors each member made in labeling the facial emotions was calculated. This measure served as the dependent variable in the study.

Treatment. After subjects were randomized into one of the three groups, each group was given a schedule of days and times they would meet. All groups met in a large living room of the Transitional Living Facility for their respective treatment programs. Both the training group and the practice group met for one hour on Mondays and one hour on Wednesdays for three consecutive weeks. The control group met for thirty minutes on Tuesdays for three weeks. The time period of three weeks was substantiated by Zeiner (1988) as being of sufficient length to produce a change in performance.

The treatment program for the training group focused on teaching each member the specific facial details that signal either a happy expression or a sad expression. In the first hour of training, an overview of the goals of the study was given, as well as the specific goals, rules, and plans involving their particular group. Also during

this first hour, a thorough discussion of the experience of happiness was led by the experimenter. The second hour followed up on the previous discussion of the experience of happiness with the appearance of a happy emotional expression, complete with each physical facial feature. In the remainder of the hour, the group discussed the emotional experience of sadness. The entire third hour the group worked on learning the physical facial clues of a sad expression. The next two hours of training involved activities designed to solidify the groups' learning of the facial details of happiness and sadness. For example, one hour the group worked at imitating the facial expressions on their own faces with the use a a poloroid camera, while the other hour the group spent drawing each of the details on a blank outline of a face. Finally, a review of the facial details of both happiness and sadness with the use of practice slides was done the last hour. A more in-depth discussion of the activities of each training hour can be found in Appendix G.

The treatment program for the practice group focused on practicing labeling facial expressions as expressing either happiness, sadness, or some other emotion. No training was given in the specific facial details of happy and sad faces. Nevertheless, the same introduction and discussion of the experiences of happiness and sadness was relayed to the practice group as was given to the training group. From this point on, however, the focus of the group was on different ways to practice correctly labeling facial

expressions. For example in the third hour, the group worked through a stack of magazine clippings of facial expressions, labeling them as happy, sad, or another emotion. The next hour made use of a videotape of daytime dramas to select examples of happy and sad facial expressions. As with the training group, the practice group made poloroid photographs of themselves attempting to express happiness and sadness. However, the practice group did not receive any instruction from the experimenter as to which facial details they should imitate to portray an emotion. Also in conjunction with the training group, the practice group spent their final hour of treatment practicing their new skills by labeling fourty-three practice slides happy, sad, or neither. A more in-depth review of each hour of this treatment program can be found in Appendix H.

The control group did not spend any time either learning the facial details of happy or sad expressions or practicing labeling emotions as portraying happy or sad emotional states. The group simply met for thirty minutes a week to sample refreshments and discuss unrelated topics. They were, however, told the overall goal of the study and asked not to discuss the activities of the other two groups.

Postest and Follow-up. For the postest trial, all three groups were again separately administered the same twenty-four slides of the three emotional states in the same random order as was used in the pretest condition. The postest was done two days after the

completion of both treatment programs. The follow-up condition was done two weeks after the completion of both treatment programs. The same procedures were used as were used in the pretest condition.

Results

The subjects were randomly sampled in such a way as to equally distribute both race and sex variables. Therefore, each group contained five Caucasians, and one African-American. Also, each group contained five males and one female, except for the control group, which contained two females.

On two other variables, however, one-way analyses of variance did indicate significant differences between groups. The training, practice, and control groups have significantly different ages, $F = 7.09$, $p < .05$. They also differ on their global assessment of functioning scores, $F = 7.22$, $p < .05$. Further pairwise comparisons indicated that the control group was significantly older than both the training group, $t = 3.74$, $p < .05$, and the practice group, $t = 9.72$, $p < .05$. On the global assessment of functioning variable, independent t-tests revealed that the control group had lower global assessment of functioning ratings than both the training group, $t = 3.58$, $p < .05$, and the practice group, $t = 5.26$, $p < .05$. See Table 1 for the means, standard deviations, and ranges of age and GAF variables by group.

Insert Table 1 about here

Because the groups are significantly different on several variables before the implementation of the training and practice programs, significant differences at postest and follow-up trials could not be determined to be due to the treatment versus these confounding variables. Therefore, an analysis of covariance was done with pretest as the covariate, in an attempt to equalize the groups in their ability to recognize facial emotions before the implementation of any treatment program. This way any differences between groups could more clearly be attributed to the treatment programs and not to the confounding variables. Pretest seems to be the covariate of choice, since it is the most economical way to take into account some of the variance due to age and GAF, and other possible confounding variables which may have affected the outcome of the study. With the use of an analysis of covariance the research question then becomes: does differential treatment of schizophrenics affect their emotion recognition abilities, after adjusting for differences in their ages and their level of functioning prior to training?

The 3(group) x 2(time) repeated measures analysis of covariance revealed a significant group effect, $F = 4.36$, $p < .03$, but no main effect for the time variable, $F = .01$, $p < .91$, and no group by time interaction effect, $F = .01$, $p < .91$. In addition, analysis indicated that $\pi^2 = .38$, or that 38 percent of the variance in the adjusted dependent variable scores is associated with treatment. Table 2 displays the original and adjusted means and standard deviations for the three

groups.

Insert Table 2 about here

Further examination of the group main effect using the adjusted scores indicated that the training group was significantly different from the control group, t= 2.69, p < .02 at postest. However, the training group was not proven to be significantly different from the practice group, t= 1.47, p < .09. In addition, the practice and control groups were not found to be significantly different from each other. This same pattern of findings was also evident at follow-up. It should be noted that because the experimenter was unable to predict the directionality of the groups performance at follow-up trial, Dunn's correction for an inflated alpha level was used to test for significant differences. Therefore, each pairwise comparison was tested against a significance level of p < .018. Still, results indicated that the training group was significantly different from the control group, t= 2.77, p < .01, but not from the practice group, t= 2.16, p < .03. Again, the practice and control groups were not significantly different from each other. Figure 1 shows the relationship of the three groups across trials.

Insert Figure 1 about here

Correlations among the confounding variables, the covariate (pretest), and the repeated measure are shown in Table 3. As can be seen, the relationship between age and the dependent variable is very low at pretest and postest, although it does increase inexplicably at follow-up. The relationship between GAF and the dependent variable is also inconsistent, as they become inversely related at postest and follow-up trials. However, these correlations do show a low, but consistent correlation between the covariate and the dependent variable, r= .23. Nevertheless, the analysis of covariance indicated that the covariate did not provide a significant adjustment to the dependent variable, with F= 2.66, p < .12.

Insert Table 3 about here

Discussion

The choice to use an analysis of covariance procedure allowed for a clearer understanding of the effect of the treatment programs in the face of the confounding variables. Even though the correlation between the covariate and the dependent variable was moderately low, it produced an adjustment that eliminated some of the error variance associated with the initial differences between groups, and left a difference between groups that is more clearly due to the training of subjects (π^2= .38).

Before the meaning of the multiple comparisons can be discussed,

the validity of the group differences must be addressed in light of the violation of transitivity. The question arises: Does it make sense, despite the p < .01 difference, to consider the training group as being different from the control group, when it was not found to be different from the practice group, and the practice group was not found to be different from the control group. Would not the logical argument be that the training group is not different from the control group? The true interpretation is unclear. Because of the illogical meaning of the pairwise comparisons, it is clear that a statistical error exists within one of the comparisons. It is possible that the training group is not actually different from the control group, and that in fact their are no differences between groups at all. However, with the data that is available, it may be more likely that the mistake lies with the insignificant difference found between the training and practice groups. This would make sense considering the results of the ANCOVA, which found clear group differences. It also coincides with the marginal differences between the training and practice groups shown at postest and follow-up. In fact, the significance level of p < .03 found at follow-up would have been considered significant had it not been for the stricter confidence levels imposed by Dunn's correction. Because of these factors, it seems more likely that a type II error occurred in the training group and practice group comparison. Therefore, the results will be discussed in terms of these trends. However, it must be stressed that because of the transitivity

problem, no conclusions can be made about the effectiveness of any of the treatment conditions.

The variables of age and GAF could pose another problem in interpretation. However, their low correlations with the dependent variable and mild effect on the adjusted pretest scores indicates that they had relatively little influence on the abilities of the subjects to recognize facial emotions. The literature suggests that age does have an effect on schizophrenics' ability to recognize facial emotions. Walker et al.'s (1980) study demonstrated a tendency of schizophrenics to have increasing difficulties recognizing facial emotions from adolescence (X= 16 years, 13-19) to adulthood (X= 32 years, 20-50). As can be seen in Table 1, each group's mean age places them in this adult range, including the mean age of the control group, and no one person's age exceeds this range in either direction as measured by Walker and her colleagues. However, this adult range is so broad that it is unclear whether adults continue to lose their recognition abilities as they age, or whether there is a leveling off of these abilities in adulthood. Although this still remains a question, the correlations here suggest that age was not such a mitigating factor.

The low correlation between schizophrenics' global assessment of functioning scores and their ability to recognize facial emotions is even more puzzling. It is intuitively reasonable that a scale which measures general psychiatric functioning would be correlated with a

measure which has been clearly linked with schizophrenia. However, the global assessment of functioning rating is a global scale designed to assess the overall severity of a disturbance on a single dimension across a continuum of ten equal intervals (Endicott et al., 1976). Therefore, it was not designed to measure very specific difficulties found in psychiatric patients, or even the severity of their specific symptoms. In their validity studies, Endicott and his colleagues (1976) found that the correlations between GAF ratings and independent measures of symptom dimensions to be fairly low. For example, the correlation between GAF ratings and cognitive disorganization was -.37, and between GAF and emotional retardation/emotional withdrawal was -.05. Given this, it makes sense that the correlation between GAF and the number of errors made attempting to recognize facial emotions would be low, especially since the recognition of facial emotions is a very specific symptom of schizophrenia involving a very focal perceptual/information processing deficit.

Having discussed the difficulties posed by the transitivity principle and the confounding variables, it is time to discuss the meaning of the analyses. These results indicate that after adjusting for differences in their abilities prior to training, differential treatment of schizophrenics does effect changes in their abilities to recognize facial emotions. How to interpret the results further is more unclear. One trend is that the training group seemed to improve

their ability to recognize facial emotions in relation to the control group. This may suggest that when schizophrenics are given an intensive training program which involves breaking down the face into its component parts and pointing out the specific facial clues that indicate a "happy" or "sad" facial expression, they may be able to improve their ability to recognize when different photographs express sad versus happy emotions. This kind of trend supports the possibility that schizophrenics, who are universally poor at recognizing what others are feeling, can be trained to improve this ability in a relatively short period of time.

Another trend in the data indicated that the practice group appeared unable to improve their ability to recognize emotions. That is, when a group of schizophrenics is given the opportunity to practice recognizing happy faces and sad faces in different media, that practice may not be enough on its own to improve those abilities from a pretest to a postest four weeks later. This trend has relevance to the question raised in the beginning regarding the three explanations for schizophrenics' poor performance recognizing facial emotions. Two of the theories suggested that schizophrenics have difficulty recognizing facial emotions because of some generalized difficulty processing complex stimuli, either due to their tendency to be distracted by irrelevant information (Buss & Lang, 1965), or to a broader inability to organize a large amount of visual information (Feinberg, 1986). The social withdrawal theory, on the other hand,

explains these deficits more as a result of their tendency towards social isolation and the lack of interaction (or practice) they obtain in social situations (Walker, et al., 1980). If this theory is true, then it would follow that giving schizophrenics the needed practice they missed would improve aspects of this social interaction, such as being able to recognize what people are feeling by looking at their faces. However, in this study, simply giving schizophrenics the opportunity to practice recognizing facial emotions did not seem to be enough to improve this skill. This begins to question the social withdrawal theory and point to the other theories which explain this deficit as an aspect of the schizophrenics' difficulty in processing complex stimuli.

Criticisms of this study would include the discrepant age and global assessment of functioning ratings, for without that problem the results would be more clearly interpretable. The study also contained so few members of the female gender and other races besides Caucasian, that the effect of these variables could not be determined. In fact, the findings of this study can only be generalized to adult white male schizophrenics with global assessment of functioning scores of above 35.

Other criticisms of the study include a low number of subjects per group and the limited time span of the study. A larger number of subjects per group would have allowed for more meaningful statistical analyses and conclusions. Also a longer time length would

have allowed for a more intensive training program and longer follow-up evaluation. It would also increase the length of the practice condition, which might increase its effectiveness. However, increasing the time length also increases the risk of subjects dropping out before the completion of the study.

Finally, a concern should certainly be raised about the lack of multicultural representation in the research slides used. Unfortunately, Ekman and Friesen's slides include only Caucasian posers, and no other group of such well-researched slides exist that include posers of other races or nationalities. Although it could be suggested that the all-Caucasian slides did not affect the results of the study, since nearly all the subjects were of that race, still the research is unclear as to how the race of expressers affect a perceiver's accuracy. Therefore, there is a need for the development of multicultural slides with good reliability and validity, so that future research does not have to be limited by the potential problems of all-Caucasian slides.

Suggestions for future research would include a replication of the present study with careful attention paid to the equality of the groups on the variables of age, sex, race, and global assessment of functioning ratings. It would be helpful if the global assessment of functioning ratings were obtained at the very beginning of the study by a group of professionals, including the researchers, so that the accuracy of the scores could be verified. With these increased

controls, the effectiveness of the training program can be retested, hopefully answering some of the questions raised in this study. If the trends in this study are more clearly substantiated, it will be important to verify that this type of training generalizes to real life interactions with others, and improves their social appropriateness with others. After this, future directions for this research will be to investigate why this treatment program works and how best to increase its efficacy.

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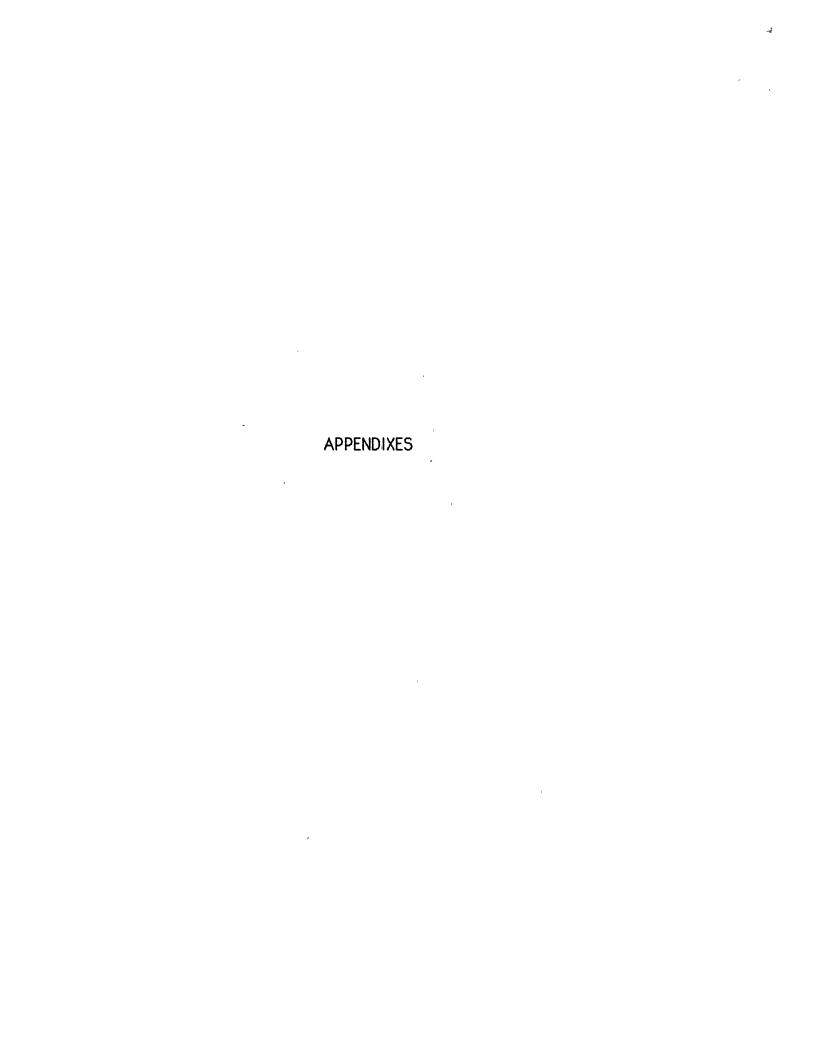
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APPENDIXES

APPENDIX A

THE EFFECTIVENESS OF SOCIAL SKILLS
TRAINING WITH SCHIZOPHRENICS

Over the past fifteen years, there have been a number of studies
that have examined the effects of social skills training on psychiatric
patients, including schizophrenics. In general, the outcomes of these
studies support the feasibility of the skills training approach by
demonstrating that schizophrenics can acquire a wide variety of
living skills. Wallace and his colleagues (Wallace et al., 1980) did an
extensive review of this body of literature and pointed out that these
studies could be divided into two types of experimental methodology:
single subject designs and group comparisons. Single subject designs
demonstrate the effectiveness of the intervention by associating
variation in the dependent measures of certain social skills with
systematic variations in the intervention. Group studies, on the other
hand, associate differences between the groups' outcomes with
differences in the intervention. If the groups were initially equal,
then it can be concluded that differences between group outcomes are
associated with differences in the intervention.

Hersen, Bellack, Eisler, and their colleagues have conducted

several studies using single subject designs that clearly demonstrate the effectiveness of training for changing specific elements of social skills in chronic psychiatric patients (Bellack, Hersen, & Turner, 1976; Edelstein & Eisler, 1976; Eisler, Hersen, & Miller, 1974; Foy, Eisler, & Pinkston, 1975; Frederiksen, Jenkins, Foy, & Eisler, 1976; Hersen & Bellack, 1976; Hersen, Turner, Edelstein, & Pinkston, 1975; Williams, Turner, Watts, Bellack, & Hersen, 1977). The experiment conducted by Frederiksen et al. (1976) is a particularly good example. The authors trained two verbally abusive patients to increase their rates of looking and making appropriate requests and to decrease their rates of irrelevant comments, hostile comments, and inappropriate requests. Training consisted of instructions, modeling, behavioral rehearsal, and feedback. A total of fourteen role-plays of interpersonal situations were used for each patient (seven during training and seven during attempts to assess the generalization of training to novel situations). After three sessions in which the fourteen situations were simply role-played and the patients' responses assessed, training was applied to the first patient while the other patient continued in the assessment-only condition. After three more sessions, the second patient also received training.

The results suggested that the behaviors changed only as the training was applied, indicating that the training was the effective element in the change. The results also showed that training generalized to different confederates and to both the seven novel

situations and the interactions on the ward. However, the results for the generalization of appropriate requests to the seven novel situations indicated that only one half as many appropriate requests were made in the seven novel situations as were made in the seven trained situations.

These results have been replicated in similar single subject studies conducted by Hersen, Bellack, Eisler, and their associates. In addition, several studies have indicated that the treatment gains were maintained for as long as six months posttreatment (Bellack, Hersen, & Turner, 1976; Foy, Eisler, & Pinkston, 1975; Hersen & Bellack, 1976; Hersen et al., 1975). Matson and Stephens (1978) found that training not only improved the social skills of four aggressive patients, but also increased ratings by nursing staff of the patients' cooperativeness, appropriateness of requests for attention, and appropriateness of verbal statements. In addition, like the studies above, these gains were maintained over a twelve week follow-up period, and the frequency of fighting and arguing was reduced for both training and follow-up phases. Liberman et al. (1978) reported similar results in training eye contact, use of gestures, appropriate posture, and voice variables in three schizophrenics.

The studies that have evaluated the effects of social skills training with the use of group comparisons are more difficult to summarize since many different training methods and many different outcome measures were used. Nevertheless, certain trends can be

described. In almost all studies that used patient report measures of competence or discomfort in interpersonal situations, improvement was noted (Argyle, Trower, & Bryant, 1976; Falloon et al., 1977; Finch & Wallace, 1977; Goldsmith & McFall, 1975; Monti et al., 1979; Percell, Berwick, & Beigel, 1974). Only Weinman, Gelbert, Wallace, and Post (1972) did not find an improvement in interpersonal competence, although all patients in their three groups (socioenvironmental therapy, systematic desensitization, and relaxation) did decline in their scores on the Fear Survey Schedule II.

In almost all studies that have evaluated the effects of training on the observable features of social skills using the BAT-R, which is an assessment instrument involving role playing hostile and commendatory interpersonal situations, or using a similar measure, improvement was noted (Field & Test, 1975; Finch & Wallace, 1977; Goldsmith & McFall, 1975; Goldstein et al., 1973; Hersen, Eisler, & Miller, 1974; Hersen et al., 1973; Longin & Rooney, 1975; Monti et al., 1979). Some of these studies demonstrated improvements that lasted as long as two years posttreatment (Field & Test, 1975; Longin & Rooney, 1975; Monti et al., 1979). These improvements have been noted for trained as well as untrained situations (Finch & Wallace, 1977; Hersen, Eisler, & Miller, 1974; Longin & Rooney, 1975; Monti et al., 1979). However, Hersen, Eisler, and Miller (1974) did not find that requests for new behaviors generalized to novel situations nor did they find generalized improvement in compliance content.

Despite the large number of studies that have documented the efficacy of social skills training, two studies failed to confirm these findings. Argyle, Trower, and Bryant (1974, 1976) compared social skills training to psychotherapy and to systematic desensitization and found no improvement for any of the three treatments on any of the behavioral measures. Both of these studies, however, were conducted with outpatients, in contrast to the successful studies, which were conducted with inpatients. Contrarily, Marzillier, Lambert, and Kellett (1976) found with outpatients that social skills training, desensitization, and milieu therapy resulted in equally significant improvements in behavioral measures. Therefore, it seems further research needs to be conducted on outpatient populations. However, the evidence supporting improvement in psychiatric inpatients is clear and overwhelming. This combined with the evidence from the single subject designs indicates that schizophrenics do indeed respond to social skills training, and that this improvement is long standing.

APPENDIX B

CONSENT FORM

Date: _____

Informed Consent Agreement

Participant's Name (print): _____

Project Title: A Treatment Program to Improve Emotion Recognition

Investigators: M. Lee Berryman, M.S.
                Kenneth Sandvold, Ph.D

Procedures: By my signature, I agree to participate in this research
            and further understand the following statements
            concerning the study:

1. I will be asked to attend three slide shows and to answer
questions about the emotions expressed on the slides.

2. I will be asked either to attend a training program for two hours
each week for three weeks, or to attend meetings with the principle
investigator (MLB) for thirty minutes once a week, for three weeks.
The training program will focus on helping me improve my ability to
recognize facial emotions.

3. I will be debriefed at the end and will be given the opportunity to

ask questions of the principal investigator (MLB) at that time concerning the purpose and goal of the study and my participation.

4. I will be exposed to no inherent risk as a function of my participation in the study. Even though there is virtually no chance of risk involved, I may terminate my participation in the study at any time I choose. Should I require medical or psychological treatment as a result of my involvement in this study, I will be assisted in gaining this help by the principal investigator (MLB).

5. I will be given information about my participation, and this may prove beneficial to me in that it may provide insight into the way I perceive facial emotions. My involvement may also prove beneficial to others as the experimenter learns how to help others through my involvement.

6. All records concerning my participation will be kept confidential. A number will be assigned to all my records and the key will be kept only by the principal investigator (MLB).

7. My participation in the study is voluntary and I may refuse to begin involvement in the study, or may terminate my involvement during any part of the study, without penalty.

8. My involvement in the study may be terminated if I transfer to another unit, or if I am discharged from the facility during the study.

9. If I have any questions or complaints about the study, I can contact one of the investigators: M. Lee Berryman, M.S., 1517 Shalamar, Stillwater, OK, 74074, (405) 372-5881; Kenneth Sandvold, Ph.D., 2313 W. University, Stillwater, OK, 74078, (405) 377-0730. I can also contact the Office of University Research Services, 001 Life Sciences East, Stillwater, OK, 74078, (405) 744-9991.

10. I have been fully informed as to what will be asked of me as a

part of my participation, and agree to the risks and benefits that may be a product of the study.

_____   _____
Signature of Participant   Date

_____   _____
Witness to Signature   Date

Principal Investigator:

_____   _____
M. Lee Berryman, M.S.   Date

APPENDIX C

GLOBAL ASSESSMENT OF FUNCTIONING SCALE

90   Absent or minimal symptoms (e.g., mild anxiety before an

| exam), good functioning in all areas, interested and involved

| in a wide range of activities, socially effective, generally

| satisfied with life, no more than everday problems or

| concerns (e.g., an occasional argument with family

81   members).

80   If symptoms are present, they are transient and expectable

| reactions to psychosocial stressors (e.g., difficulty

| concentrating after family argument); no more than slight

| impairment in social, occupational, or school functioning

71   (e.g., temporarily falling behind in school work).

70   Some mild symptoms (e.g., depressed mood and mild

| insomnia) or some difficulty in social, occupational, or

| school functioning (e.g., occasional truancy, or theft within

| the household), but generally functioning pretty well, has

61   some meaningful interpersonal relationships.

60   Moderate symptoms (e.g., flat affect and circumstantial

| speech, occasional panic attacks) or moderate difficulty

| in social, occupational, or school functioning (e.g., few

51   friends, conflicts with co-workers).

50   Serious symptoms (e.g., suicidal ideation, severe

| obsessional rituals, frequent shoplifting) or any serious

| impairment in social, occupational, or school functioning

41   (e.g., no friends, unable to keep a job).

40   Some impairment in reality testing or communication (e.g.,

| speech is at times illogical, obscure, or irrelevant) or

| major impairment in several areas, such as work or school,

| family relations, judgement, thinking, or mood (e.g.,

| depressed man avoids friends, neglects family, and is unable

| to work; child frequently beats up younger children, is

31   defiant at home, and is failing at school).

30   Behavior is considerably influenced by delusions or

| hallucinations or serious impairment in communication or

| judgement (e.g., sometimes incoherent, acts grossly

| inappropriately, suicidal preoccupation) or inability to

| function in almost all areas (e.g., stays in bed all day; no

21   job, home, or friends).

20	Some danger of hurting self or others (e.g., suicidal
I	attempts without clear expectations of death, frequently
I	violent, manic excitement) or occasionally fails to maintain
I	minimal personal hygiene (e.g., smears feces) or gross
I	impairment in communication (e.g., largely incoherent or
11	mute).
10	Persistent danger of severely hurting self or others (e.g.,
I	recurrent violence) or persistent inability to maintain
I	minimal personal hygiene or serious suicidal act with clear
1	expectation of death.

APPENDIX D

DESCRIPTION AND RELIABILITY OF THE TEST SLIDES

One of the major obstacles to all research on the facial
expressions of emotions is that there is a lack of a comprehensive set
of high quality photographs of different people expressing the
different emotions which has been adequately researched. Both
Frois-Wittman (1930) and Schlosberg (1954) have attempted to
develop just a set of photos. Unfortunately, all the emotions are
portrayed by only one actor. Ekman and Friesen (1972), in their
extensive studies of facial emotions have attempted to reconcile
these difficulties, and produce a standardized set of photos.

During the development of these photos, Ekman and Friesen (1976)
chose six frequently experienced emotions believed to yield
characteristic facial expressions-- happiness, sadness, fear, anger,
disgust, and surprise. Posers were trained to contract or relax
different facial muscles associated with various facial expressions.
Generally, posers were instructed to activate certain muscles rather
than to pose a particular emotion.

The present set of slides was chosen on the basis of empirical
studies which measured the consistency of judgements of the various
pictures. Photographs which yielded highly consistent judgements

and which fit the authors' theory of facial expressions of affect were finally selected for inclusion in the set, which now provides fourteen actors for the six emotions. One photograph each was also taken of each poser portraying a "neutral" expression.

The pictures of each person which the authors thought best represented the expressions of the six emotions were shown to groups of observers. They judged which of six emotion words best described each photograph. There were two variations in the judgement procedure and the norms were calculated differently for the two procedures to provide comparable normative data across all photographs.

In the first procedure, each slide was shown for ten seconds to small groups of U.S. born college students. The number of male and female observers was approximately equal. The answer sheet provided a choice of six emotions: happy, sad, fear, anger, surprise, and disgust. The observers selected the one word which best described the emotion expressed in each slide. The percentage of observers judging each of the six emotions was calculated for each slide.

In the second procedure, each slide was shown for ten seconds to small groups of U.S. born college students. Again the number of male and female observers was approximately equal. The answer sheet listed the same six emotion words, but each emotion word was presented on a seven point scale, with neutral or no emotion at one

end, and the intended emotion at the other. The observers rated every slide on each of the six emotion scales, i.e. they could rate a slide as showing maximum happiness and neutral on all other scales, or maximum on all six emotions, or some degree between the extremes. This second procedure was used in only one experiment. It is the only data source where observers could give "neutral" as a judgement choice.

To convert these data to a format comparable to the first procedure, each observer's ratings were reduced to a single judgement for each slide, that is which emotion was given the highest rating. If he or she gave the same intensity rating to more than one emotion, or there was not a difference of at least two points between his ratings of two emotions expressed in a picture, his data was deleted from the analysis for that slide. This procedure required deleting only five percent of the observers.

All photographs in the present set were judged to show the intended emotion by at least seventy percent of the observers. All but eleven were correctly rated more then eighty percent of the time. Fifty-nine photographs were correctly judged by more than ninety percent of the raters.

APPENDIX E

SLIDE PRESENTATION INSTRUCTION SCRIPT

I would like to show you some slides of people who are expressing an emotion. We are going to look at the slides one at a time for about 10 seconds each. I want you to look carefully at the person in the slide and circle the emotion on your response sheet that best describes the emotion/feeling that the person in the slide is trying to express– either a happy feeling, a sad feeling, or neither a happy or sad feeling. Please circle only one emotion for each slide. If you are not sure about which emotion the person is expressing, try hard and circle the emotion that you think fits best. Be sure and do your own work, because I am interested in each of you individually.

APPENDIX F

RESPONSE SHEET

INSTRUCTIONS: CIRCLE ONLY ONE ANSWER

1.	Happy	Sad	Neither
2.	Happy	Sad	Neither
3.	Happy	Sad	Neither
4.	Happy	Sad	Neither
5.	Happy	Sad	Neither
6.	Happy	Sad	Neither
7.	Happy	Sad	Neither
8.	Happy	Sad	Neither
9.	Happy	Sad	Neither
10.	Happy	Sad	Neither
11.	Happy	Sad	Neither
12.	Happy	Sad	Neither
13.	Happy	Sad	Neither
14.	Happy	Sad	Neither
15.	Happy	Sad	Neither
16.	Happy	Sad	Neither
17.	Happy	Sad	Neither
18.	Happy	Sad	Neither
19.	Happy	Sad	Neither
20.	Happy	Sad	Neither
21.	Happy	Sad	Neither
22.	Happy	Sad	Neither
23.	Happy	Sad	Neither
24.	Happy	Sad	Neither

APPENDIX G

TREATMENT PROGRAM FOR THE TRAINING GROUP

Hour 1

The training program began with an introduction to the goals and plans of the training program. It was explained to the group that the goal of the program was to help each member improve his/her ability to recognize the facial emotions of happiness and sadness. It was suggested that this would improve their ability to relate to others in social situations, since understanding what someone is expressing is vital to good communication. The purpose of having separate groups was to teach emotion recognition to people like them. Therefore, the group was told not to discuss their training program with anyone outside of their group members. As a final part of the introduction, the group was told that their training program would involve breaking the face into three parts—the forehead and brow, the eyes, and the mouth—and looking at the specific details of each emotion as they appear in these three areas.

The actual training began with a discussion of the experience of happiness. The group was given a definition of happiness and some examples of happy experiences. Then, the group was asked to discuss specific things that make them feel happy. It was shown that these

examples fell into one of four categories: pleasure, excitement, relief, and exhancement of self-concept (Ekman & Friesen, 1975). Pleasure-happiness involves the experiencing of positive physical sensations, whereas excitement-happiness was more the experience of doing something new and interesting. Relief-happiness was the experience after something unpleasant or painful is removed. Finally, self-concept enhancement occurs when something happens that makes a person feel good about themselves.

Hour 2

The discussion of the emotion of happiness was briefly reviewed, and then the explanation of the appearance of happiness was begun. The group was told that it was helpful to break the face down into three parts--the brow and forehead; the eyes, lids, and upper parts of the nose; and the lower nose, cheeks, mouth, and chin-- and examine closely how each part moves when a feeling is expressed. Then the specific emotion of happiness was broken down into its component parts with the help of slides (Ekman & Friesen, 1975). In the first part, the group was taught that the brow and forehead are relaxed during the emotional expression of happiness. In the second portion of the face, it was demonstrated that the lower lid is pushed up, that lines form below the eyes, and wrinkling can usually be seen in the corner of the eyes. These basic features were shown in different intensities of the state of happiness.

For the remaining time, the group discussed the experience of

sadness. The definition of sadness was given with some examples of experiences that might make people feel sad. The group was asked to contribute their own examples of things that make them sad. It was pointed out that most often people are sad as a result of losses they experience in their lives. These losses can result in simply a disappointment or in the other extreme an overall hopelessness. Finally, it was explained that sadness has different intensities which range from acute distress (e.g., a reaction to a natural disaster) to a simple "blue" mood (Ekman & Friesen, 1975).

Hour 3

At the beginning of the hour, the group was reviewed on their discussion of the experience of sadness and what it means. Then with the help of the training slides, the face again was divided into its component parts and each part was examined separately (Ekman & Friesen, 1975). On the top portion of the face, it was pointed out that on a sad face the forehead is tensed and horizontal lines are evident. Also the inner corner of the eyebrows are raised and drawn together. Finally, the upper eyelid droops.

In the middle part of the face , two other clues are usually present. First, the lower eyelid is raised so that it covers the lower portion of the eye. Secondly, the eyes themselves are usually downcast.

Finally, on the bottom portion of the face two more details signal a sad expression. First, tiny lines appear which run from the

outer edge of the nose to the outer edge of the mouth. Secondly, the mouth itself is characterized by pursed lips and turned down edges.

After the group had a good grasp of these details, the different intensities of the emotion sadness were examined with the use of slides. These different intensities were reviewed in light of the particular details of the face explained above and how these details can become more or less pronounced in response to different intensities.

Hour 4

The beginning of the hour was spent reviewing the details of the appearance of both happiness and sadness. When the review was completed, each member of the group was given a photograph from Ekman and Friesen's book (1975) to use as a model in imitating the emotions of happiness and sadness. The focus was on imitating each detail of the facial emotion as it has been described previously. After the member had practiced modeling the facial emotion conveyed by the photograph with coaching from the instructor, a poloroid photograph of him/her was taken. This process was done for each emotion with each member of the group. When all the photographs had been taken, the group looked at each photograph commenting on the specific details of the facial emotion that were clearly portrayed and those that were missing.

Hour 5

In an attempt to cement the group members' new learning of the

different details which signal a happy or sad facial emotion, the hour was spent having each member draw those details. First, the instructor presented an outline of a face with only eye holes and proceeded to review the details of each emotional expression as she drew them on the outline. Several happy and sad faces were drawn until the group felt ready to draw their own. Then each member was given the same facial outline and without use of a model were asked to draw the details of both a happy and sad face. Instruction and direction were given when needed to complete the drawing. Each member shared their drawings with the other members and pointed out the details they included as a further review.

Hour 6

A final review of the appearance of happiness and sadness was presented. Then the twenty-one of Ekman and Friesen's (1976) research slides (nine happy; six sad; six neutral) and the twenty-two color slides taken of Oklahoma State University graduate students and faculty were presented to the group. The group was asked to label the emotion each slide portrayed as either happy, sad, or neither with little help from the instructor. When help was needed, the group members were referred back to the specific details they should be looking for. Any final questions were answered and the training program was ended.

APPENDIX H

TREATMENT PROGRAM FOR THE PRACTICE GROUP

<u>Hour 1</u>

The treatment program began with an introduction to the goals and plans of the training program. It was explained to the group that the goal of the program was to help each member improve his/her ability to recognize the facial emotions of happiness and sadness. It was suggested that this ability would improve their ability to relate to others in social situations, since understanding what someone is expressing is vital to good communication. The purpose of having separate groups was to teach emotion recognition to people like them. Therefore, the group was told not to discuss their treatment program with anyone outside of their group members. As a final part of the introduction, the group was told that their treatment program would involve practicing labeling faces as either expressing happiness or sadness.

The actual treatment began with a discussion of the experience of happiness. The group was given a definition of happiness and some examples of happy experiences. Then, the group was asked to discuss specific things that make them feel happy. It was shown that these

examples fell into one of four categories: pleasure, excitement,
relief, and enhancement of self-concept (Ekman & Friesen, 1975).
Pleasure-happiness involves the experiencing of positive physical
sensations, whereas excitement-happiness was more the experience
of doing something new and interesting. Relief-happiness was the
experience after something unpleasant or painful is removed. Finally,
self-concept enhancement occurs when something happens that makes
a person feel good about themselves.

Hour 2

The discussion of the emotion of happiness was briefly reviewed,
and then the group discussed the experience of sadness. The
definition of sadness was given with some examples of experiences
that might make people feel sad. The group was asked to contribute
their own examples of things that make them sad. It was pointed out
that most often people are sad as a result of losses they experience
in their lives. These losses can result in simply a disappointment or,
in the other extreme, an overall hopelessness. Finally, it was
explained that sadness has different intensities which range from
acute distress (e.g., a reaction to a natural disaster) to a simple
"blue" mood (Ekman & Friesen, 1975). Fifteen of the twenty-one
practice slides (nine happy; six sad) from Ekman and Friesen's (1976)
research were used as preliminary practice for distinguishing
between happy and sad expressions. The instructor helped the group
appropriately discriminate between the two emotional expressions.

Hour 3

At the beginning of the hour, the group was reviewed on its discussion of the experience of happiness and sadness. Then a large batch of magazine clippings was placed on a table so that they could be sorted through on the basis of whether the pictures were of happy people, sad people, or neither happy nor sad people. The group discussed why the pictures appeared happy or sad, in an attempt to come to a group consensus. Again the instructor helped the group appropriately label the emotions expressed in the pictures, but no training was given on the specific details of the face which determine what emotion is being expressed.

Hour 4

In an attempt to give the group practice recognizing facial emotions in the greatest number of media possible, a videotape of daytime dramas was used as another practice tool. The group was told to be looking for any expressions of either happiness or sadness in the video, and to signal the instructor to pause the videotape at any time when they recognized one. This allowed all the group members to focus on this expression and decide whether or not it was a good example. After the group had decided, the videotape was continued. If at any time the instructor felt that the group missed a key expression, she would stop the videotape herself and ask the group what emotion was being expressed. The instructor assisted the group when ambiguous expressions were portrayed.

Hour 5

The beginning of the hour was spent reviewing what they had
learned so far about the emotions of happiness and sadness. When the
review was completed, each member of the group was given a
photograph from Ekman and Friesen's book (1975) to use as a model in
imitating the emotions of happiness and sadness. The focus was on
imitating each facial emotion to the best of their ability. After the
member had practiced modeling the facial emotion conveyed by the
photograph, a poloroid photograph of him/her was taken. This process
was done for each emotion with each member of the group. When all
the photographs had been taken, the group looked at each photo
commenting on the facial emotion that was portrayed and the clarity
of that emotion.

Hour 6

The twenty-one of Ekman and Friesen's (1976) research slides
(nine happy; six sad; six neutral) and the twenty-two color slides
taken of Oklahoma State University graduate students and faculty
were presented to the group. The group was asked to label the
emotion each slide portrayed with little help from the instructor.
Any final questions were answered and the treatment program was
ended.

Table 1

<u>Means of Age and GAF Variables by Group</u>

Measure	Training Group	Practice Group	Control Group
Age			
M	32.33	33.00	41.66
SD	8.59	4.60	7.50
RG	22-48	28-41	34-50
GAF			
M	40.00	39.83	29.33
SD	6.32	3.19	3.93
RG	35-50	35-45	25-34

Table 2

Means of Trials by Group

Measure	Original Measures		Adjusted Measures	
	M	SD	M	SD
Pretreatment				
Training	8.17	3.19		
Practice	6.00	2.45		
Control	7.50	3.33		
Posttreatment				
Training	3.17	2.40	2.82	1.95
Practice	5.50	4.32	5.94	4.26
Control	7.17	2.64	7.07	2.39
Follow-up				
Training	3.00	2.37	2.65	1.55
Practice	5.50	2.74	5.94	2.70
Control	7.17	2.64	7.06	2.27

Table 3

Correlation Matrix across Age, GAF, and Trials

	Age	GAF	Pretest	Postest	Follow-up
Age	1.00				
GAF	-.12	1.00			
Pre	.03	.24	1.00		
Post	.04	-.28	.23	1.00	
FUP	.21	-.31	.22	.49*	1.00

* p < .05

Figure Caption

Figure 1. The effect of treatment across pretest, postest, and

follow-up trials.

rcentage
f Errors

45

40

35

30 — Control Group

25 — Practice Group

20

15

10 — Training Group

5

Pretest   Postest   Follow-up

VITA $\mathcal{V}$

M. Lee Berryman

Candidate for the Degree of

Doctor of Philosophy

Thesis: A TRAINING PROGRAM TO IMPROVE EMOTION
RECOGNITION IN SCHIZOPHRENICS

Major Field: Psychology

Biographical:

Personal Data: Born in Corpus Christi, Texas, May 18, 1964,
the daughter of Bob C. and Dena L. Berryman.

Education: Graduated from Forest Park High School, Beaumont,
Texas, in July, 1981; received Bachelor of Arts Degree in
Psychology from Baylor University in May 1985; received
Master of Science degree at Oklahoma State University in
May, 1987; completed requirements for Doctor of
Philosophy degree at Oklahoma State University in
December, 1990.

Professional Experience: Teaching Assistant, Department of
Psychology, Oklahoma State University, August, 1985, to
December, 1987. Clinical Practicum, Department of
Psychology, Oklahoma State University, August 1986, to
July 1989. Clinical Internship, University of Kansas
Medical School-Wichita, August 1989, to August 1990.