PERSONALITY CORRELATES OF ENCODING AND DECODING AFFECT

By

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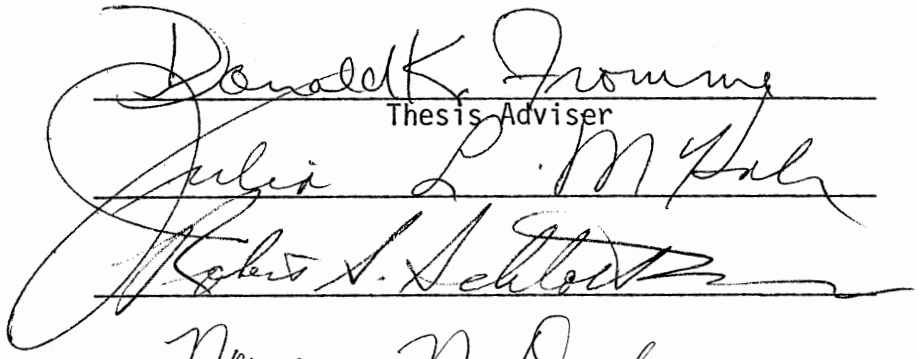

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To all those who had faith in me, even when I doubted myself. Your faith sustained me and I cannot begin to thank you enough. You share my success:

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CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

The beginning of the scientific study of nonverbal communication of affect can perhaps be dated to the publication of Charles Darwin's The Expression of the Emotions in Men and Animals in 1872. Even he, however, notes earlier publications by prior investigators. This area was then opened to study, and the initial questions were asked. These questions may be summarily stated as, "Can individuals accurately convey to others information about their feeling state through the nonverbal mode?". This question has aroused considerable debate and numerous investigations during the past hundred years, with both affirmative and negative findings.

The conclusions that the reviewer reaches in attempting to respond to the above question will depend, to a large extent, on the historical period in which he focuses. The very early investigators, such as Darwin (1872), Feleky (1914), and Langfield (1918), tended to report positive findings. A group of influential studies reported between 1924 and 1929, however, provided negative responses. These are the studies of Landis (1924 and 1929) and Sherman (1927). Following this there is a period of great ambiguity of results, generally marked by pessimism and doubt. The doubt is most clearly seen in Bruner and Tagiuri's (1954, p. 639) review of the literature which ends with an admonition that psychologists study "the insights of the dramatists and poets . . ."

as a source of new ideas. The pessimism is most apparent in the work of Hunt (1941).

The modern reviewer is in a far more fortunate position. This is largely due to the exhaustive work of Ekman, Friesen, and Ellsworth (1972). These authors, through a careful reanalysis of prior studies plus telling methodological criticisms, have provided an affirmative but qualified response. They report that when a reasonable number of adult, live subjects are employed as the enactors, when posing is the method employed to determine the intended emotion expressed by the enactors, when a reasonable number of judges are used, and when a reasonable number of categories of emotions are sampled from the list of happiness, surprise, fear, anger, sadness, disgust-contempt, and interest, then accuracy beyond the chance level is virtually guaranteed. This is a rather lengthy list of qualifications, but Ekman, Friesen, and Ellsworth argue strongly for the methodological necessity of each. The qualification for using adult enactors, for example, is necessitated by the finding that infants are probably only capable of gross affective responses and that differentiation of these into finer categories is a rather slow developmental process (McCandless, 1967). Despite this, negative findings from studies using infants as stimuli have been put forth as evidence that accurate judgment of emotion from nonverbal cues is impossible (Sherman, 1927).

Before proceeding with this discussion, a brief digression is necessary in order to define the terms that will be used throughout this paper. "Encoding" or "enacting" refers to the process by which individuals nonverbally display to others information about their feeling state. "Decoding" or "judging" refers to the process by which individuals

attempt to interpret or understand the nonverbal displays of others. The focus of this paper is on nonverbal communication through the visual channel. When research is cited which uses auditory channels this will be clearly pointed out.

As noted above, it appears that the initial summary question has been answered affirmatively. A second question may be generated at this point and issued in the following form: "Do individuals differ in their ability to encode and decode affect accurately?". The "common sense" response to this question seems to be affirmative, and the research data provide support for an affirmative answer. In fact, the existence of individual differences in encoding and decoding ability is taken as a "given" in most modern research. Joel Davitz in his 1964 review of the literature states that there are "wide differences in accuracy reported in the literature" (p. 14). He goes on to state that these differences are in part due to methodological factors, but he also reports that they are due to individual differences in ability of encoders and decoders.

At this point a third question may be generated. This question provides the focus for the research reported in this paper and may be stated as: "Are the observable individual differences in encoding and decoding accuracy systematically related to personality factors?". This question has generated a number of scientific inquiries and these will be presented in some detail. Prior to this elaboration, however, some note should be made about the importance of this question in the field of clinical psychology.

A positive correlation between accurate nonverbal communication of affect and mental health seems to be assumed by many theorists and

therapists and is openly asserted by many others (Mahrer, 1967). Freud (1952, p. 465), for example, defined mental health as the capacity to work and love. Is it possible to conceive of love existing between two people without accurate nonverbal encoding and decoding of feelings? When Carl Rogers (1951) speaks of unconditional positive regard, does he mean that this is communicated by words only? Perls (1951) speaks directly of the negative consequences of emotional suppression, and provides exercises designed to enhance nonverbal communication of emotion. A similar trend is noted in the work of many who are in the area of sensitivity training (Lakin, 1972). In The Obsessive Personality, Leon Salzman (1973, p. 30) speaks of obsessional needs for control and states: "all emotional responses must be either dampened, restrained, or denied" by the obsessive. Beck (1967, p. 42) reports that sad facies are the most common feature of depressed patients and states that "the emotional release produced by crying" often provides symptom relief. In the Diagnostic and Statistical Manual of Mental Disorders (DSMII)(1968, p. 38) it is reported that a paranoid system may be based on and proceed logically from a "misinterpretation of an actual event." This seems to include a misinterpretation of a nonverbal cue.

In addition to the above, accurate nonverbal communication appears to be deemed essential in a psychotherapeutic relationship. The entire concept of transference, for example, is based on the misperception by the patient of the therapist's neutrality (Saul, 1972). The well-known psychoanalytic couch position was designed to limit the patient's accurate nonverbal perceptions and thus foster transference distortions (Wolberg, 1967). Rogers (1951) speaks at length about empathy and the importance of this to therapeutic progress. This empathy must be

communicated in both verbal and nonverbal modes. Sullivan (1954, p. 7) cautions that while the psychiatric interview is primarily vocal, it is "quite a serious error to presume that the communication is primarily verbal."

It thus appears that accurate nonverbal communication is assumed to be of central importance to mental health and the therapeutic process by a number of theorists who maintain otherwise divergent views. One would therefore expect this assumption to be supported by the scientific literature. A search through the literature, however, lends credance to the view expressed by Renato Tagiuri (1969, p. 406). He stated that "The literature on personality correlates of the ability to judge emotions is scanty and unclear." It is this discrepancy between assumptions of the many and results of the few who have attempted to test the assumptions that provided the impetus for the present work.

The California Psychological Inventory

The personality variables to be employed in the present study are scores on the eighteen standard California Personality Inventory (CPI) scales. The CPI is an MMPI-like instrument which was developed by Harrison Gough. Gough was strongly influenced by Hathaway and McKinley, and the CPI bears a striking resemblance to the MMPI (Megargee, 1972). Like the MMPI it is a self-administered, paper and pencil inventory in which the subject responds either true or false to 480 short statements. Megargee (1972) notes that 213 of these statements either appear word for word on the MMPI, or are MMPI items that are slightly changed. The scales on the CPI were derived in a predominantly empirical fashion.

There are several differences between the CPI and the MMPI which

suggest its usefulness for the present research. The scales are different, and the CPI has almost twice as many standard scales as the MMPI. While the MMPI scales purport to measure varying degrees of psychopathology, the CPI scales measure varying degrees of what Gough (1968, p. 57) has called "folk concepts." These, he states, are descriptive terms applied by lay people to everyday behavior patterns and traits. Another important difference between the two is that the CPI scales were meant to be used in a bipolar fashion, while the MMPI scales are more undirectional.

Reading from left to right across the bottom of the CPI score sheet, the first scale to appear is Dominance (Do). Those who score high on this scale are described as aggressive, confident, demanding, and strong. Low scorers are described as cautious, gentle, inhibited, and submissive (Megargee, 1972). The Do scale has been one of the CPI scales most consistently validated and employed in research (Gough, 1966; Rawls and Rawls, 1968).

Capacity for Status (Cs) is the next scale. It attempts to identify individuals who possess traits that underlie and lead to high socioeconomic status (Megargee, 1972). The research literature on the validity of the Cs scale is meager, but in general supports the idea that Cs predicts upward mobility (Gough, 1948 and 1968).

Sociability (Sy) is the next scale, and high scorers on it are described as flirtatious, outgoing, sociable, and talkative, while low scorers are described as meek, modest, shy, and timid (Megargee, 1972). Validation research has been mixed, but tends to emphasize that the scale is more a measure of sociability than of participation in social activities (Hase & Goldberg 1967; Richardson & Roebuck, 1965).

Social Presence (Sp) is the fourth CPI scale and it attempts to measure self-confidence, poise, and spontaneity (Megargee, 1972). Validity studies in the literature are rare and generally inadequate (Richardson & Roebuck, 1965; Wilcock, 1964).

Self-Acceptance (Sa) is the next scale to appear on the CPI. The validation data reported in the literature are contradictory. For instance, while Sa is negatively correlated with ratings of guilt (Gough, 1969), it does not distinguish groups manifesting various degrees of psychopathology and symptom free groups (Stewart, 1962).

The first validity scale on the CPI is called Sense of Well Being (Wb). It is a "fake bad" scale that is quite similar to the MMPI F scale. The scale also attempts to measure the individual's degree of psychological adjustment, and the research that has been done with it lends credence to its validity in this area (Corrotto, 1963; Hirt & Cook, 1962).

The Responsibility scale (Re) is the seventh scale. Persons high on Re are described as conscientious, cooperative, foresighted, and reliable. Those scoring low on Re are described as arrogant, careless, lazy, and rebellious (Megargee, 1972). The literature on the Re scale shows stronger support for its validity when some measure of performance is used as the criterion (Gough, 1966), than when ratings by others are used (Dicken, 1963).

Socialization (So) is the eighth CPI scale. It measures the extent to which values are internalized. High scorers are described as clear thinking, conservative, organized, and reasonable, while low scorers are described as defensive, foolish, impulsive, and uninhibited (Megargee, 1972). The So scale is perhaps the best validated and most frequent

appearing scale in the research literature. In studies of delinquency, So has been shown to consistently differentiate delinquents from non-delinquents, and these results have been replicated cross-culturally (Richardson & Roebuck, 1965).

The Self-Control scale (Sc) is next in line and it is very similar to both Re and So. Megargee (1972) states that the difference between the scales is that Re measures the degree to which social controls are understood, So measures the degree to which controls are used by the individual, and Sc measures the degree to which the individual approves of the controls. Sc has been poorly supported by the validation data in the literature (Gough, 1969).

The Tolerance Scale (To) was designed to assess the same attitudes that the California F (Authoritarianism) and California E (Ethnocentrism) scales measure (Megargee, 1972). The correlations reported are generally in the -.30 to -.50 range (Gough, 1969).

The final two validity scales are Good Impression (Gi) and Communality (Cm). Gi is a "fake good" scale, and Cm is very much like the MMPI F scale (Megargee, 1972). Dicken (1960) asked students to first take the CPI under standard instructions, and then asked them to try to improve their scores on particular scales. In every group it was the Gi scale that showed the greatest gains under the "fake good" instructions. Only one validity study exists on the Cm scale (Gough, 1969), and it supports the usefulness of this scale in detecting a random response pattern. The next three scales are measures of intellectual efficiency and achievement potential. All three have been extensively studied and validated (Gough, 1963, 1964, 1969; Hase & Goldberg, 1967). The first of these scales is Achievement via Conformance (Ac). It

attempts to assess those qualities of personality that are related to success in situations where achievement is closely linked to structure and organization. Achievement via Independence (Ai) is the following scale, and it attempts to assess achievement potential in situations where creativity and independence are important. Intellectual Efficiency (Ie) is the final scale of this series, and it was designed to measure personality traits that correlate significantly with standard tests of intelligence (Megargee, 1972).

Psychological Mindedness (Py) is a scale designed to identify individuals who have various degrees of success in figuring out how people think and feel (Megargee, 1972). The literature does not support the validity of the scale as a measure of insightfulness about others, but does tend to validate it as a predictor of success in academic psychology (Gough, 1964).

Flexibility (Fx) is the next to the last CPI scale. High scorers on this scale are described as imaginative, individualistic, original, and daring, while low scorers are described as conservative, rigid, slow, and sincere (Megargee, 1972). Fx has not been well validated in research studies (Dicken, 1963; Garwood, 1964).

The final CPI scale is Feminity (Fe). This scale is very similar to the MMPI Mf scale, with high scorers being described by terms applicable to the culturally approved female stereotype and low scorers being described by terms applicable to the culturally approved male stereotype (Megargee, 1972). The Fe scale has been well validated (Gough, 1969).

Role Playing

All studies of the nonverbal communication of emotion are confronted

with the task of deciding how the emotions to be communicated are to be evoked from the encoders. There are, in general, two alternatives; the evoked emotion may be either spontaneous or posed. Either alternative seems to have inherent advantages and disadvantages, and the interested reader is referred to Ekman, Friesen, and Ellsworth's (1972) comprehensive discussion of this issue. The present study will employ posing as the eliciting circumstance and a brief outline of the rationale for this will be presented.

There are at least three major problems which occur when spontaneous expressions of emotion are used. The first of these is that in naturalistic settings it is almost impossible to verify which emotion the encoder was experiencing at the time that a sample of his nonverbal behavior was recorded. If, for example, one uses newspaper photos as stimuli, the researcher is faced with the task of locating the encoder and then depending on his retrospective report to verify what he was feeling when the photo was taken. The second problem is that if a laboratory setting is used, the researcher is faced with ethical decisions if he attempts to study unpleasant feelings. Genuine anger, sorrow, or fear, for example, are all difficult to reliably elicit in a laboratory setting unless extreme measures are employed. The third problem with spontaneous expressions is that quite often such expressions are really "blends" of two or more feelings that are simultaneously experienced, i.e., the encoder may feel both angry and afraid of his anger (Ekman, Friesen, and Ellsworth, 1972). In such a case, a decoder may be accurate if he says that the encoder feels either anger or fear.

The use of role played or posed expression of emotion has obvious advantages in terms of ease of elicitation, verification of the emotion

expressed, and ethical considerations. The major objection to the use of role playing was first raised by Hunt (1941) who stated that posed facial expressions were a specialized, conventionalized language which is not related to spontaneous expression. There is, however, both direct and indirect evidence that Hunt was inaccurate.

The indirect evidence stems from the work of Ekman, Sorenson, and Friesen (1969). These authors found that the same posed facial behavior was judged as showing the same emotion in a number of different cultural groups. The startling fact about these results is that pre-literate tribesmen in New Guinea, who had never been exposed to Western civilization, recognized these posed expressions with approximately the same degree of accuracy as did American subjects. It is difficult to understand how a specialized, conventionalized language could evolve so similarly across very divergent cultural groups. The direct evidence is found in the work of Zuckerman, De Frank, Hall, and Rosenthal (1976). These authors directly compared the spontaneous and posed expressions of 60 encoders. They found that there were large significant correlations between abilities to both encode and decode expressions elicited via spontaneous and posed modes. It thus appears that the major theoretical objection to the use of posing has, in large part, been removed. It may also be recalled that Ekman, Friesen, and Ellsworth (1972), in outlining guidelines for future research, recommended the use of posing, and this methodological technique has been adopted by a large number of researchers in this field (Fromme and Schmidt, 1972).

Encoding and Decoding of Emotion and Personality

It was previously noted that there seem to be individual differences

in encoding and decoding ability. In attempting to discover which variables account for these individual differences, investigators have studied the effects of sex, level of intelligence, age, and stereotype accuracy, among others. It has generally been reported that effective nonverbal communication is correlated with stereotype accuracy, age, high intelligence level, and being female (Bruner and Tagiuri, 1954). It was also previously noted that a considerable body of clinical lore suggests that a relationship exists between various personality factors and nonverbal communication of affect. Despite this lore, Joel Davitz (1964) in reviewing the literature could only find two studies that touch upon the relationship between personality and accurate decoding. In one of these studies, Ruckmick (1921) anecdotally noted that judges' identification of emotions varied on a day-to-day basis, possibly as a result of the judge's mood changes. The other study, Levy, Orr, and Rosenzweig (1960), compared college students' and psychotics' ratings of facial expressions. There were no consistent differences found between the means of the two groups, but the psychotics tended to be more variable in their ratings.

These two studies constituted the entirety of the literature on personality correlates of decoding prior to 1964. The literature on personality correlates of encoding was non-existent at that time. In fact, Thompson and Meltzer (1964, p. 129) state that "prior studies have not been interested in the communicator (expressor) of emotion as a source of variance. . . ." This study will be further discussed below. It should be noted at this point, however, that prior to the middle of the 1960s this entire area of research had essentially been neglected. It is one of the present author's main contentions that this neglect

has been changed but little since that time, and the available research leaves many questions unanswered.

As noted above, Thompson and Meltzer (1964) conducted the first research designed to explore personality characteristics of encoders as a source of variance in nonverbal communication. These authors had 60 male and female encoders deliberately attempt to express ten emotions to four separate decoders. The encoders were seated across a table from the decoders, and were given 15 seconds in which to communicate each emotion. California Psychological Inventory scores were available for each of the encoders, but not for the decoders. The results indicated that some emotions, such as happiness, love, and fear, are easier to enact than others, such as suffering, disgust, and contempt. Low and generally positive correlations were found between the ability to enact various emotions, but Thompson and Meltzer were unable to explain the pattern of the correlations. They also noted that the encoders differed greatly in their overall ability to communicate emotion, but went on to report that these differences did not seem to be strongly correlated with any of the CPI scores. Eight correlations were reported to be significant at the .05 level, but the authors dismiss these as "about as many as would be expected by change alone" (p. 132). The authors do note one interesting qualitative observation. All four judges reported that the encoders who were the most relaxed were the easiest to judge. Thompson and Meltzer state that their results may be due to either the inadequacy of the CPI, the possibility that enactment may be correlated with traits other than those measured by the CPI, or the possibility that encoding may be unrelated to personality.

This study bears a striking resemblance to the present study.

There are, however, three major methodological flaws which may also account for the results. The first of these is that the situational anxiety generated by the "live" situation, and reported by the judges, may have interacted with and obscured underlying personality differences. The second flaw is that 15 seconds is a long time to maintain a constant expression. The judges may have been confused when emotions other than the one intended were inadvertently expressed by the encoders. The third flaw is that four judges is a rather small number, and decoder variables were thus poorly controlled. The present study was designed to eliminate these methodological errors.

There have been extremely few studies of nonverbal communication that have used standard personality test scores as the dependent variables. A decoding study carried out by Davitz (1964) is an exception. Davitz' study involved encoding and decoding of emotion through the vocal channel. While the present research is directed at nonverbal communication through the visual channel, there is some evidence that a correlation exists between vocal and visual abilities (Levy, 1964; Zuckerman, Lipets, Koivumaki, and Rosenthal, 1975), and thus Davitz' research seems to be relevant to the present study. Davitz administered a battery of personality tests to 80 subjects. The tests included: (1) the Guilford-Zimmerman Temperament Survey; (2) the Allport-Vernon-Lindzey Study of Values; (3) the Edwards Personal Preference Schedule; and (4) the Psychaesthenia and Hysteria scales of the MMPI. He then divided the subjects into two groups of equal size. Decoding ability was measured by the subjects' responses to a tape recording developed by Davitz' co-workers. The tape was a 37-item content standard instrument which consisted of recitations of 10 emotions (i.e., a speaker

repeats a sentence such as "What are you doing?", while attempting to convey anger, fear, joy, etc.). Of the 33 correlations obtained from the first group of subjects, 3 were found to be significantly different from zero. Davitz reports that these results could have been obtained by chance, and this impression was strengthened by the fact that none of the correlations was cross-validated in the second group. He then concluded: "the present shotgun procedure using questionnaire techniques is clearly not a profitable line for further investigation" (p. 60).

It appears that these two studies have had a substantial impact in this field, as very little research has been conducted since that time in which broad range personality tests have been used. The majority of researchers have taken Davitz' advice to heart and have focused on variables such as introversion-extroversion, test anxiety, and field dependence as possible correlates of encoding and decoding ability. It will be remembered that Thompson and Meltzer's (1964) judges reported that those decoders who were most relaxed were easiest to judge; this observation has subsequently been further investigated.

Buck, Savin, Miller, and Caul (1972) used an experimental paradigm invented by R. E. Miller (1967) to study the effect of anxiety and several other variables on encoding and decoding accuracy. This technique consists of having an encoder view emotionally-laden slides while he is being surreptitiously viewed by a decoder. The decoder then attempts to categorize correctly the slide being viewed as well as rate the encoder's emotional response to the slide. Buck et al. first administered several personality scales to 20 female subjects. The scales were: (1) the Eysenck Extroversion-Introversion Scale; (2) the Janis and Field Self Esteem Scale; (3) the Byrne Repression-Sensitization

Scale; (4) the Alpert and Haber Test Anxiety Scale; and (5) the Marlowe and Crowne Social Desirability Scale. The subjects were then divided into pairs, with the encoders seated facing a screen upon which the slides were projected, while the decoders (unknown to the encoders) watched the encoders' facial expressions via closed circuit television. The 25 slides were categorized into five groups: sexual; scenic; children-mothers; disgusting-horrible; and unusual-interesting. After viewing the slide for a 10-second period, the encoders first verbally described their emotional response and then rated their reaction to the slide on a 9-point pleasant-unpleasant scale. While the encoders were making their ratings and then waiting for the next slide, the decoders attempted to correctly categorize the slide and rate the encoders emotional response on a 9-point scale. Two accuracy measures were then obtained: percentage of slides correctly categorized by the decoders, and the correlation between the encoders and decoders pleasantness ratings. The results were that nonverbal communication as measured by the pleasantness index was not significantly related to any of the personality measures. The categorization index, however, was positively related to several personality measures. For encoders, positive correlations were found between accuracy and extroversion ($r = .62$), accuracy and test anxiety ($r = .85$), and accuracy and debilitating test anxiety ($r = .65$). For decoders, a correlation was found between accuracy and self-esteem ($r = .64$).

These results tend to support the hypothesis that there is a relationship between personality factors and nonverbal communication, at least in terms of accurate categorization of emotion. The findings of Thompson and Meltzer (1964) are thus contradicted on both counts, i.e.,

a relationship seems to exist and anxiety does not seem to be a debilitating factor. Anxiety may, in fact, be related to performance in a curvilinear fashion (Spence, 1960). In addition, two results that appear to have face validity are reported. It seems logical that extroverts would be effective encoders, and that a good sense of self-esteem would enhance accurate decoding. These results, however, were obtained only with female pairs of subjects.

In a more recent study Buck, Miller, and Caul (1974) utilized the same experimental paradigm in an attempt to replicate and expand their previous results. In this study, however, males and females were paired in all possible combinations of encoder and decoder subjects. Another change from the earlier study was the substitution of the Budner Intolerance of Ambiguity Scale for the Marlowe and Crowne Social Desirability scale. The results of this study were: (1) female encoders were more accurate communicators than males in terms of both the categorization and pleasantness-unpleasantness ratings and this was true when they were paired with both male and female decoders; (2) female decoders were not significantly more accurate than male decoders; and (3) the personality measures were not related to accurate categorization of the slides. These results, therefore, do not support the earlier results and tend to suggest that the 1972 results were spurious.

There were, however, two other sets of results that do imply there is some relationship between personality and nonverbal communication. On the basis of a contrast between measures of physiological arousal (GSR and heart rate) and facial movement of the encoders, Buck et al. divided the encoders into two groups, which they labeled externalizers and internalizers. The externalizer subjects showed a large degree of

facial movement in response to the slides, but did not exhibit large GSR and heart rate changes. The internalizers displayed the opposite response pattern, i.e., small facial changes and large physiological changes. Externalizers tended to be females and internalizers tended to be males. When the personality test scores of the externalizers and internalizers were contrasted, it was discovered that the internalizers tended to have a lower sense of self esteem, a greater degree of introversion, and a greater degree of sensitization than the externalizers. The internalizers thus do not report an emotional experience when physiological measures show it to be present. This result seems to have important implications for mental health, especially in light of theories of the etiology of psychophysiological disorders (Wolberg, 1967).

Lanzetta and Kleck (1970) used a similar experimental paradigm to study the relationship between GSR response and accurate encoding and decoding. During the first phase of this experiment the subjects were clandestinely videotaped during a series of trials in which they were shocked after a red light was presented and not shocked following the presentation of a green light. The subjects then viewed the videotapes of themselves and others and attempted to determine whether the trial they were viewing was a shock or nonshock trial. The subjects were shocked if their response was inaccurate. The results were that affect was both encoded and decoded above the chance level ($p < .001$), but while significant differences were found between subjects in encoding ability ($p < .001$), none were found in decoding ability. It was also found that decoders were no more or less sensitive to their own nonverbal displays than to the displays of others. A strong negative correlation ($r = -.80$), however, was found between encoding and decoding

ability. Thus, those who are good encoders are generally poor decoders and vice versa. The final two results tend to confirm the results of Buck and his colleagues. These results were that more errors were made in judging subjects who showed high GSR activity, but these same subjects tended to be the best judges of others. In discussing their results, Lanzetta and Kleck state their findings do not support the theory that there is a general communication factor which underlies accurate nonverbal communication, as good actors do not make good judges and good judges do not make good actors. In discussing the GSR results the authors speculate that some individuals have been punished for overt emotional displays and have therefore learned to inhibit such displays. They are, however, aroused by affect laden stimuli and experience conflict between tendencies to express and to inhibit. The high level of GSR activity is due to the combination of affective arousal and conflict. These same individuals are sensitive to affect displays in others, as these are often the cues to their own arousal and serve as warnings that suppression may be necessary.

Another of the results reported by Buck, Miller and Caul (1974) suggested that internalizers tend to be introverts. This implies that introverts will be generally poor encoders and good decoders. Duckworth (1975) attempted to study introverts as decoders in greater detail. His study investigated whether emotionally provoking disagreements between 36 marriage partners influenced their ability to identify each others feelings from vocal cues. The Eysenck Personality Inventory was used as a measure of introversion. The results were that among the males only the decoding ability of stable introverts increased after the disagreements, while that of neurotic introverts decreased ($p = .01$). It

thus appears that the rather consistent findings that extroverts are good encoders while introverts are good decoders may need to be modified in the light of the inconsistent findings concerning the effect of anxiety on performance. It seems that anxiety may foster the performance of introverts who are otherwise emotionally healthy, but prove deleterious to introverts who are emotionally troubled. A similar interaction may be posited concerning anxiety and extroversion, but this has not been experimentally explored.

Two recent studies have focused on the effect that the decoder's current emotional state has on his judgments of others. The earliest of these, Cohen and Rau (1972), compared the judgments of depressed and normal subjects. The depressed subjects were first interviewed and rated for their degree of depression. All subjects were then asked to look at a group of facial photographs and complete the following sentence for each photograph: "This face looks. . ." (p. 449). The photographs were divided into four categories: sad, thoughtful, contented, and happy. The result of this phase of the experiment was that very minimal differences were found between the groups, i.e., the depressed decoders were as accurate as the nondepressed decoders. In the next phase of the experiment the decoders were asked to "Pick out one that best looks like you feel right now" (p. 450). The results were that the depressed subjects predominantly chose photographs from the sad and thoughtful categories, while nondepressed subjects chose photographs from the contented and happy categories ($p < .001$). When the selected photographs of the depressed subjects were rated by judges on a seven-point scale from elated to depressed, and these ratings were compared to the interviewers' ratings of the subjects' degree of depression, a

highly significant correlation was obtained ($p < .005$). Cohen and Rau, therefore, did not find evidence that the decoder's emotional state adversely affected his performance.

Schiffenbauer (1974), however, was able to produce evidence that affective arousal tends to influence a decoder's judgments. He divided 60 subjects into 5 groups and each group received a different emotional arousal manipulation. The manipulation consisted of listening to tapes. These were either: white noise at high volume, white noise at low volume, a comedy tape, a disgust tape, or a control tape. Each subject judged a series of facial expression slides during scheduled breaks in the tape. The results were that the subject's own emotional state exerted a strong influence on his judgment of another's emotional state. The comedy group, for example, gave the lowest percentage of negative labels, the control group the next lowest percentage, and the disgust group gave the highest percentage ($p < .05$). This was also discovered to be a linear relationship ($p < .01$). Thus, an aroused subject was more likely to attribute to the photographs the emotion he was feeling or a similarly valenced emotion than was a nonaroused or differently aroused subject. It was further found that a subject's own emotional state had an influence on the intensity of emotion he attributed to the slides. The more aroused a subject was, the more intense was the affect he attributed to the slides. This effect was independent of the affect expressed in the slide, and both of these effects held true for both positive and negative emotional states of the decoders.

In attempting to discover personality correlates of encoding and decoding abilities, researchers have also focused on traits which common sense dictates should be related to these skills. Approval seeking

tendencies, for example, might well be related to accurate communication of positive affects, but not of negative affects. High approval seekers might be expected to be attuned to stimuli indicating acceptance and approval, and to have given some effort to developing their repertoire of approval inducing nonverbal behaviors. Zaidel and Mehrabian (1969) tested this hypothesis as one aspect of a rather complex study. In the first part of their experiment, Zaidel and Mehrabian administered the Crowne and Marlow Social Desirability Scale to a large pool of subjects, and then selected the three highest and lowest scoring males and females to participate in an encoding and decoding task. The task combined both verbal and visual channels of communication, and involved five degrees of positive and negative attitudes, i.e., strong positive, moderately positive, neutral, moderately negative, and strong negative. In the second part of the experiment, 36 male and 36 female subjects were first divided into high approval seeking and low approval seeking groups. These subjects then decoded the recorded vocal and visual nonverbal communications of the subjects from the first part of the experiment. The results were that for both the visual and vocal channels, low social approval seekers were more accurate encoders than were high social approval seekers. The major reason for this, however, was the superiority of the low social approval seekers in communicating negative attitudes. The high social approval seekers were slightly better at encoding positive attitudes, but this difference was outweighed by their difficulties in communicating negative affect. In contrast to the encoding differences, there were no differences found between the groups in decoding ability.

In a somewhat similar vein as Zaidel and Mehrabian, Snyder (1974) developed a Self-Monitoring Scale, and attempted to apply this idea to the problem of accurate encoding and decoding. He reports that self-monitors are not necessarily high approval seekers, as those who score high on the need for approval tend to be somewhat schizoid. He states that those who are high on self-monitoring are people who: (1) are concerned about their own social appropriateness, (2) are sensitive to the expressions and self-presentations of others as cues to the social appropriateness of self-expressions, and (3) use these cues for monitoring and managing their own self-presentations. Snyder then developed a scale designed to assess self-monitoring (SM). This scale is not significantly correlated with the Marlowe and Crowne Social Desirability Scale, the MMPI Pd Scale, the Alpert and Haber Test Anxiety Scale, or with measures of inner and other directedness. When Snyder divided encoders and decoders into high and low groups based on self-monitoring (SM) test scores, he found that his test correlated positively with both encoding and decoding ability. When high SM encoders were paired with high SM decoders, the most accurate communication occurred. The next most accurate pairing occurred with high SM encoders and low SM decoders. The two least accurate pairings, respectively, were low SM encoders with high SM decoders, and finally low SM encoders with low SM decoders.

Another approach that has recently received some attention in the literature is an attempt to correlate field dependence with encoding and decoding accuracy. Wolitzky (1973) reports that it has been suggested that field dependent subjects have superior performance to field independent subjects in only one area: attunement to and memory for socially relevant stimuli. It has therefore been postulated that field

dependent subjects may be highly accurate decoders. Wolitzky, however, states that interest does not guarantee perceptiveness, and he tested the hypothesis that field independent subjects are more accurate decoders than field dependent subjects. Wolitzky's stimuli to be judged by the decoders was the Feldstein Affect Judgment Test. This is a vocal test of nonverbal communication in which a neutral passage is repeatedly read in tones of anger, depression, fear, hate, joy, nervousness, sadness, and neutral. The task of the decoder was to correctly identify the affect being expressed. The result of this experiment was that field independent subjects were significantly more accurate decoders than field dependent subjects ($p < .001$). Thus, Wolitzky's comment that interest does not guarantee perceptiveness has received support.

Additional support for the communicative superiority of field independent subjects comes from the work of Shennum (1976). He compared field dependent and independent subjects as encoders. Using the familiar Miller experimental paradigm (Miller, 1967), Shennum had 20 field dependent and 20 field independent female subjects view 6 pleasant and 6 unpleasant slides while their facial expressions were being videotaped by a concealed camera. These tapes were later viewed by jduges who attempted to correctly categorize the slides being viewed. When Shennum divided the encoders into high and low expressive groups, he found that the nonexpressive encoders were significantly more field dependent than the expressive encoders. Thus, Shennum's results parallel Wolitzky's, and Shennum concludes that field dependent subjects were possibly raised in families in which strong adherence to social authority was practiced in conjunction with parental admonitions against emotional

expressiveness. As adults, therefore, these subjects are both field dependent and nonexpressive.

The foregoing studies essentially constitute the entirety of published experimental research to date on personality correlates of encoding and decoding. It is quite evident from this review that there does not seem to be any clear trend emerging from the literature. The findings of one author seem contradicted by the next, and so little work has been done that it seems quite premature to state that personality factors are not related to communicative ability. It is the present author's opinion that the dearth of consistent findings in the literature are more representative of the lack of well-controlled research and general paucity of work that has been done, than the possibility that accurate nonverbal communication is unrelated to personality factors. It seems that the well-constructed research guidelines laid down by Ekman and his colleagues (Ekman, Friesen, and Ellsworth, 1972) have essentially been ignored, and that the previously noted pessimism of the Thompson and Meltzer (1964) and Davitz (1964) studies has been given too much credence.

Hypotheses

The current lack of clear trends in the literature indicates that research on personality correlates of nonverbal communication is still in the "frontier" stage. So little has been done and even less replicated that very specific research hypotheses seem premature. The hypotheses under investigation in the present study are, therefore, of a general nature.

The first hypothesis is that significant differences are expected to occur on one or more of the CPI scales among the high, medium, and low accuracy encoding groups. It is predicted that accurate encoding will be related in a positive linear fashion to CPI scores that are found to be significantly different.

The second hypothesis is that significant differences are expected to occur on one or more of the CPI scales among the high, medium, and low accuracy decoding groups. It is predicted that accurate decoding will be related in a positive linear fashion to CPI scores that are found to be significantly different.

The third hypothesis is that the intercorrelations among all the encoding accuracy scores will be positive and significant. This is an hypothesis which postulates that encoding is a general trait rather than a set of discrete abilities.

The fourth hypothesis is that the intercorrelations among all the decoding accuracy scores will be positive and significant. This is an hypothesis which postulates that decoding is a general trait rather than a set of discrete abilities.

CHAPTER II

METHOD

Subjects

The subjects for this study were 72 male, Caucasian, undergraduate students at Oklahoma State University. The age range was from 18 to 21 years. Half of the subjects served as encoders (mean age = 19.3 years) and half served as decoders (mean age = 18.8 years).

Materials

All subjects were administered the California Psychological Inventory. Photographs of the subjects who served as encoders were taken with a tripod-mounted 35 mm Nikon F camera. The subjects who served as decoders viewed 144 35 mm slides which were the photographs of the encoders. The decoders were provided with checklists on which to indicate their judgment of the emotion expressed in each slide. The order of the list of emotions at the top of the checklist was randomized for each decoder.

Procedure

The first group of 36 subjects were the encoders. They were met individually in the photography room by the experimenter. The room contained a desk, on top of which was the camera, and a piece of masking tape placed on the floor 10 feet in front of the camera. This distance

allowed the subject's entire body to appear on the slide. Color film was employed, the speed of which was such that natural lighting conditions were used.

The subject was asked to stand facing the camera with his toes placed on the masking tape. The following verbal instructions were then read to the subject:

> My name is Tom Dohne. As part of my research I would like to take some pictures of you while you are imagining that you are experiencing four different emotional states. I will first tell you what the emotion is, then describe a short scene appropriate to that emotion. I will then ask you to practice imagining yourself in the situation, experiencing the emotion, and expressing it without using words. When you feel ready to go ahead, I will turn around, count to four, and then take your picture. Please pretend that the camera is the person whose actions I will be describing.

The four scenes were presented to the subject, one at a time, in a random order. The scenes and their corresponding emotions were:

(1) Anger: A person insulted your date.

(2) Fear: A person threatened you with physical violence.

(3) Sorrow: A person informed you of the death of a loved one.

(4) Neutral: You are simply looking at another person.

After each photograph was taken the experimenter asked the subject if he had been ready when the picture was taken. If the subject replied he had not been, the scene was repeated and another photograph was taken. This procedure closely follows that suggested by Ekman, Friesen, and Ellsworth (1972); the role playing instructions were first used by Fromme and Schmidt (1972). At the conclusion of the photography session the subject was thanked for his cooperation and was directed to another room where the California Psychological Inventory (CPI) was administered. The instructions, which were read to the subject, were as follows:

> As the second part of my research I would like you to complete the questionnaire that is on the desk before you. I will read the directions out loud. Please follow along with me.

The directions on the front of the CPI booklet were then read to the subject. When the directions had been read, the experimenter continued: "You may take as much time as you like to finish the questionnaire. When you have finished, please turn it in to me."

The 36 subjects who served as decoders were met in small groups by the experimenter. The room contained desks, chairs, and a 35 mm slide projector which was placed 40 feet away from a movie screen. The following instructions were read to the subjects:

> My name is Tom Dohne, and as part of my research I would like for you to view some slides of people who are expressing various emotions. On the desk before you are some sheets of paper with rows numbered from 1 to 144, and columns labeled Anger, Fear, Sorrow, and Neutral. When I show a slide I will call out its number. Please place a checkmark in the column which you feel best describes the emotion being expressed by the person in the slide. The slides will be exposed for 10 seconds each.

The subjects were then shown the slides which had been placed in a random order. As soon as a slide appeared on the screen, the experimenter called out its number. Following the 10-second exposure, a 10-second period of illumination was provided during which the subject could mark his response. This was done by alternating a slide with a blank space in the carrousel. This is a procedure that closely approximates that used by Ekman and Friesen (1967).

When the judging session was completed, the experimenter asked the subjects if they knew any of the people whose pictures they had seen. If a positive response was given to the question, that decoder's participation in the experiment was terminated. The CPI was then administered to the subjects using the same procedure as previously described.

CHAPTER III

RESULTS

Independent Variables

Accuracy scores served as the basis for dividing both the encoders and decoders into three groups of equal size (n = 12). This was done for each of the four affect conditions plus an overall condition (total). The overall condition was the sum of the four affect conditions. The accuracy score for each encoder in each condition was the number of decoders who correctly identified the emotion the encoder was attempting to express. The accuracy score for each decoder in each condition was the number of encoders whose emotional expression the decoder correctly identified. The groups were then labeled high, medium, and low accuracy.

It should be noted that the scores for the various conditions are quite dissimilar (see Appendix B, Figures 9 through 18). Thus, while an encoding accuracy score of 22 would place an encoder in the low accuracy group for the neutral condition, this same raw score obtained in the fear condition would place him in the high group. Also, it should be noted that the encoder accuracy distributions follow a generally bimodal shape while the decoder accuracy distributions follow a generally normal shape.

Dependent Variables

There were 18 dependent variables employed in this study. These

are the 18 CPI scales (see Appendix C). Prior to any further analysis, the CPI raw scores were transformed to T-scores. This was done to make the scores on the various scales more comparable.

Analysis of Variance

The CPI scores were then analyzed by means of a one-way analysis of variance. This was performed for each of the affect conditions for both encoders and decoders. Thus a total of 180 separate analyses were performed. In all cases the degrees of freedom were 2 and 33.

Calculated values of F and their associated p values for all CPI scales in all treatment conditions for both encoders and decoders are presented in Tables XXIX and XXX of Appendix C.

Table I presents summary data for encoder variables with p values $\leq .05$. A total of six variables were found to be significant at these levels.

Table II presents summary data for decoder variables with p values $\leq .05$. A total of four variables were found to be significant at these levels. Variables found in Tables I and II are also presented in Figures 1 through 7.

Trend Analysis

The data from the ten significantly different variables were further analyzed, at this point, by means of a trend analysis. This was accomplished by attempting to fit both linear and quadratic orthogonal polynomial coefficients. Summary data from these analyses are presented in Tables III and IV.

TABLE I

ANALYSIS OF VARIANCE: ENCODER CPI VARIABLES
WITH p VALUES $\leq .05$

Condition	CPI Variable	Group Means	F-Ratio	Probability
Sorrow	Py (16)	Low = 49.08 Med = 42.50 Hi = 52.67	3.44	0.04
Fear	Fx (17)	Low = 44.83 Med = 55.00 Hi = 47.25	3.76	0.03
Neutral	Do (1)	Low = 49.17 Med = 47.25 Hi = 57.83	3.59	0.04
Neutral	Sy (3)	Low = 50.00 Med = 43.50 Hi = 54.50	3.91	0.03
Anger	Sy (3)	Low = 42.75 Med = 50.75 Hi = 54.50	4.81	0.01
Total	Cm (12)	Low = 53.92 Med = 45.17 Hi = 53.58	3.24	0.05

TABLE II

ANALYSIS OF VARIANCE: DECODER CPI VARIABLES
WITH $\underline{p}$ VALUES $\leq$ .05

Condition	CPI Variable	Group Means	F-Ratio	Probability
Anger	Fx (17)	Low = 56.33 Med = 51.50 Hi = 45.17	4.56	0.02
Total	Sp (4)	Low = 55.25 Med = 44.67 Hi = 53.75	6.26	0.005
Total	Re (7)	Low = 42.83 Med = 50.50 Hi = 52.75	3.21	0.05
Total	Ie (15)	Low = 54.92 Med = 45.92 Hi = 55.00	4.10	0.03

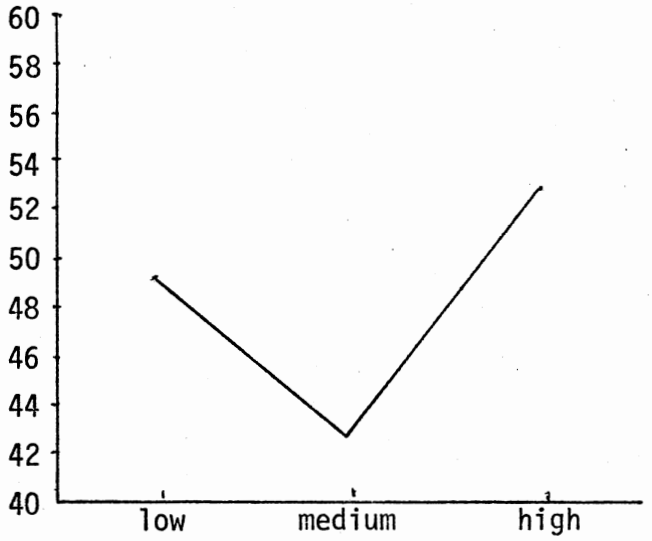

Figure 1. Relationship of Psychological Mindedness Test Scores to Sorrow Encoding Accuracy

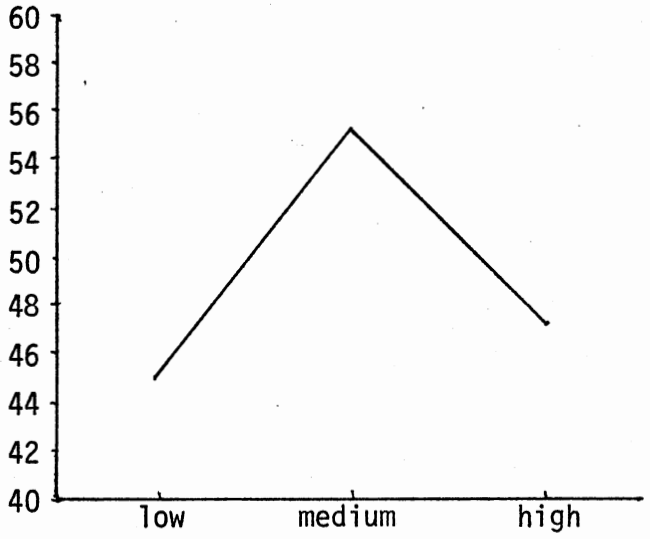

Figure 2. Relationship of Flexibility Test Scores to Fear Encoding Accuracy

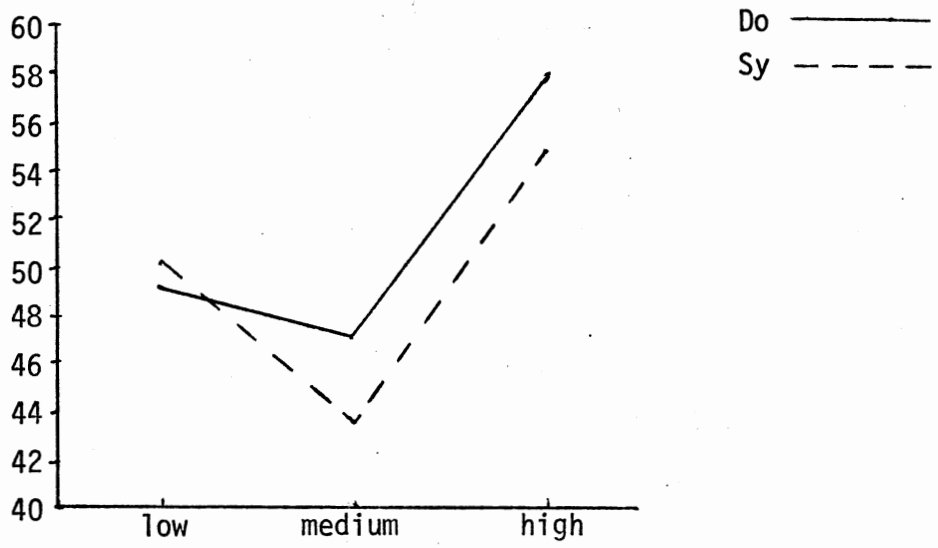

Figure 3. Relationship of Dominance and Sociability Test Scores to Neutral Encoding Accuracy

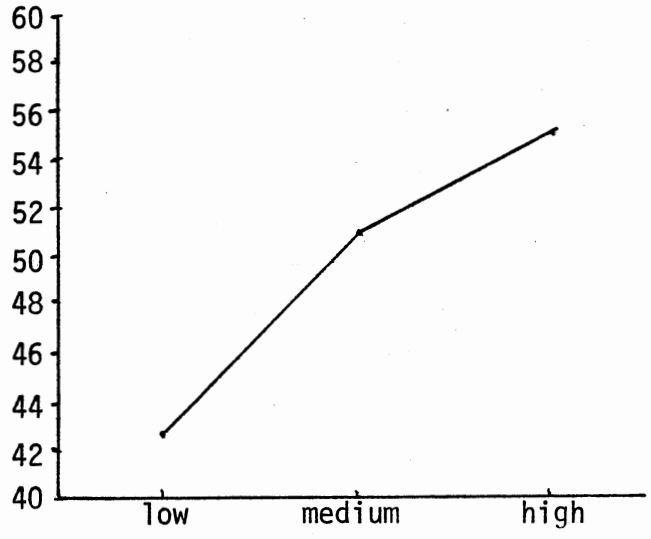

Figure 4. Relationship of Sociability Test Scores to Anger Encoding Accuracy

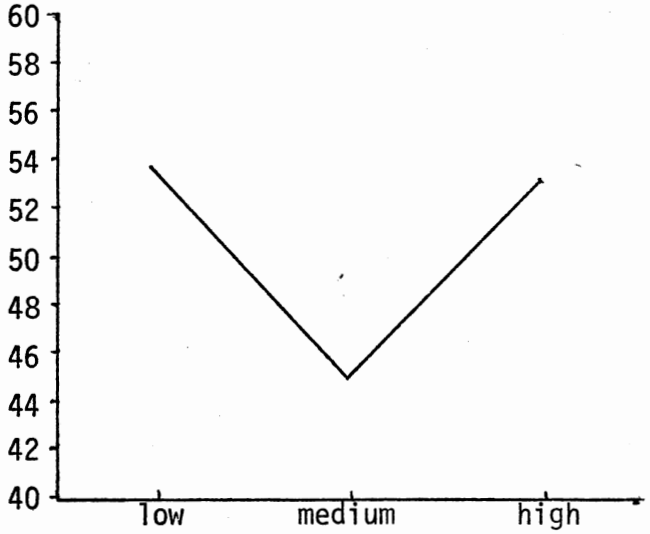

Figure 5. Relationship of Communality Test Scores to Total Encoding Accuracy

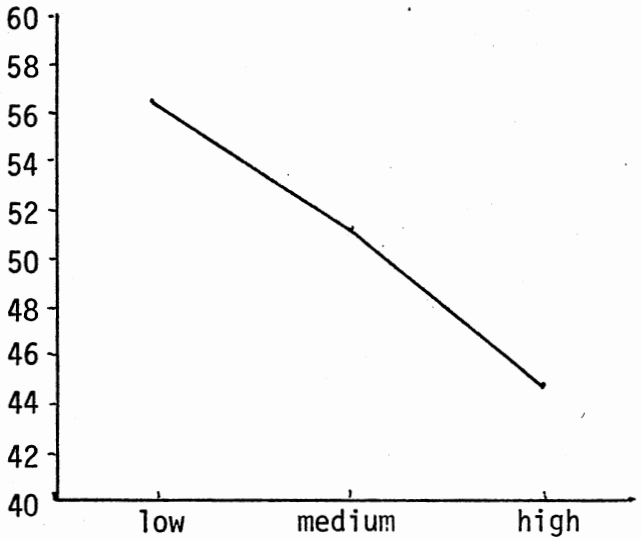

Figure 6. Relationship of Flexibility Test Scores to Anger Decoding Accuracy

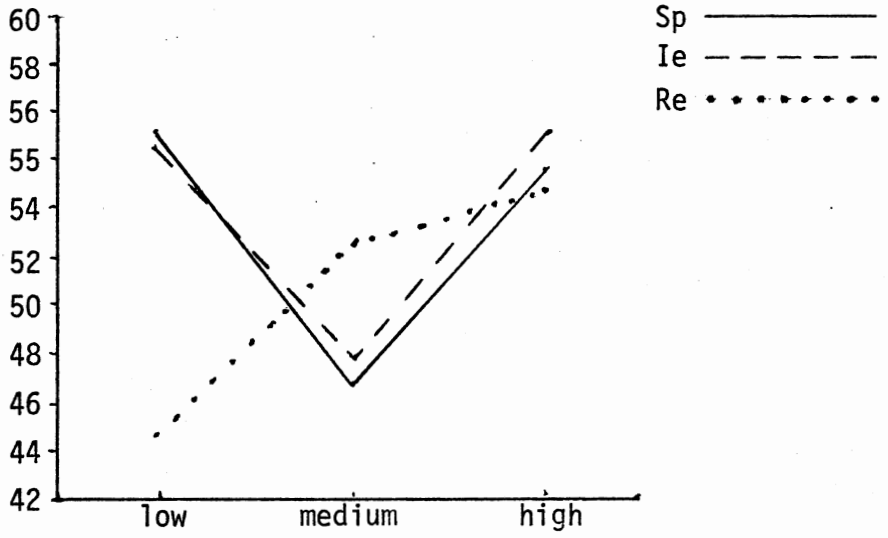

Figure 7. Relationship of Social Presence, Intellectual Efficiency, and Responsibility Test Scores to Total Decoding Accuracy

TABLE III

ORTHOGONAL POLYNOMIAL TREND ANALYSIS: ENCODER CPI VARIABLES WITH $\underline{p}$ VALUES $\leq .05$

Condition	CPI Variable	F-Ratio	d.f.	Probability
Sorrow	Py (16)	$F_{lin.} = 0.52$	1, 33	0.52
		$F_{quad.} = 6.35$		0.02
Fear	Fx (17)	$F_{lin.} = 0.08$	1, 33	0.77
		$F_{quad.} = 7.45$		0.01
Neutral	Do (1)	$F_{lin.} = 2.84$	1, 33	0.10
		$F_{quad.} = 4.34$		0.04
Neutral	Sy (3)	$F_{lin.} = 0.38$	1, 33	0.55
		$F_{quad.} = 7.44$		0.01
Anger	Sy (3)	$F_{lin.} = 9.03$	1, 33	0.005
		$F_{quad.} = 0.59$		0.55
Total	Cm (12)	$F_{lin.} = 0.00$	1, 33	0.98
		$F_{quad.} = 6.47$		0.02

TABLE IV

ORTHOGONAL POLYNOMIAL TREND ANALYSIS: DECODER CPI VARIABLES WITH p VALUES $\leq .05$

Condition	CPI Variable	F-Ratio	d.f.	Probability
Anger	Fx (17)	$F_{lin.} = 8.54$	1, 33	0.006
		$F_{quad.} = 0.57$		0.54
Total	Sp (4)	$F_{lin.} = 0.88$	1, 33	0.64
		$F_{quad.} = 11.63$		0.002
Total	Re (7)	$F_{lin.} = 6.24$	1, 33	0.02
		$F_{quad.} \quad 0.18$		0.68
Total	Ie (15)	$F_{lin.} = 0.14$	1, 33	0.71
		$F_{quad.} = 8.06$		0.01

The results of this analysis confirm the visual impression gained by examining Figures 1 through 7. Those variables which appear to be linear are confirmed as linear (encoder Anger--Sy, decoder Anger--Fx, and decoder Total--Re), while all the remaining variables are confirmed as quadratic.

Dunn's Multiple Comparison Tests

Those variables which were found to contain significant quadratic trends were analyzed by Dunn's Multiple Comparison Procedure. Two comparisons were performed. The first of these (t_1) tested the hypothesis that the CPI means of the low group and the high group were significantly different. The second (t_2) tested the hypothesis that the average of the means of the low and high groups were significantly different from the mean of the medium group. The α level was set at .05 and the degrees of freedom were 33 in all cases. The results of these tests are found in Tables V and VI.

Once again the visual impressions gained from Figures 1 through 7 are in large part confirmed. In all cases, except for the Neutral-Do variable, the low and high group scores are not significantly different, and the medium group score is significantly different from the average of the other two.

Correlation Matrices

The final analysis consisted of the computation of Pearson Product Moment Correlations for all the dependent and independent variables for both encoders and decoders. Levels of significance of the obtained correlations were also computed. Tables XXXI through XXXIV (Appendix D)

TABLE V

DUNN'S MULTIPLE COMPARISON TESTS: ENCODER CPI VARIABLES WITH QUADRATIC TRENDS

Condition	CPI Variable	t	d.f.	Sig. or N.S.
Sorrow	Py (16)	$t_1 = 0.91$	33	n.s.
		$t_2 = 2.46$	33	sig.
Fear	Fx (17)	$t_1 = 0.62$	33	n.s.
		$t_2 = 2.67$	33	sig.
Neutral	Do (1)	$t_1 = 2.06$	33	n.s.
		$t_2 = 1.71$	33	n.s.
Neutral	Sy (3)	$t_1 = 1.14$	33	n.s.
		$t_2 = 2.56$	33	sig.
Total	Cm (12)	$t_1 = 0.09$	33	n.s.
		$t_2 = 2.54$	33	sig.

TABLE VI

DUNN'S MULTIPLE COMPARISON TESTS: DECODER CPI VARIABLES WITH QUADRATIC TRENDS

Condition	CPI Variable	t	d.f.	Sig. or N.S.
Total	Sp (4)	$t_1 = 0.46$	33	n.s.
		$t_2 = 3.51$	33	sig.
Total	Ie (15)	$t_1 = 0.02$	33	n.s.
		$t_2 = 2.86$	33	sig.

contain the CPI intercorrelations and the correlations between the CPI scores and the various accuracy scores. Tables VII and VIII contain the intercorrelations and significance levels of the encoding and decoding accuracy scores.

Three major points are to be made in reference to these correlation tables. The first is that the total accuracy score was composed by summing the other four accuracy scores, and therefore each individual accuracy score should correlate with total accuracy at approximately $r = .50$. This, however, is not the case; with the most deviant correlations for both encoders and decoders, being the neutral correlations. The second point is that only the neutral score universally correlates in a negative direction with each of the other three individual accuracy scores. The third major point is that with the exception of total, none of the encoding accuracy intercorrelation is significant at the .05 level, while all of the decoding accuracy intercorrelations are significant at least at the .05 level, with the exception of neutral x total.

TABLE VII

ENCODER ACCURACY INTERCORRELATION MATRIX

	Fear	Neutral	Anger	Sorrow	Total
Fear	---				
Neutral	r = -0.23 p = .18	---			
Anger	r = 0.02 p = .93	r = -0.24 p = .16	---		
Sorrow	r = -0.01 p = .96	r = -0.13 p = .45	r = 0.20 p = .25	---	
Total	r = 0.42 p = .01	r = 0.06 p = .72	r = 0.64 p = .001	r = 0.63 p = .001	---

TABLE VIII

DECODER ACCURACY INTERCORRELATION MATRIX

	Fear	Neutral	Anger	Sorrow	Total
Fear	---				
Neutral	r = -.48 p = .003	---			
Anger	r = .70 p = .001	r = -.33 p = .05	---		
Sorrow	r = .61 p = .001	r = -.43 p = .009	r = .56 p = .001	---	
Total	r = .75 p = .001	r = -.08 p = .65	r = .81 p = .001	r = .78 p = .001	---

CHAPTER IV

DISCUSSION

Analysis of Variance Results

Of the 180 AOV's computed, only 10 were found to have F values $\leq$ .05. Thus, the results of the present study bear a strong resemblance to the results of Thompson and Meltzer (1964) and Davitz (1964) in that these results may have been produced by chance alone. Unlike Thompson and Meltzer, however, the present author believes that these results should not be dismissed so lightly (Thompson and Meltzer did not even report which variables were significantly different). Although 10 significant F tests out of 180 are not many, perhaps there is some knowledge to be gained, especially in an area in which so little is known. In addition, while the number of significant variables is low, the previously noted quadratic relationships have never been reported. Thus, while it may be argued that the first two hypotheses should be rejected, the quadratic trends in the data offer suggestions for future research, and a possible explanation for the apparent paucity of knowledge in this area. In much of the research that has been done previously, experimenters have divided encoders and decoders into high and low accurate groups. The results of the present study suggest that in many cases both good and bad encoders and decoders score similarly on personality measures, and the moderately accurate group is the different group.

This finding has been obscured in previous research, and thus the present author will present the significant results and speculate as to the possible meaning of each.

Before proceeding with a detailed interpretation of the results, however, an overall post hoc interpretation of the quadratic trends found in the data seems in order. It will be remembered that both Buck, Miller, and Caul (1974) and Lanzetta and Kleck (1970) found that encoding and decoding abilities were strongly negatively correlated. If, as Megargee (1972) suggests, elevation on the CPI scales is indicative of positive mental health; and if there is a correlation between mental health and communicative ability, then a possible overall interpretation of the quadratic trends may be offered. Perhaps there are two distinct and mutually exclusive methods of attaining social adaptiveness and mental health. Individuals may achieve a high level of social adaptation by being either an accurate encoder or an accurate decoder, and the most troubled individuals are those who are only relatively accurate in either realm. Those subjects, therefore, who achieve high CPI scores but a low level of encoding accuracy may be highly accurate decoders and vice versa. The moderately accurate group, on the other hand, may lack success in either encoding or decoding and thus form an emotionally troubled group. This would account for the generally low CPI scores of this middle group.

As noted, this is a post hoc hypothesis and it was not directly tested. This "either/or" hypothesis, however, may gain some support from other findings in this study. These will be discussed in more detail at a later point. Prior to this, however, the analysis of variance results will be discussed.

The first hypothesis was that significant differences were expected on one or more of the CPI scales among the high, medium, and low accuracy encoding groups. It was also predicted that these relationships would be linear. This hypothesis was partially supported by the data, as in every affect condition at least one CPI scale was found on which the groups scored significantly different. The prediction that the trends would be linear, however, was not supported as five of the six dependent variables were found to show quadratic trends ($p \leq .05$).

In the sorrow condition, scores on Psychological Mindedness (Py) were found to significantly differentiate the groups ($p = .04$). Further analysis yielded the results that the relationship between accurate encoding and scores on Py is quadratic ($p = .02$). Also, the mean of the moderately accurate group is significantly different from the average of the means of the high and low groups, while the high and low groups are not significantly different from each other. Thus, moderately effective encoders of sorrow score lower on Py than do either the most effective or least effective encoders.

It is difficult to interpret the meaning of these results as the Py scale has been poorly validated, and the validation research that has been done supports its usefulness only as a predictor of success in scientific psychology (Megargee, 1972). The scale apparently does not measure insightfulness about others as Gough intended (Gough, 1969). Thus, it appears that the importance of this particular result lies primarily in its form rather than its content, i.e., the fact that the relationship is quadratic. It may be noted that like the majority of the quadratic trends, this one is U-shaped as opposed to an inverted U-shape. High and low accurate encoders tend to score higher on this scale than

do moderately accurate encoders. It may also be noted that the means of the high and low groups are near a T score of 50, while the mean of the medium group is much lower. It thus appears that this moderately effective group is the deviant one. A speculative hypothesis is that both effective and noneffective encoding lead to predictable (though different) results, while those in the middle range are in a more ambiguous situation. They may therefore be more troubled than either the highly successful or typically unsuccessful encoders. This result is very much in line with the "either/or" post hoc hypothesis.

In the fear condition, scores on Flexibility (Fx) were found to differentiate the groups significantly ($p = .03$). Trend analysis, once again, revealed a significant quadratic trend ($p = .01$). In a fashion similar to the results for the sorrow condition, comparison testing supported the conclusion that the high and low accurate encoders scored similarly, while the moderately accurate encoders formed the deviant group. In marked contrast to the sorrow condition results, however, the moderate group mean was higher than the means of the other two groups. An inverted U-shaped function was found.

Once again, interpretation of these results is difficult as Fx has been poorly validated (Dicken, 1963). Megargee (1972) suggests that high scorers are imaginative and individualistic while low scorers are conservative and rigid. A possible interpretation of these results is suggested by the work of Cline (1964). He suggests that a large portion of the variance encountered in person perception research may be accounted for on the basis of stereotype accuracy. Those who hold accurate stereotypes communicate effectively while those who hold inaccurate stereotypes do poorly. It may be that the low and high groups rigidly

adhere to their stereotypes of how a fearful person looks, and the difference is that the low group holds an inaccurate stereotype while the high group holds an accurate one. The medium group appears to be imaginative and individualistic (high Fx scores). Perhaps these qualities interact with the stereotypes that this group holds in a fashion that produces moderately effective encoding. Thus, being imaginative and abandoning a stereotype will lead to more success if the stereotype is inaccurate, and to less success if it is accurate.

In the Neutral condition scores on two CPI scales were found to significantly differentiate the groups. These scales were Dominance (Do) and Sociability (Sy). Computed probabilities were $\underline{p} = .04$ and $\underline{p} = .03$, respectively. Trend analysis confirmed both these variables as quadratic, with $\underline{p} = .04$ for Do and $\underline{p} = .01$ for Sy. When comparison tests were performed, however, the two variables ceased to be similarly related to accurate encoding. For Sy only, the average of the means of the high and low groups was significantly different from the mean of the medium group. Neither of the comparison tests performed on the means of the Do scores was significant and so, unlike the previously discussed results, the moderately effective encoders do not constitute the deviant group. In fact, this variable appears to have a pronounced linear as well as quadratic trend, with the mean of the highly accurate group considerably elevated above the other two means.

Interpretation of these results does not suffer from the same disadvantage as the previously discussed results; both Do and Sy are relatively well-validated scales. Do and Sy also seem to be assessing similar traits, and it is not surprising that if one of these scales is correlated with encoding ability, then so is the other. Megargee (1972)

reports that for males the correlation between Do and Sy is .61, and this is a higher correlation than either of these scales attains with any other CPI scale. Interpretation of these results, therefore, will be made with both scales considered in tandem rather than individually.

Once again, it is the form of these results, the quadratic trend, that makes interpretation difficult. It appeals to common sense that aggressive, confident, outgoing, and sociable individuals (high Do and Sy scorers) would be the most effective encoders. This holds true in the neutral condition. But the fact that the least effective encoders score higher on these scales than the moderately effective encoders poses problems in interpretation. If, however, the task to be performed in this condition is examined, it will be noted that in contrast to the other affect conditions the Neutral condition calls for the absence of an affect display. The previously discussed results of Buck and his colleagues (1972 and 1974) and Lanzetta and Kleck (1970) concerning introverted subjects (i.e., internalizers) also may help to explain these results. It will be recalled that the general consensus of these studies was that introverts are poor encoders. This is due in part to the lack of facial movement of these individuals. When one attempts to encode a neutral condition, however, this lack of facial movement becomes an asset. If low scores on Do and Sy can be considered indicative of introverted tendencies, then perhaps these results can be understood. The least effective encoders are neither predominantly introverted nor extroverted, the moderately effective encoders are introverted and their typically blank expressions help them enact this particular condition, and finally the extroverted subjects are the most effective encoders as has been noted in prior research (Lanzetta and Kleck, 1970).

In the Anger condition, scores on Sociability (Sy) were found to significantly differentiate the groups ($p = .01$). Trend analysis, in contrast to the previously discussed results, revealed a significant linear trend ($p = .005$). Comparison tests were not performed. These results are the results that are most in line with the research hypothesis of this study. A positive linear trend was discovered on a CPI variable that seems to be in line with the results of prior studies. Megargee (1972) describes the sociability scale in terms that leave little doubt as to its close relationship to measures of introversion-extroversion. High scorers on Sy possess extroverted qualities, while low scorers seem introverted. Both the work of Buck et al. (1972 and 1974) and Lanzetta and Kleck (1970) describe extroverts as the most effective encoders and introverts as the least effective. In the anger enactment condition these previous findings are supported by the group's scores on the Sy scale. The high Sy subjects were the best encoders of anger, the medium Sy subjects were moderately effective encoders, and the subjects who scored lowest on Sy were the poorest encoders.

The final encoding condition, Total, is simply the summation of the accuracy scores on each of the other four conditions. In this overall condition, scores on Communality (Cm) were found to significantly differentiate the groups. Another quadratic trend is observed ($p = .02$), and once again comparison testing led to the conclusion that the high and low accurate groups score similarly and are distinct from the medium accurate group. Thus, moderately effective encoders in the summation condition score lower on Cm than do either the most or least effective encoders.

As will be remembered, Cm is primarily a validity scale that was designed to detect a random response pattern, and the scale is composed of items answered in the keyed direction by 95 percent of the normative samples (Megargee, 1972). Megargee (1972) cautions that this scale should be used "simply as an indicator of improperly answered protocals" (p. 71), but he goes on to provide some "clinical" interpretations of the scale. High Cm scores are said to reflect a conventional attitude, while those who score low are described as unconventional. This suggests a possible interpretation for these results. This interpretation, once again, supports the "either/or" hypothesis. Both effective and noneffective encoders are conventional, while moderately effective encoders are deviant. Perhaps there are two ways of attaining conventionality: by being either an effective encoder or an effective decoder. Those subjects who are conventional but poor encoders may be good decoders. The middle group, however, fails to succeed in either encoding or decoding and thus is the unconventional and deviant group.

The second hypothesis under investigation was that significant differences on one or more of the CPI scales were expected among the high, medium, and low accuracy decoding groups. It was also predicted that these relationships would be linear. This hypothesis was supported by the data only in the Anger and Total conditions. Significant differences were found in these conditions, but trend analysis confirmed two of the dependent variables as quadratic while the other two were found to be linear as predicted. Thus, unlike the encoding results, the decoding results did not support the hypothesis to a large extent. A possible speculation at this point is that encoding and decoding are two distinctly different abilities that are in large part inversely related to

each other. This idea has previously been noted and will be expanded upon at a later point in this paper. For the present, however, note should be made of the fact that in the decoding conditions the total condition seems most related to personality factors, while in the encoding conditions personality factors seem related to each specific type of enactment. Perhaps decoding is a general ability while encoding is more specific in nature.

As noted, significant differences were observed for decoders in only two of the five conditions. In the Anger condition scores on Flexibility (Fx) were found to significantly differentiate the groups (p = .02). The relationship between Fx scores and accurate decoding of anger appears to be negatively accelerating and linear. Trend analysis confirmed the trend as linear (p = .006), and comparison tests were therefore not performed. Thus, poor decoders are the most flexible, moderately effective decoders score near the mean on the Fx scale, and the most effective decoders score the lowest.

The Fx scale has not been very well-validated, and this provides a good degree of tentativeness to interpretation of these results. Megargee (1972) suggests that Fx is best thought of as correlating negatively with measures of rigidity (i.e., the California F and E scales), and cautions against interpreting high scores on Fx as an indication of creativity and flexibility. It therefore seems that the most rigid decoders are the best discriminators of anger in others, or they may see anger in all expressions. A speculative interpretation of these results coincides with Snyder's (1974) work with self-monitoring subjects. Rigid subjects (low Fx scores) may be especially tuned to angry expressions in others as a sign that they themselves have violated a norm.

These subjects, therefore, are very adept at discriminating cues indicative of others' anger, and thus do well on a task designed to test these skills. Less conventional subjects (high Fx scorers) may not be so attuned and thus do poorly. Subjects who score near the mean on the Fx scale are neither especially attuned nor oblivious to these cues, and thus fall in the middle of the accuracy range.

The Total decoding condition was the only other judging condition in which CPI scores were found to significantly differentiate the groups. These differences were observed on the Social Presence (Sp), Intellectual Efficiency (Ie), and Responsibility (Re) scales. F tests performed yielded p values of .005 for Sp, .03 for Ie, and .05 for Re. Trend analysis confirmed both Sp and Ie as quadratic; $\underline{p}$ = .002 and $\underline{p}$ = .008, respectively. Comparison testing led to the conclusion that for both of these variables, the high and low accurate groups were not significantly different from each other, but they were significantly different from the means of the middle accurate group. In contrast, Re was found to be linear ($\underline{p}$ = .02), and comparison tests were therefore not performed. Thus, for both the Sp and Ie scales the low and high accurate decoders score higher than the moderately accurate group, while the Re scale displays a positively accelerating linear relationship to decoding accuracy.

These results lend credence to the interpretative basis employed in explicating the preceding results in which quadratic trends were discovered. The assumption implicit in many of the previous interpretations is that while the high and low accurate groups score similarly on certain CPI scales, there exist, nonetheless, differences between them. Inspection of Figure 7 (the Total-decoding results) will reveal that the two quadratic relationships essentially occupy the same points on the graph,

with the Sp and Ie mean scores of the high, medium, and low accuracy groups being almost indistinguishable. The mean Re scores, however, are quite different for each group and the difference between the high and low groups is large. Thus, both highly accurate and relatively inaccurate encoders may be described as self-confident, intelligent, and poised. The difference between them, however, is demonstrated by their scores on Re. The highly accurate judges are conscientious, cooperative, and reliable in addition to the aforementioned attributes, while the low accurate group tends to be careless, lazy, and rebellious. Thus, the self-confidence and high level of intelligence that some previous studies (Bruner and Tagiuri, 1954; Buck, Savin, Miller, and Caul, 1972) have found to be associated with accurate decoding are confirmed as correlated with decoding ability in the present study only when these attributes are combined with conscientiousness and cooperativeness. When these same attributes are combined with a low level of responsibility, inaccurate decoding results. The moderately accurate group seems to be socially insecure with less intellectual capacity than the other groups (low Sp and Ie scores), but their level of responsibility seems near that of the highly effective decoders. Perhaps their conscientiousness helps them to overcome some of their difficulties and helps them to be more effective judges. It may also be that low Re scores are indicative of extroverted tendencies. Previous research (Lanzetta and Kleck, 1970) has indicated that extroverts are poor decoders.

The first two hypotheses and their associated predictions therefore received only minimal support from this study, and interpretation of the results was seriously hampered by both the low number of scales found to significantly differentiate the groups and the validity of those scales.

The author seriously doubts that an attempt to replicate this study would yield similar condition-by-condition results. Thompson and Meltzer (1964), it will be remembered, attempted a similar study with nonsignificant results.

There seem to be, however, three major findings in the AOV and trend analysis portions of this study that may help point the way for future research. The first of these has already been discussed as an assumption implicit in the interpretations offered for the present results, i.e., that while both effective and noneffective communicators score similarly, there nonetheless exist differences between them. The second finding that seems to be important for future research is that a number of quadratic trends were discovered. Many studies of nonverbal communication divide encoders and decoders into effective and noneffective groups. This tendency toward dualism has in all probability obscured significant results in previous research. It seems clear from the present results that moderately effective communicators are quite different from either noneffective or highly effective ones, while the high and low accurate groups appear superficially alike. In a similar vein, hypotheses which presuppose a linear relationship between communicative ability and personality traits now seem too simplistic, and prior conflicting results may be an artifact of the nature of the relationship between communicative ability and personality rather than the possibility that personality is unrelated to these abilities. The third finding relates directly to the third and fourth hypotheses of this study. These hypotheses concern encoding and decoding abilities as general versus specific. That is, can one be a good encoder or decoder of anger, for example, but not of sorrow? Or does the fact that one

easily portrays or recognizes angry expressions mean that one will probably easily portray and recognize sorrowful expressions? The finding (that for every encoding condition at least one CPI scale was found to significantly differentiate the groups, while in the decoding conditions the Total condition provided the majority of significantly different CPI scales) suggests that encoding may be a series of specific abilities while decoding ability is more of a general trait. The remaining results of this study seem to support this conjecture.

Correlation Results

The third hypothesis under investigation was that all of the encoding accuracy intercorrelations would be positive and significant. This hypothesis postulates that encoding is a general ability. This hypothesis was not supported by the results. The intercorrelation matrix for encoders contains ten correlations. Of these ten, only six are positive, and only three obtained p values $\leq .05$. It should be further noted that the three correlations that proved to be significant are all correlations between the individual condition accuracy scores and the Total condition accuracy score. Since the Total condition was merely the summation of the individual conditions, chance alone may have produced these results. In addition, none of the affect condition intercorrelations were significant, and all attained $r < .25$.

Thus, there seems to be a low correlation existing between the ability to enact one emotion and the ability to enact another. This finding has also been reported by Thompson and Meltzer (1964), who went on to report that they were unable to explicate the pattern of the correlations they obtained. The present findings in conjunction with the findings of Thompson and Meltzer suggest a possible explanation for the

difficulties researchers have encountered in attempting to find personality correlates of encoding ability. Perhaps encoding is a specific rather than a general trait, and attempts to correlate encoding with any personality measure are doomed to fail as the personality correlates of the ability to encode anger, for example, are different from the personality correlates of the ability to encode sorrow. If this is so, then some of the conflicting results of prior studies may be due to the assumption that encoding is a general ability, and to differences in the categories of emotions sampled in different experiments.

The fourth hypothesis was that the intercorrelations among all the decoding accuracy scores would be positive and significant. This is an hypothesis which postulates that decoding is a general ability. Inspection of Table VIII reveals that all of the intercorrelations were significant at p values < .05 except for the Neutral X Total correlation. In addition, all of the correlations were positive except for the correlations with the Neutral condition which were uniformly negative. In fact, except for the Neutral condition correlations, all the intercorrelations were positive and significant at $p = .001$.

Thus, with the exception of the Neutral condition correlations, strong evidence that decoding is a general ability was obtained. There is reason to believe that these neutral correlations should not be given too much weight as evidence that decoding is not a general ability. In the first place, neutral is not an emotion, and the task in judging a neutral expression is not to determine which emotion is present, but to determine that no emotion is being expressed. In the second place, conservative error probably accounts more in attaining high accuracy in the Neutral condition than in any other condition. That is, it seems likely

that if a judge is unable to determine which emotion an encoder is expressing due to minimal facial cues, he will judge the expression as neutral. This would inflate the Neutral accuracy scores. Inspection of Figure 17 in Appendix B provides support for this speculation as the Neutral decoding accuracy scores tend to cluster more toward the high end of the scale than do the scores for any of the other decoding conditions. Anecdotally, the author noted when scoring the decoding conditions that a number of decoders responded neutral to almost all of the slides. These decoders were thus highly accurate in the Neutral condition, but fell in the low accurate groups for every other condition. Thus, both conservative error and an apparent "all neutral" response set in some subjects seem to be likely explanations for the strong negative correlations found in this condition.

It seems, therefore, that the fourth hypothesis was supported by the data, and decoding is a general ability unlike encoding. This finding provides support for the theory offered by Cline (1964). He stated that judging ability is a general trait, like intelligence, even though it appears to be factorially complex. It may also be remembered that the analysis of variance results seemed to indicate that decoding was a general ability that may be linked to personality factors, as the majority of CPI scales that were found to significantly differentiate the groups were found in the Total decoding condition.

In summary, this study was rather exploratory in nature as very little work has been done in which personality correlates of encoding and decoding abilities have been studied. The paucity of prior work in combination with the conflicting results that have been reported led to the conclusion that general hypotheses were appropriate. The hypothesis

that encoding accuracy would be related to personality traits in a linear fashion was partially supported as personality correlates were found, but they were found to contain quadratic trends. A similar hypothesis for decoding accuracy was not supported, and once again quadratic trends were noted. Finally, the hypothesis that encoding is a general ability was not supported, but a similar hypothesis for decoding ability was supported.

A number of directions for future research have been offered throughout this discussion. The most prominent of these is a direct test of the "either/or" hypothesis which was suggested by the quadratic trends. In addition, the finding that encoding is a specific ability while decoding is more general should be validated by future research, as the implications of this finding seem enormous.

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APPENDIX A

DECODING CHECKLIST

	F-Fear		N-Neutral			A-Anger		S-Sorrow	
1					27				
2					28				
3					29				
4					30				
5					31				
6					32				
7					33				
8					34				
9					35				
10					36				
11					37				
12					38				
13					39				
14					40				
15					41				
16					42				
17					43				
18					44				
19					45				
20					46				
21					47				
22					48				
23					49				
24					50				
25					51				
26					52				

Note: Letters were marked in at top of columns, with a different ordering for each subject.

Figure 8. Decoding Checklist

	F-Fear		N-Neutral	
53				
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				
71				
72				
73				
74				
75				
76				
77				

	A-Anger		S-Sorrow	
78				
79				
80				
81				
82				
83				
84				
85				
86				
87				
88				
89				
90				
91				
92				
93				
94				
95				
96				
97				
98				
99				
100				
101				
102				

Figure 8. (Continued)

	F-Fear		N-Neutral	
103.				
104.				
105.				
106.				
107.				
108.				
109				
110				
111				
112				
113				
114				
115				
116				
117				
118				
119				
120				
121				
122				
123				
124				
125				
126				
127				

	A-Anger		S-Sorrow	
128				
129				
130				
131				
132				
133				
134				
135				
136				
137				
138				
139				
140				
142				
143				
144				

Figure 8. (Continued)

APPENDIX B

ENCODING AND DECODING ACCURACY

BAR GRAPHS AND TABLES

TABLE IX

ENCODER FEAR ACCURACY SCORES AND MEANS

Low	Medium	High
0	13	23
1	13	30
8	19	29
5	10	28
7	11	24
4	13	22
3	14	30
6	21	22
2	8	27
2	9	29
1	10	26
2	8	27
T 41	149	317
$\bar{X}$ 3.42	12.42	26.42

TABLE X

ENCODER NEUTRAL ACCURACY SCORES AND MEANS

Low	Medium	High
13	25	33
22	24	30
13	28	29
10	26	32
22	26	31
6	25	35
19	27	28
22	26	31
8	28	32
22	28	32
13	26	31
16	24	31
T 186	313	375
$\bar{X}$ 15.50	26.08	31.25

TABLE XI

ENCODER SORROW ACCURACY SCORES AND MEANS

Low	Medium	High
2	19	32
10	19	26
2	21	29
7	14	32
6	25	26
5	26	33
7	14	30
2	24	31
3	21	35
5	17	26
1	13	30
10	15	29
T 60	228	359
$\bar{X}$ 5.00	19.00	29.92

TABLE XII

ENCODER ANGER ACCURACY SCORES AND MEANS

Low	Medium	High
7	20	34
2	17	33
1	11	31
6	15	32
5	12	30
7	29	33
3	20	32
4	24	29
7	15	33
3	12	31
6	8	31
2	21	31
T 53	204	380
$\bar{X}$ 4.42	17.00	31.67

TABLE XIII

ENCODER TOTAL ACCURACY SCORES
AND MEANS

	Low	Medium	High
	44	81	88
	57	68	96
	55	69	105
	57	71	100
	60	78	99
	62	76	83
	39	79	95
	57	73	91
	65	80	93
	46	65	99
	51	72	110
	45	66	99
T	638	876	1158
$\overline{X}$	53.17	73.17	96.50

TABLE XIV

DECODER FEAR ACCURACY SCORES AND MEANS

Low	Medium	High
0	15	17
10	14	17
9	13	24
10	13	20
0	14	18
7	14	20
12	16	17
9	15	16
12	15	20
11	15	17
11	16	21
10	16	20
T 101	176	227
$\bar{X}$ 8.42	14.67	18.92

TABLE XV

DECODER NEUTRAL ACCURACY SCORES AND MEANS

Low	Medium	High
20	21	34
21	22	27
15	26	32
15	26	29
18	25	36
17	24	33
13	24	30
20	24	31
20	21	29
16	21	27
18	25	28
20	26	27
T 213	285	363
$\bar{X}$ 17.75	23.75	30.25

TABLE XVI

DECODER SORROW ACCURACY SCORES AND MEANS

Low	Medium	High
3	20	24
0	19	24
6	19	23
18	20	22
3	19	22
15	19	22
17	20	23
13	19	23
15	19	25
15	19	23
15	21	25
13	20	22
T 133	234	278
$\bar{X}$ 11.08	19.50	23.17

TABLE XVII

DECODER ANGER ACCURACY SCORES AND MEANS

Low	Medium	High
17	18	26
3	20	20
14	19	21
3	19	21
16	19	26
13	19	20
17	19	24
15	19	20
11	19	24
17	19	20
16	18	22
16	18	21
T 158	226	262
$\bar{X}$ 13.17	18.83	21.83

TABLE XVIII

DECODER TOTAL ACCURACY SCORES
AND MEANS

Low	Medium	High
40	78	86
59	76	88
67	76	81
69	73	82
42	73	94
64	79	80
64	73	97
71	79	80
70	78	81
67	76	83
64	78	87
71	77	80
T 748	916	1019
$\overline{X}$ 62.33	76.33	84.91

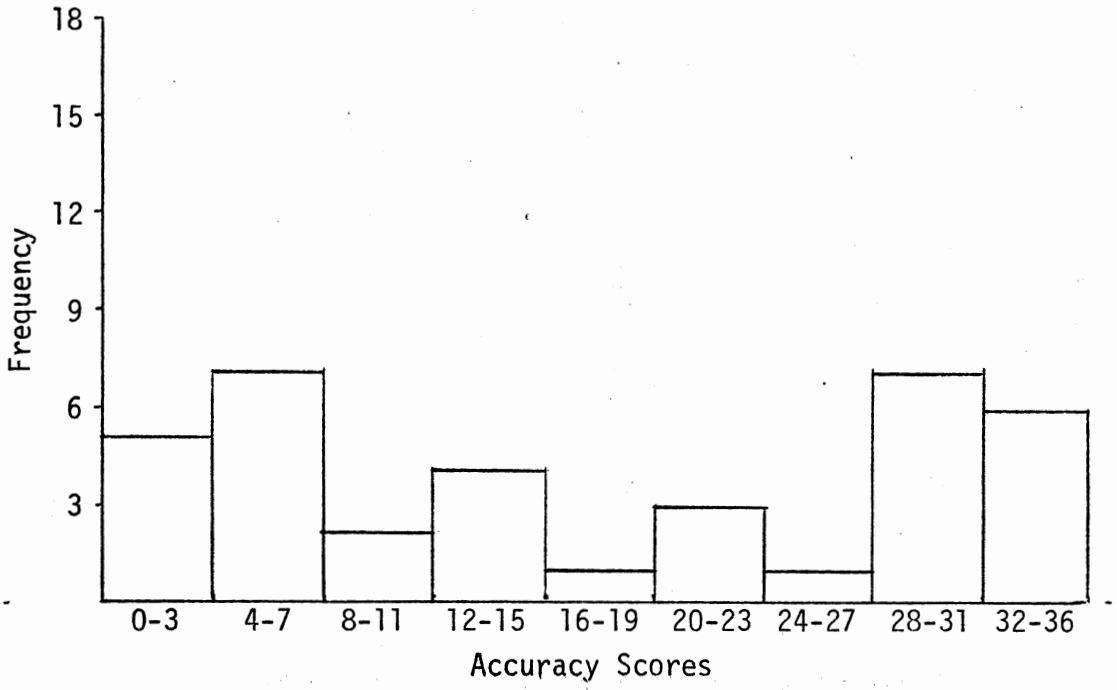

Figure 9. Encoder Anger Accuracy Bar Graph

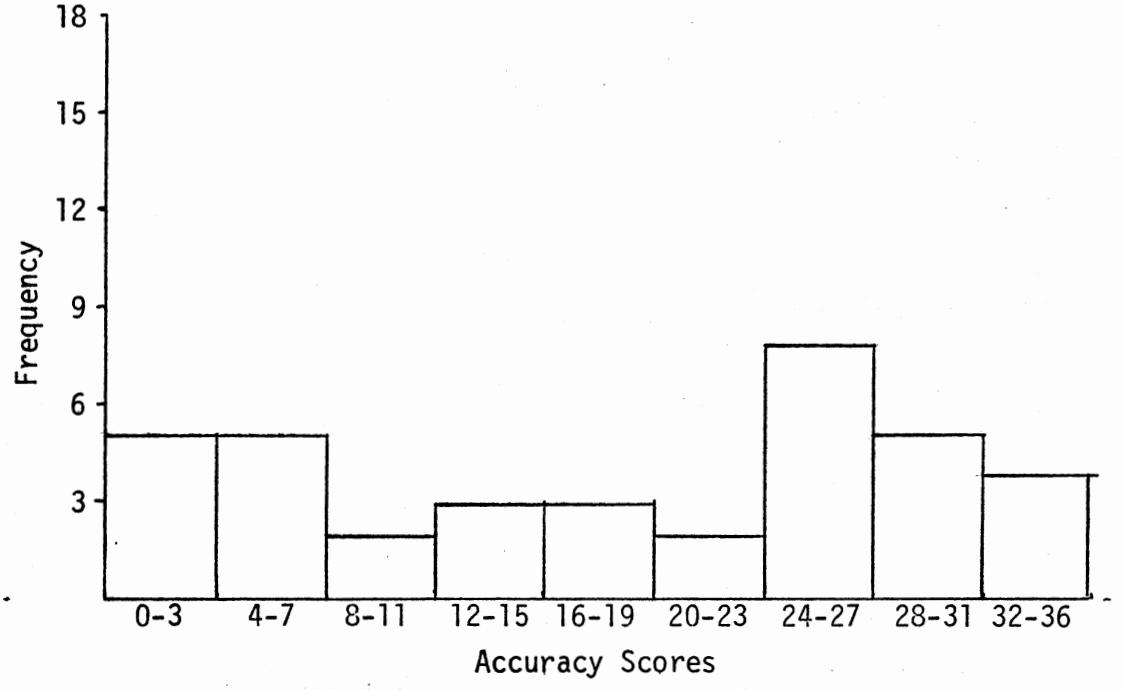

Figure 10. Encoder Sorrow Accuracy Bar Graph

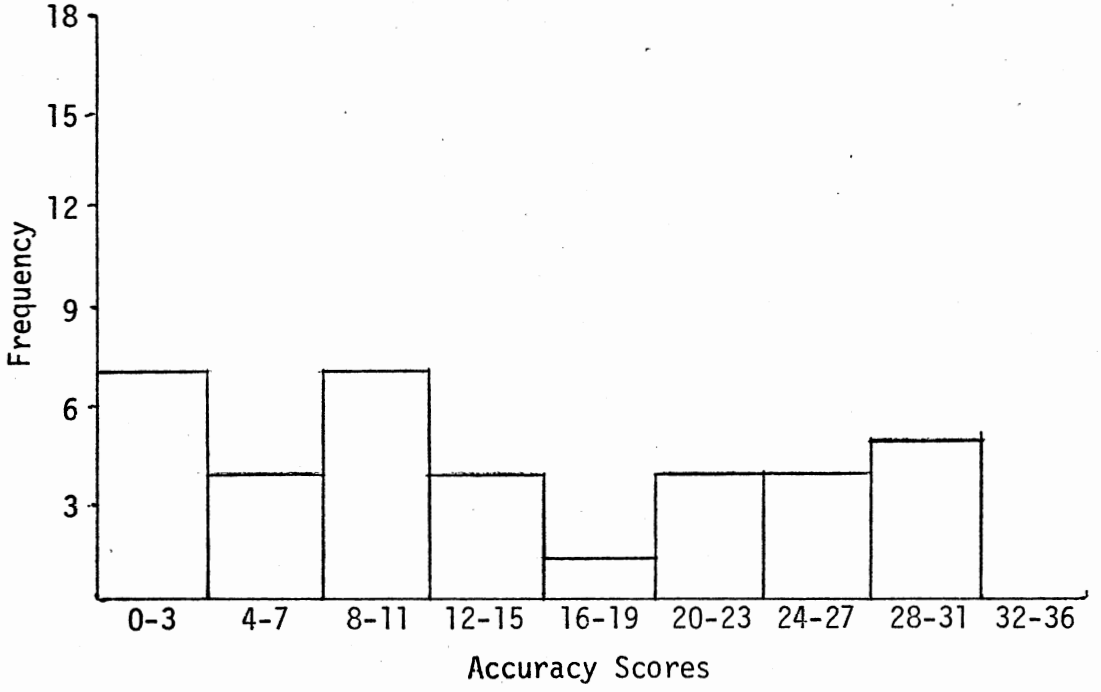

Figure 11. Encoder Fear Accuracy Bar Graph

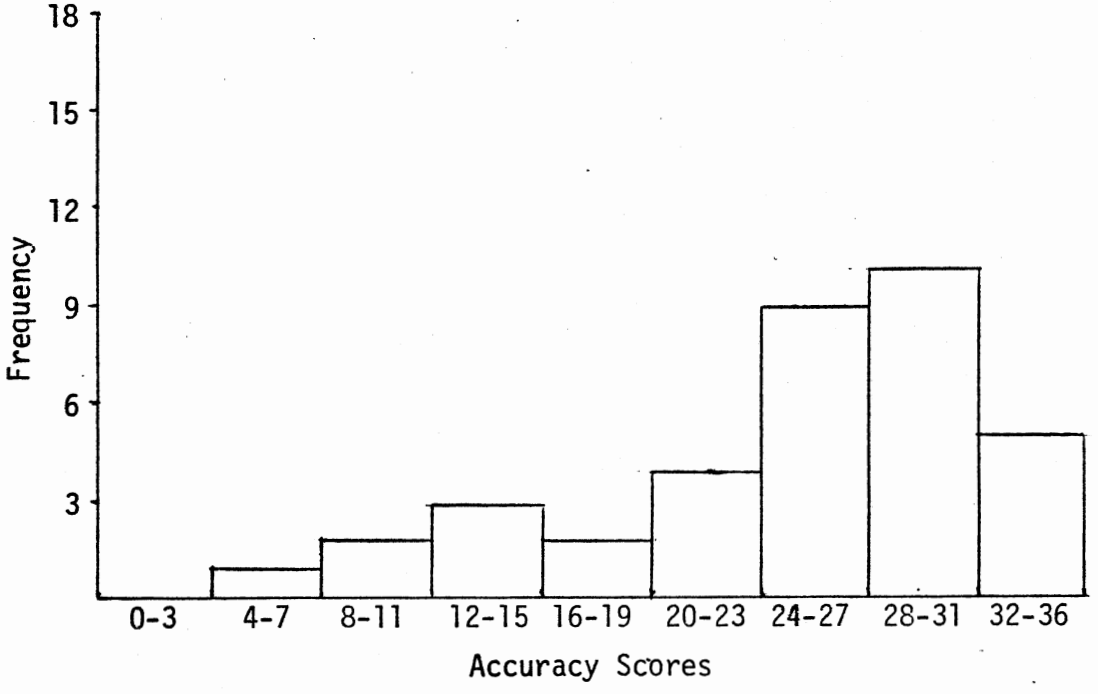

Figure 12. Encoder Neutral Accuracy Bar Graph

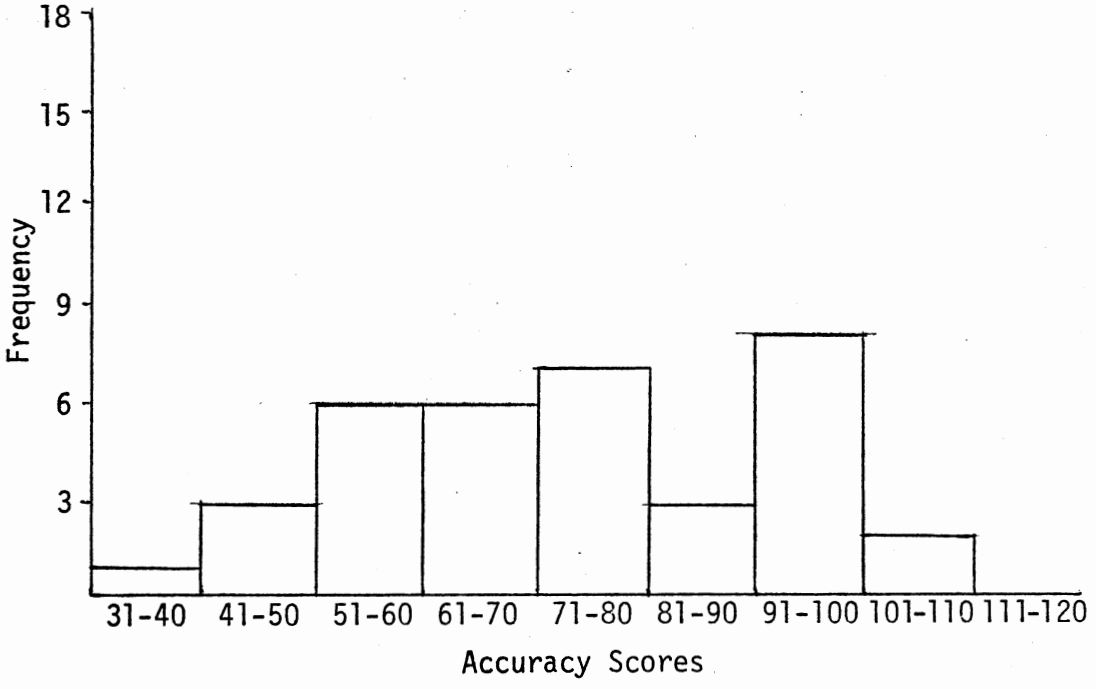

Figure 13. Encoder Total Accuracy Bar Graph

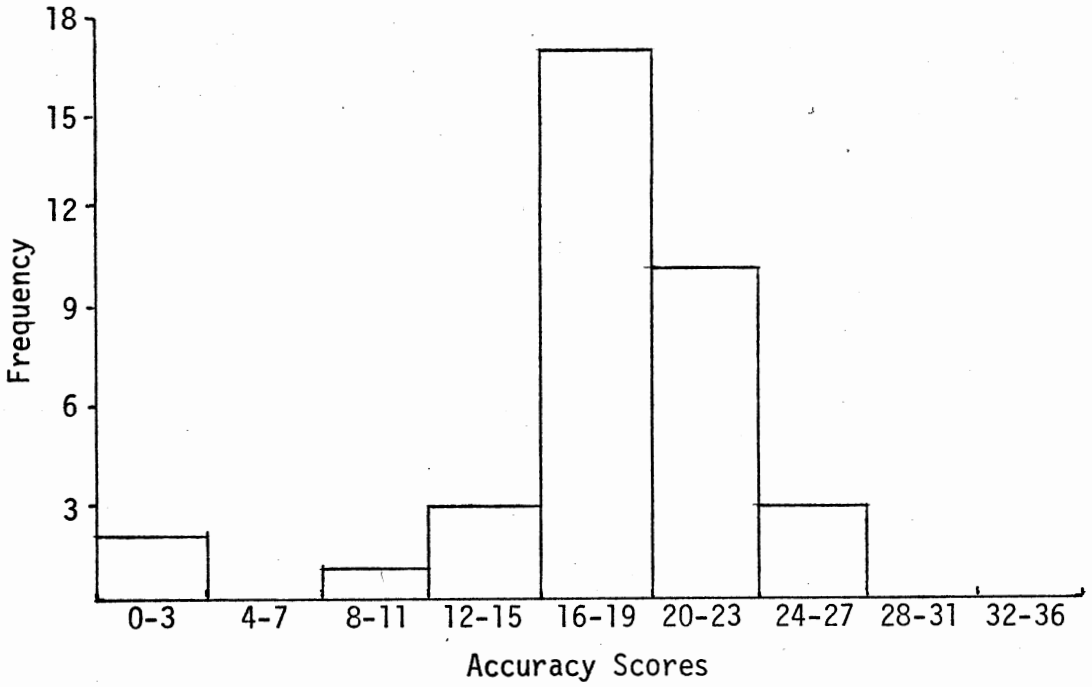

Figure 14. Decoder Anger Accuracy Bar Graph

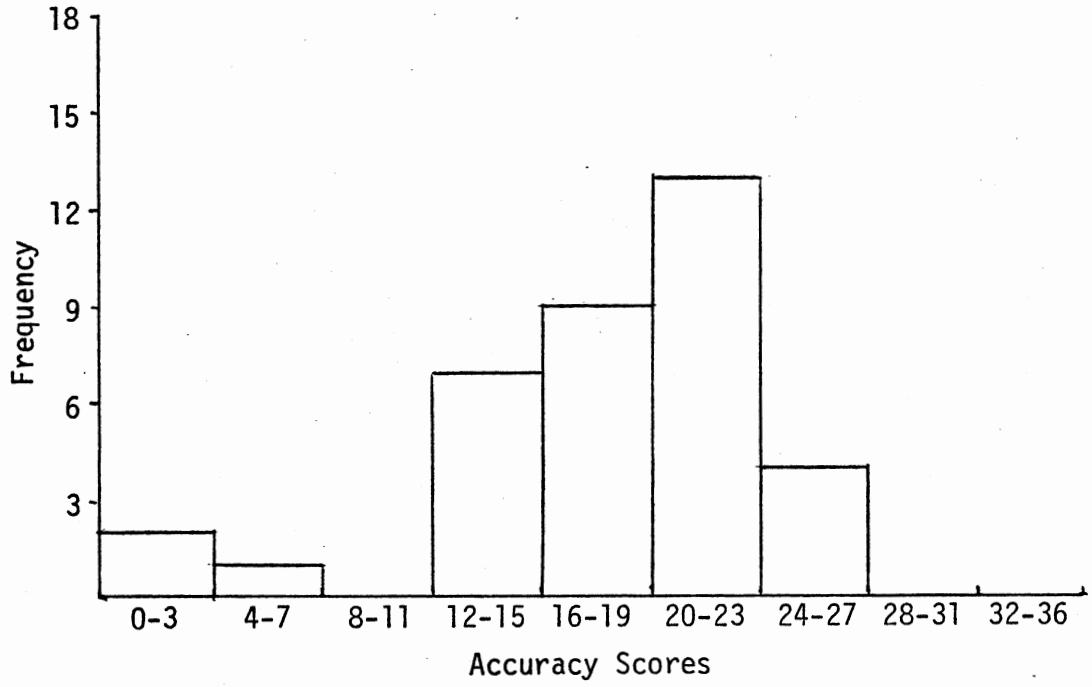

Figure 15. Decoder Sorrow Accuracy Bar Graph

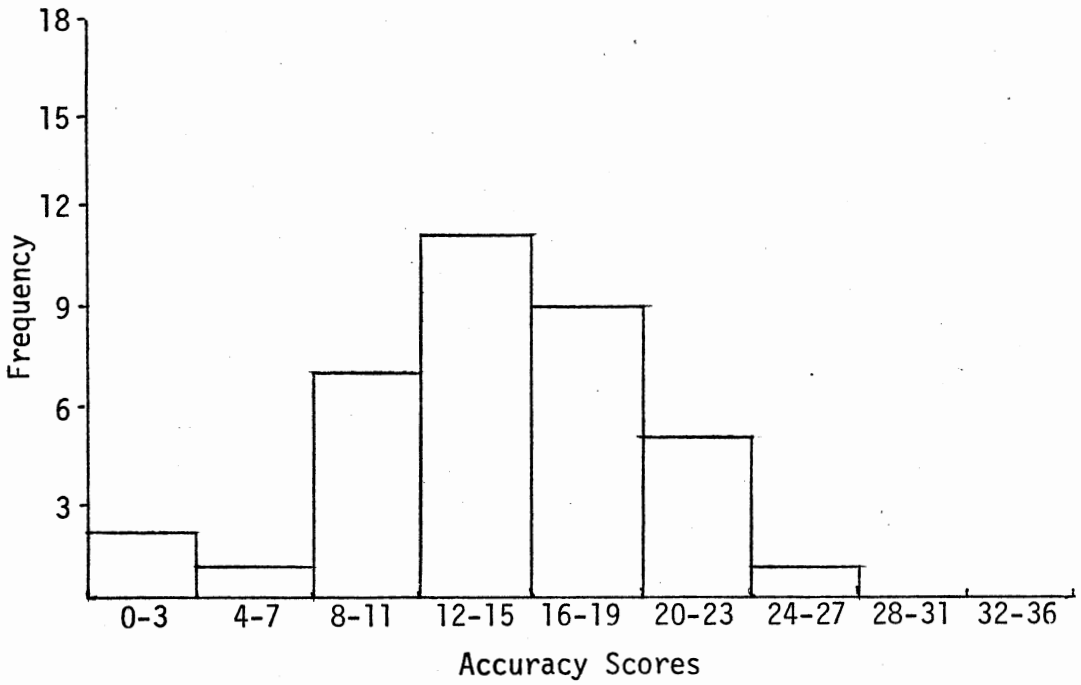

Figure 16. Decoder Fear Accuracy Bar Graph

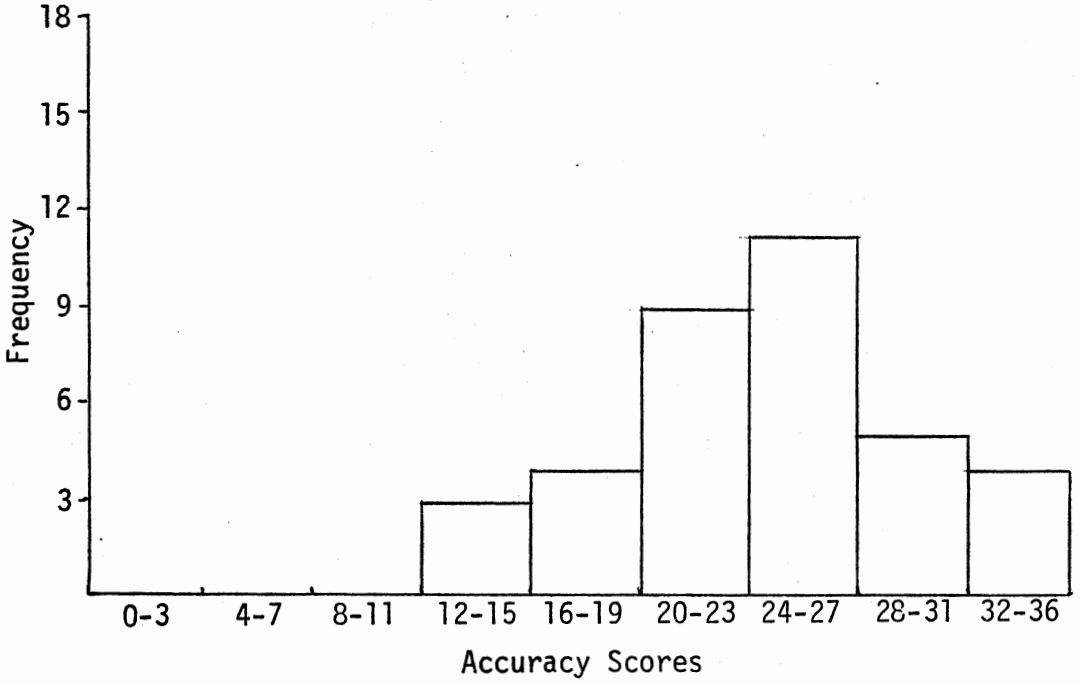

Figure 17. Decoder Neutral Accuracy Bar Graph

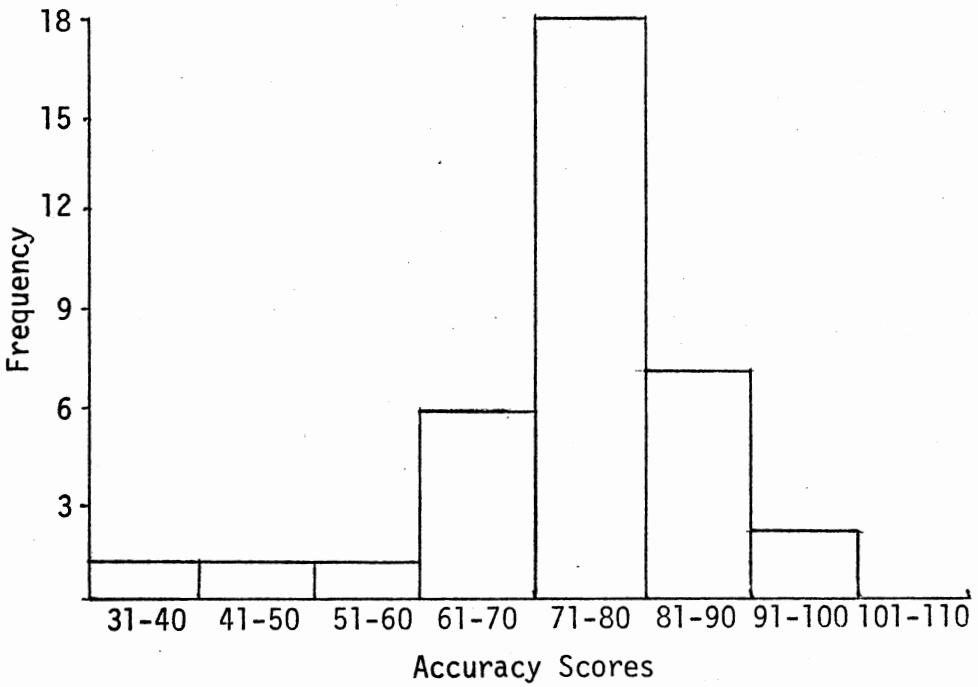

Figure 18. Decoder Total Accuracy Bar Graph

APPENDIX C

CPI TABLES OF MEANS AND ANALYSIS OF VARIANCE TABLES

TABLE XIX

ENCODER-FEAR MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	53.75	49.50	51.00	51.42
Cs (2)	48.25	51.25	47.08	48.86
Sy (3)	52.50	46.50	49.00	49.33
Sp (4)	47.92	49.08	49.00	48.67
Sa (5)	52.50	50.50	51.00	51.33
Wb (6)	50.08	49.50	46.92	48.83
Re (7)	52.75	51.33	50.17	51.42
So (8)	50.17	47.25	50.83	49.42
Sc (9)	49.50	50.92	47.08	49.17
To (10)	49.00	49.58	48.25	48.94
Gi (11)	49.50	54.42	46.42	50.11
Cm (12)	54.92	45.75	52.00	50.89
Ac (13)	49.17	51.50	48.17	49.61
Ai (14)	45.83	51.00	46.83	47.89
Ie (15)	47.92	49.92	46.58	48.14
Py (16)	46.42	50.17	47.67	48.08
Fx (17)	44.83	55.00	47.25	49.03
Fe (18)	53.00	49.42	51.92	51.44

TABLE XX

ENCODER-NEUTRAL MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	49.17	47.25	57.83	51.42
Cs (2)	48.58	47.42	50.58	48.86
Sy (3)	50.00	43.50	54.50	49.33
Sp (4)	46.75	46.00	53.25	48.67
Sa (5)	51.00	47.75	55.25	51.33
Wb (6)	45.25	48.33	52.92	48.83
Re (7)	50.67	48.83	54.75	51.42
So (8)	46.67	51.25	50.33	49.42
SC (9)	47.25	50.25	50.00	49.17
To (10)	46.83	48.75	51.25	48.94
Gi (11)	49.25	49.42	51.67	50.11
Cm (12)	52.50	45.83	54.33	50.89
Ac (13)	47.33	48.33	53.17	49.61
Ai (14)	43.92	52.00	47.75	47.89
Ie (15)	45.83	47.25	51.33	48.14
Py (16)	44.00	51.42	48.83	48.08
Fx (17)	48.33	50.42	48.33	49.05
Fe (18)	53.17	50.67	50.50	51.44

TABLE XXI

ENCODER-SORROW MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	52.08	47.08	55.08	51.42
Cs (2)	50.25	43.75	52.58	48.86
Sy (3)	49.75	44.67	53.58	49.33
Sp (4)	50.92	43.92	51.17	48.67
Sa (5)	51.25	49.75	53.00	51.33
Wb (6)	51.33	44.83	50.33	48.83
Re (7)	51.50	50.42	52.33	51.42
So (8)	48.17	51.33	48.75	49.42
Sc (9)	49.17	47.25	51.08	49.17
To (10)	49.00	46.17	51.67	48.94
Gi (11)	48.08	48.58	53.67	50.11
Cm (12)	52.92	49.83	49.92	50.89
Ac (13)	50.58	48.00	50.25	49.61
Ai (14)	47.92	47.50	48.42	47.89
Ie (15)	50.50	46.83	47.08	48.14
Py (16)	49.08	42.50	52.67	48.08
Fx (17)	48.42	51.25	47.42	49.03
Fe (18)	51.67	52.33	50.33	51.44

TABLE XXII

ENCODER-ANGER MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	47.42	52.58	54.25	51.42
Cs (2)	48.08	49.67	48.83	48.86
Sy (3)	42.75	50.75	54.50	49.33
Sp (4)	45.75	49.00	51.25	48.67
Sa (5)	48.25	53.50	52.25	51.33
Wb (6)	49.67	48.00	48.83	48.83
Re (7)	47.67	52.83	53.75	51.42
So (8)	51.92	48.17	48.17	49.42
Sc (9)	50.42	47.50	49.58	49.17
To (10)	48.33	48.58	49.92	48.94
Gi (11)	50.75	48.42	51.17	50.11
Cm (12)	45.83	52.92	53.92	50.89
Ac (13)	47.75	47.67	53.42	49.61
Ai (14)	50.58	44.92	48.17	47.89
Ie (15)	48.50	45.67	50.25	48.14
Py (16)	50.33	43.50	50.42	48.08
Fx (17)	47.42	51.58	48.08	49.03
Fe (18)	52.75	49.67	51.92	51.44

TABLE XXIII

ENCODER-TOTAL MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	51.92	49.42	52.92	51.42
Cs (2)	51.67	46.75	48.17	48.66
Sy (3)	49.00	46.75	52.25	49.33
Sp (4)	50.83	45.42	49.75	48.67
Sa (5)	53.75	47.75	52.50	51.33
Wb (6)	51.92	46.00	48.58	48.83
Re (7)	49.58	51.25	53.42	51.42
So (8)	50.83	47.50	49.92	49.42
Sc (9)	50.42	48.00	49.08	49.17
To (10)	48.92	49.58	48.33	48.95
Gi (11)	52.42	47.92	50.00	50.11
Cm (12)	53.92	45.17	53.58	50.89
Ac (13)	51.17	47.17	50.50	49.61
Ai (14)	47.67	49.75	46.25	47.89
Ie (15)	50.08	47.33	47.00	48.14
Py (16)	48.67	47.08	48.50	48.08
Fx (17)	46.75	53.50	46.83	49.03
Fe (18)	52.00	52.75	49.58	51.44

TABLE XXIV

DECODER-FEAR MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	46.83	50.42	48.75	48.67
Cs (2)	50.50	54.00	48.75	51.08
Sy (3)	48.08	50.67	53.17	50.64
Sp (4)	49.25	51.75	52.67	51.22
Sa (5)	43.42	50.50	51.67	48.53
Wb (6)	51.67	52.25	50.67	51.53
Re (7)	47.25	50.75	48.08	48.69
So (8)	52.00	54.00	46.00	50.67
Sc (9)	54.17	53.75	44.25	50.72
To (10)	52.33	53.17	47.58	51.02
Gi (11)	50.83	51.83	47.00	49.89
Cm (12)	48.67	49.67	50.33	49.56
Ac (13)	47.17	53.17	50.75	50.36
Ai (14)	52.92	54.50	48.33	51.92
Ie (15)	53.17	51.42	51.25	51.94
Py (16)	52.17	51.17	52.00	51.78
Fx (17)	51.50	49.67	51.83	51.00
Fe (18)	46.33	52.25	47.08	48.56

TABLE XXV

DECODER-NEUTRAL MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	47.92	46.67	51.42	48.67
Cs (2)	51.33	50.17	51.75	51.08
Sy (3)	50.67	49.92	51.33	50.64
Sp (4)	52.08	49.00	52.58	51.22
Sa (5)	49.75	46.83	49.00	48.53
Wb (6)	51.33	48.50	54.75	51.53
Re (7)	48.50	45.25	52.33	48.69
So (8)	49.00	47.75	55.25	50.67
Sc (9)	52.58	47.50	52.08	50.72
To (10)	50.92	49.42	52.75	51.03
Gi (11)	50.42	47.08	52.17	49.89
Cm (12)	48.67	48.67	51.33	49.56
Ac (13)	49.58	46.33	55.17	50.36
Ai (14)	52.08	50.67	53.00	51.92
Ie (15)	53.33	49.67	52.83	50.94
Py (16)	54.25	47.92	53.17	51.78
Fx (17)	53.17	50.17	49.67	51.00
Fe (18)	46.83	48.08	50.75	48.57

TABLE XXVI

DECODER-SORROW MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	48.00	50.50	47.50	48.67
Cs (2)	52.25	49.83	51.17	51.08
Sy (3)	50.08	51.42	50.42	50.64
Sp (4)	50.92	53.08	49.67	51.22
Sa (5)	47.08	50.75	47.75	48.53
Wb (6)	52.92	47.67	54.00	51.53
Re (7)	45.58	46.08	54.42	48.69
So (8)	51.75	48.83	51.42	50.67
Sc (9)	50.58	47.67	53.92	50.72
To (10)	53.67	47.50	51.92	51.03
Gi (11)	49.50	48.83	51.33	49.89
Cm (12)	48.25	49.33	51.08	49.50
Ac (13)	49.00	49.08	53.00	50.36
Ai (14)	54.67	49.50	51.58	51.92
Ie (15)	54.00	48.33	53.50	51.94
Py (16)	54.08	50.83	5.042	51.78
Fx (17)	54.42	49.58	49.00	51.00
Fe (18)	46.08	51.33	48.25	48.56

TABLE XXVII

DECODER-ANGER MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	43.92	51.25	50.83	48.67
Cs (2)	51.08	52.83	49.33	51.08
Sy (3)	45.67	53.33	52.92	50.64
Sp (4)	51.33	50.83	51.50	51.22
Sa (5)	45.25	49.08	51.25	48.53
Wb (6)	51.25	53.08	50.25	51.53
Re (7)	47.08	49.17	49.83	48.69
So (8)	48.25	52.83	50.92	50.67
Sc (9)	51.25	52.75	48.17	50.72
To (10)	49.00	53.67	50.42	51.03
Gi (11)	49.25	52.75	47.67	49.89
Cm (12)	50.33	48.92	49.42	49.56
Ac (13)	49.00	53.67	48.42	50.36
Ai (14)	53.83	53.25	48.67	51.92
Ie (15)	52.17	52.00	51.67	51.94
Py (16)	51.33	55.17	48.83	51.78
Fx (17)	56.33	51.50	45.17	51.00
Fe (18)	51.42	50.67	43.58	48.56

TABLE XXVIII

DECODER-TOTAL MEAN CPI SCORES

	Low	Medium	High	Grand
Do (1)	47.83	46.92	51.25	48.67
Cs (2)	53.92	49.83	49.50	51.08
Sy (3)	51.17	48.08	52.67	50.64
Sp (4)	55.25	44.67	53.75	51.22
Sa (5)	48.67	45.42	51.50	48.53
Wb (6)	51.25	49.50	53.83	51.53
Re (7)	42.83	50.50	52.75	48.69
So (8)	48.08	51.08	52.83	50.67
Sc (9)	50.00	53.67	48.50	50.72
To (10)	52.00	48.83	52.25	51.03
Gi (11)	49.67	52.83	47.17	49.89
Cm (12)	46.92	49.25	52.50	49.56
Ac (13)	47.75	49.67	53.67	50.36
Ai (14)	55.25	48.83	51.67	51.92
Ie (15)	54.92	45.92	55.00	51.94
Py (16)	54.42	49.50	51.42	51.78
Fx (17)	55.17	49.50	48.33	51.00
Fe (18)	45.58	52.50	47.58	48.56

TABLE XXIX

ENCODER ANALYSIS OF VARIANCE SUMMARY TABLE

	Fear		Neutral		Anger		Sorrow		Total	
	F	P	F	P	F	P	F	P	F	P
Do (1)	0.44	0.65	3.59	0.04	1.27	0.29	1.67	0.20	0.31	0.74
Cs (2)	0.46	0.64	0.25	0.78	0.06	0.94	2.30	0.11	0.64	0.54
Sy (3)	0.99	0.62	3.91	0.03	4.81	0.01	2.37	0.11	0.83	0.55
Sp (4)	0.04	0.96	1.65	0.21	0.75	0.52	1.77	0.19	0.81	0.54
Sa (5)	0.11	0.89	1.63	0.21	0.83	0.55	0.28	0.76	1.12	0.33
Wb (6)	0.34	0.72	1.98	0.15	0.08	0.92	1.60	0.22	1.12	0.34
Re (7)	0.22	0.81	1.27	0.29	1.51	0.23	0.12	0.89	0.49	0.63
So (8)	0.52	0.61	0.86	0.56	0.67	0.52	0.40	0.68	0.42	0.67
Sc (9)	0.83	0.55	0.60	0.56	0.48	0.62	0.81	0.54	0.31	0.74
To (10)	0.05	0.95	0.57	0.58	0.08	0.92	0.89	0.58	0.04	0.96
Gi (11)	2.03	0.15	0.20	0.82	0.25	0.79	1.13	0.33	0.58	0.57
Cm (12)	2.83	0.07	2.54	0.09	2.45	0.10	0.35	0.71	3.24	0.05
Ac (13)	0.41	0.67	1.44	0.25	1.63	0.21	0.27	0.77	0.65	0.53
Ai (14)	0.97	0.61	2.26	0.12	1.05	0.36	0.04	0.97	0.39	0.69
Ie (15)	0.30	0.74	0.91	0.58	0.59	0.57	0.46	0.64	0.31	0.74
Py (16)	0.40	0.68	1.67	0.20	1.88	0.17	3.44	0.04	0.08	0.92
Fx (17)	3.76	0.03	0.16	0.85	0.56	0.58	0.44	0.65	1.81	0.18
Fe (18)	0.59	0.57	0.38	0.69	0.44	0.66	0.18	0.84	0.47	0.63

TABLE XXX

DECODER ANALYSIS OF VARIANCE SUMMARY TABLE

	Fear		Neutral		Anger		Sorrow		Total	
	F	P	F	P	F	P	F	P	F	P
Do (1)	0.48	0.63	0.92	0.59	2.87	0.06	0.38	0.69	0.79	0.53
Cs (2)	1.01	0.38	0.09	0.91	0.42	0.67	0.20	0.82	0.85	0.56
Sy (3)	0.86	0.56	0.06	0.94	2.73	0.08	0.06	0.94	0.72	0.50
Sp (4)	0.44	0.65	0.54	0.59	0.02	0.98	0.42	0.66	6.26	0.01
Sa (5)	2.62	0.08	0.26	0.77	1.12	0.34	0.44	0.65	1.12	0.34
Wb (6)	0.07	0.93	1.18	0.32	0.24	0.79	1.40	0.26	0.55	0.59
Re (7)	0.34	0.72	1.35	0.27	0.21	0.82	2.87	0.07	3.21	0.05
So (8)	1.79	0.18	1.65	0.21	0.51	0.61	0.24	0.79	0.56	0.58
Sc (9)	2.71	0.08	0.60	0.56	0.41	0.67	0.76	0.52	0.54	0.59
To (10)	1.02	0.37	0.30	0.75	0.63	0.54	1.15	0.33	0.39	0.68
Gi (11)	0.75	0.52	0.77	0.52	0.78	0.53	0.19	0.83	0.94	0.60
Cm (12)	0.11	0.90	0.36	0.71	0.08	0.93	0.31	0.74	1.26	0.30
Ac (13)	0.90	0.58	2.12	0.13	0.82	0.55	0.51	0.61	0.90	0.58
Ai (14)	1.24	0.30	0.16	0.86	0.95	0.60	0.79	0.54	1.25	0.30
Ie (15)	0.14	0.87	0.49	0.62	0.01	0.99	1.28	0.29	4.10	0.03
Py (16)	0.04	0.97	1.54	0.23	1.35	0.27	0.51	0.61	0.79	0.53
Fx (17)	0.16	0.86	0.42	0.67	4.56	0.02	1.07	0.36	1.68	0.20
Fe (18)	0.94	0.60	0.35	0.71	1.78	0.18	0.62	0.55	1.17	0.32

APPENDIX D

CORRELATION MATRICES

TABLE XXXI

ENCODER CPI X CPI CORRELATION MATRIX

		Do (1)	Cs (2)	Sy (3)	Sp (4)	Sa (5)	Wb (6)
Do (1)	r	---					
	p						
Cs (2)	r	.51	---				
	p	.001					
Sy (3)	r	.74	.47	---			
	p	.001	.004				
Sp (4)	r	.65	.60	.63	---		
	p	.001	.001	.001			
Sa (5)	r	.75	.60	.56	.68	---	
	p	.001	.001	.001	.001		
Wb (6)	r	.47	.58	.27	.53	.37	---
	p	.004	.001	.116	.001	.026	
Re (7)	r	.39	.28	.27	.17	.26	.42
	p	.017	.104	.110	.309	.126	.011
So (8)	r	.07	-.07	-.04	-.01	-.02	.25
	p	.695	.696	.809	.972	.909	.138
Sc (9)	r	.22	.49	.06	.16	.10	.75
	p	.191	.003	.747	.345	.552	.001
To (10)	r	.48	.74	.42	.62	.45	.77
	p	.003	.001	.012	.001	.006	.001
Gi (11)	r	.38	.56	.27	.44	.33	.59
	p	.022	.001	.109	.008	.047	.001
Cm (12)	r	.35	.16	.44	.32	.36	.32
	p	.036	.353	.007	.059	.029	.061
Ac (13)	r	.52	.55	.41	.50	.42	.78
	p	.001	.001	.014	.002	.010	.001
Ai (14)	r	.30	.57	.06	.43	.30	.63
	p	.077	.001	.719	.009	.071	.001
Ie (15)	r	.48	.67	.35	.66	.59	.79
	p	.003	.001	.038	.001	.001	.001
Py (16)	r	.30	.43	.17	.47	.17	.43
	p	.077	.010	.332	.004	.329	.008
Fx (17)	r	.12	.35	-.02	.36	.21	.31
	p	.456	.038	.91	.032	.210	.062
Fe (18)	r	-.03	-.18	-.16	-.33	-.02	-.19
	p	.879	.281	.360	.050	.899	.258

TABLE XXXI (Continued)

		Re (7)	So (8)	Sc (9)	To (10)	Gi (11)	Cm (12)
Re (7)	r	---					
	p						
So (8)	r	.37	---				
	p	.027					
Sc (9)	r	.46	.19	---			
	p	.004	.265				
To (10)	r	.47	.21	.55	---		
	p	.004	.209	.001			
Gi (11)	r	.21	-.17	.62	.50	---	
	p	.220	.324	.001	.002		
Cm (12)	r	.45	.46	.16	.30	-.09	---
	p	.006	.005	.350	.077	.599	
Ac (13)	r	.28	.16	.60	.69	.59	.31
	p	.097	.340	.001	.001	.001	.065
Ai (14)	r	.24	.25	.47	.73	.39	-.04
	p	1.66	.141	.004	.001	.018	.835
Ie (15)	r	.40	.23	.49	.76	.42	.28
	p	.015	.183	.002	.001	.010	.104
Py (16)	r	.27	.15	.42	.43	.34	-.06
	p	.107	.392	.010	.009	.046	.747
Fx (17)	r	.17	-.01	.06	.48	.18	-.21
	p	.323	.934	.746	.003	.306	.223
Fe (18)	r	.17	-.05	.06	-.30	-.02	-.06
	p	.136	.775	.719	.071	.929	.746

TABLE XXXI (Continued)

		Ac (13)	Ai (14)	Ie (15)	Py (16)	Fx (17)	Fe (18)
Ac (13)	r	---					
	p						
Ai (14)	r	.61	---				
	p	.001					
Ie (15)	r	.71	.76	---			
	p	.001	.001				
Py (16)	r	.27	.44	.41	---		
	p	.111	.007	.014			
Fx (17)	r	.38	.66	.55	.10	---	
	p	.022	.001	.001	.555		
Fe (18)	r	-.25	-.36	-.26	-.18	-.36	---
	p	.142	.031	.120	.291	.031	

TABLE XXXII

DECODER CPI X CPI CORRELATION MATRIX

		Do (1)	Cs (2)	Sy (3)	Sp (4)	Sa (5)	Wb (6)
Do (1)	r	---					
	p						
Cs (2)	r	.59	---				
	p	.001					
Sy (3)	r	.82	.60	---			
	p	.001	.001				
Sp (4)	r	.48	.61	.61	---		
	p	.003	.001	.001			
Sa (5)	r	.68	.56	.63	.53	---	
	p	.001	.001	.001	.001		
Wb (6)	r	.23	.31	.22	.20	-.09	---
	p	.175	.070	.196	.249	.584	
Re (7)	r	.24	.17	.08	-.04	.01	.63
	p	.154	.327	.625	.815	.963	.001
So (8)	r	.28	.20	.16	-.11	-.01	.62
	p	.100	.241	.362	.528	.944	.001
Sc (9)	r	-.07	.13	-.19	-.19	-.38	.65
	p	.699	.435	.269	.265	.020	.001
To (10)	r	.30	.53	.29	.34	.01	.80
	p	.080	.001	.087	.042	.939	.001
Gi (11)	r	.23	.53	.18	.08	-.06	.53
	p	.170	.001	.279	.641	.721	.001
Cm (12)	r	-.30	-.28	-.33	-.33	-.06	.19
	p	.099	.097	.051	.048	.721	.275
Ac (13)	r	.45	.31	.32	.13	.22	.70
	p	.006	.069	.057	.455	.205	.001
Ai (14)	r	.02	.40	-.05	.30	-.14	.64
	p	.894	.017	.767	.072	.408	.001
Ie (15)	r	.37	.39	.36	.39	.16	.70
	p	.026	.020	.029	.017	.366	.001
Py (16)	r	.39	.49	.38	.46	.20	.56
	p	.017	.003	.023	.005	.247	.001
Fx (17)	r	-.15	.24	-.08	.29	-.21	.48
	p	.392	.154	.631	.089	.212	.003
Fe (18)	r	-.08	.18	-.18	-.22	.03	.04
	p	.662	.295	.292	.194	.873	.807

TABLE XXXII (Continued)

		Re (7)	So (8)	Sc (9)	To (10)	Gi (11)	Cm (12)
Re (7)	r	---					
	p						
So (8)	r	.74	---				
	p	.001					
Sc (9)	r	.67	.66	---			
	p	.001	.001				
To (10)	r	.53	.57	.67	---		
	p	.001	.001	.001			
Gi (11)	r	.51	.50	.74	.62	---	
	p	.001	.002	.001	.001		
Cm (12)	r	.41	.24	.17	-.10	-.12	---
	p	.014	.159	.329	.577	.488	
Ac (13)	r	.76	.66	.53	.54	.44	.40
	p	.001	.001	.001	.001	.008	.017
Ai (14)	r	.43	.28	.65	.69	.52	.08
	p	.009	.098	.001	.001	.001	.638
Ie (15)	r	.45	.42	.32	.63	.22	.10
	p	.006	.010	.053	.001	.193	.556
Py (16)	r	.47	.40	.50	.74	.52	-.02
	p	.004	.015	.002	.001	.001	.914
Fx (17)	r	.03	-.11	.30	.38	.29	.02
	p	.868	.539	.078	.022	.090	.927
Fe (18)	r	.35	.26	.36	.02	.41	.48
	p	.037	.132	.032	.890	.012	.003

TABLE XXXII (Continued)

		Ac (13)	Ai (14)	Ie (15)	Py (16)	Fx (17)	Fe (18)
Ac (13)	r	---					
	p						
Ai (14)	r	.39	---				
	p	.020					
Ie (15)	r	.54	.55	---			
	p	.001	.001				
Py (16)	r	.61	.59	.62	---		
	p	.001	.001	.001			
Fx (17)	r	.13	.74	.33	.40	---	
	p	.443	.001	.049	.016		
Fe (18)	r	.39	.20	-.08	.19	.14	---
	p	.018	.240	.653	.261	.425	

TABLE XXXIII

ENCODER CPI X ACCURACY CORRELATION MATRIX

		Fear	Neutral	Anger	Sorrow	Total
Do (1)	r	-.11	.25	.19	-.02	.15
	p	.507	.142	.275	.925	.388
Cs (2)	r	-.05	.11	-.09	.09	-.01
	p	.775	.532	.605	.616	.950
Sy (3)	r	-.21	.11	.35	.03	.18
	p	.218	.509	.034	.851	.292
Sp (4)	r	.03	.20	.11	-.08	.12
	p	.852	.242	.522	.627	.496
Sa (5)	r	.03	.04	.07	-.01	.07
	p	.862	.835	.696	.955	.671
Wb (6)	r	-.14	.26	-.07	-.09	-.08
	p	.401	.120	.675	.600	.630
Re (7)	r	-.14	.12	.21	.06	.16
	p	.426	.500	.224	.715	.360
So (8)	r	.08	.04	-.18	.01	-.03
	p	.623	.814	.299	.931	.851
Sc (9)	r	-.16	.10	-.07	.16	-.03
	p	.360	.574	.666	.366	.859
To (10)	r	-.06	.19	-.03	.04	.04
	p	.729	.269	.883	.839	.804
Gi (11)	r	-.15	.05	-.03	.25	.05
	p	.395	.789	.877	.147	.774
Cm (12)	r	-.08	-.17	.25	.19	-.05
	p	.640	.326	.141	.276	.753
Ac (13)	r	-.10	.18	.21	-.07	.09
	p	.553	.289	.220	.740	.592
Ai (14)	r	.05	.32	-.12	.02	.08
	p	.758	.056	.501	.885	.626
Ie (15)	r	-.03	.22	.01	-.15	-.02
	p	.842	.207	.974	.383	.920
Py (16)	r	-.01	.20	-.05	.14	.11
	p	.965	.231	.794	.431	.524
Fx (17)	r	.04	.26	.03	-.05	.12
	p	.799	.133	.850	.752	.474
Fe (18)	r	-.01	-.29	-.09	-.03	-.19
	p	.942	.086	.593	.851	.273

TABLE XXXIV

DECODER CPI X ACCURACY CORRELATION MATRIX

		Fear	Neutral	Anger	Sorrow	Total
Do (1)	r	.09	.17	.13	-.05	.11
	p	.587	.327	.448	.785	.534
Cs (2)	r	-.07	.07	-.07	-.04	-.10
	p	.691	.681	.706	.812	.549
Sy (3)	r	.20	.02	.22	.04	.15
	p	.246	.903	.204	.810	.385
Sp (4)	r	.11	.10	-.05	-.14	-.06
	p	.520	.606	.788	.403	.731
Sa (5)	r	.36	-.05	.14	.06	.14
	p	.033	.761	.425	.726	.403
Wb (6)	r	.01	.08	.16	.06	.16
	p	.977	.624	.355	.707	.362
Re (7)	r	.03	.17	.24	.29	.38
	p	.848	.333	.155	.087	.022
So (8)	r	-.14	.26	.15	.09	.19
	p	.412	.130	.396	.565	.277
Sc (9)	r	-.25	-.01	.08	.10	.03
	p	.146	.469	.646	.567	.879
To (10)	r	-.10	.09	.21	-.04	.07
	p	.573	.622	.227	.833	.667
Gi (11)	r	-.16	.02	.04	.08	.01
	p	.353	.888	.818	.634	.977
Cm (12)	r	.17	.05	.16	.19	.29
	p	.327	.787	.342	.278	.091
Ac (13)	r	.07	.16	.09	.15	.23
	p	.702	.366	.589	.372	.173
Ai (14)	r	-.17	.07	-.09	-.19	-.17
	p	.319	.671	.618	.257	.333
Ie (15)	r	-.06	.01	.03	-.07	-.04
	p	.728	.953	.857	.672	.837
Py (16)	r	-.04	.01	.02	-.14	-.06
	p	.833	.975	.930	.434	.719
Fx (17)	r	-.06	-.13	-.27	-.22	-.31
	p	.714	.461	.107	.199	.069
Fe (18)	r	-.04	.07	-.12	.15	.08
	p	.838	.688	.487	.389	.664

VITA 2

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