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THE EFFECTS OF DEFENSIVE STYLES (REPRESSION-SENSITIZATION) ON THE PERCEPTION AND COMMUNICATION OF VOCAL AFFECT

by

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CHAPTER I

INTRODUCTION

Patterns of affective communication have take on considerable importance in recent psycho-social literature, especially in the areas of family dynamics, community mental health, and the development of mental illness. The expressive behavior of language is certainly one of the most intriguing aspects of interpersonal relations. However, implicit in every interpersonal contact is a propensity for faulty or distorted communication. Problems in communication occur because a host of psycho-social variables influence the behavior of both speakers and listeners. In normal speech patterns, inflection of the voice, and various nonverbal cues can clarify or confuse the affective meaning. Moreover, communication patterns are sometimes made baffling because people send and receive messages at both overt and covert levels (Beier, 1966). All in all, the possiblities for error by distortion and misunderstanding in human communication are endless.

Davitz (1964), in his introduction to the Communication of Emotional Meaning notes that it has always been important for the clinician to be sensitive, to empathize, to understand and to be intuitively responsive to his patient's feelings and emotions. He cannot be satisfied with the general content of communication and must search out the affective significance. For the mental health professional and psychotherapist, this has always been a vague sixth sense he has had to acquire, sharpen and refine.

Davitz (1961) noted that inexperienced counselors, though having little difficulty hearing the verbal content of their clients' speech,

often missed the emotional meanings conveyed by nonverbal cues. Communication between counselor and client was thus impaired, and sensitizing students to the nonverbal facets of emotional communication became a major teaching objective. However, there have been few general principles that have been experimentally validated upon which the clinician could base his judgements of emotional meaning. Moreover, the subjective nature of feelings or affects has become a major obstacle to scientific investigation as was discovered early in the history of experimental psychology.

In general, studies in the area of affective vocalization have involved the use of posed emotions that are usually tape recorded, and subsequently presented to subjects for affective judgments. The reliability of nonverbal communications has been demonstrated and evidence of a consistent relationship between affective vocalizations and reported subjective experiences of the feelings expressed has been demonstrated experimentally (Davitz, 1969). However, much of the research on the expressions of emotions via the voice has concentrated on the differential recognition accuracy of various affects, frequently ignoring relevant characteristics of speakers and listeners. Undoubtedly, many personality characteristics and variables can mediate, modify and perhaps distort the communication and perception of vocal affect. In view of the paucity of previous research and the potential significance of defensive styles in perception and communication, an important research problem would involve the possible interaction between defensive styles and affective communication.

Before reviewing some of the studies that have been conducted on

the vocal expression of emotion, it is necessary to briefly focus on a theoretical formulation adequate to explain vocal affect. The term emotion has been used in relation to many different psychological states and forms of behavior. Consequently, a theoretical account of emotion may help clarify some of the more complex issues involved in the vocal expression of emotion. It is also essential to relate research on vocal affect to a more general theory of emotions, with the eventual aim of integrating studies of emotional communication with research in other areas of emotional behavior.

The psychological literature reveals a welter of conflicting viewpoints about affective behavior. However, it should be emphasized that these theoretical disputes have not been a hindrance to psychological research, and attempts at integration have been proposed. From this investigator's point of view, the most persuasive theory of emotional behavior, and a major attempt at theoretical synthesis, has been proposed by Schachter, who has emphasized the interaction of cognitive and physiological factors in defining emotional states (Schachter & Singer, 1962; Schachter & Wheeler, 1962).

Schachter and Singer (1962) note that, although various emotional states differ in regard to the overall level of physiological arousal or activation of the organism, there are subjective differences in emotional response patterns that, nevertheless, have the same level of activation. Thus, subjectively different emotional states may be associated with similar physiological reactions. Happiness and anger may have relatively similar levels of activation, yet they are subjectively different.

Schachter and Singer (1962) explain the differences in these emotional states in terms of the individual's cognitive interpretation of the situation. Hence, emotions are determined partly as a function of how a situation is viewed perceptually by the subject; and consideration of activity level as well as cognitive variables is necessary to determine the specific emotional response. In defining emotions, therefore, Schachter's view suggests a joint consideration of the individual's state of activation as well as the cognitive variables which then determine the specific affect produced.

In extending Schachter's formulation into the communication process, it is obvious that affective speech conveys information both in the vocal and verbal modes. The meaning of a sample of speech, especially its emotional meaning, is therefore a function of what is said and how it is said, the interaction of verbal and vocal aspects of the total message. Davitz (1964) suggests that the verbal aspect of speech may primarily reflect the cognitive determinants of emotional states, while the vocal aspects are a function of the speaker's state of activation. Consequently, the conceptual framework proposed by Schachter leads to a significant theoretical formulation involving possible interactions in affective communication.

Review of Research on Vocal Expressions of Affect

Recently, the expression of emotion by the voice has been the subject of some experimental investigation. Research in this area began during the 1920's and 1930's, and following a temporary decline during World War II, picked up again in the 1950's and 1960's. However,

there has been a good deal of repetition of previous work, and investigation has generally taken two forms: (1) the study of manifest verbal content, and (2) studies of vocal but nonverbal content or modes of communication. Many investigators have found that the most useful indicators of emotional meaning are to be sought in the latter area. Alpert et al. (1963) argue that the more important aspect of affective communication is how something is said, rather than what is said. Davitz (1964) noted that his experimenters discovered emotional meanings were communicated nonverbally far beyond chance expectation and that affect can be communicated reliably by content-free speech.

Soskin and Kauffman (1961) describe the discriminable qualitative features of the voice as the "carrier" on which articulated sounds are superimposed, and within this carrier my be some of the major cues to affective communication. According to Ostwald (1963, p. 193):

> "Vocal communication, verbal and content-free speech, carries information about the soundmaker's emotions, no matter how carefully he tries to hide them behind the acoustic symbols he emits. Therefore, the voice can be viewed as a primary resonator of emotions and provides a medium for the quantitative analysis of emotional states."

To investigate the communication of vocal affect three major techniques have been used to eliminate or control the verbal information conveyed by speech. In some studies (Dusenberry and Knower, 1939; Davitz and Davitz, 1959), speakers attempted to express feelings merely by reciting the alphabet or counting, for example for 1-10, assuming that neither letters nor numerals carried meaning relevant to emotional communication. Other researchers have utilized standard verbal content

that presumably was emotionally neutral; speakers recited the same few sentences while trying to express different feelings, so that whatever emotional meaning was communicated depended upon vocal cues (Fairbanks and Pronovost, 1939; Pollack, et al., 1960).

Ruckmick (1936) reviewed some earlier studies made on the relationship of vocal expressions of affect. These studies analyzed changes in pitch and intensity of voice, in its vibrato and in its general pattern, through photographic recordings. The recordings were of dramatic and conversation performances, by competent speech performers. The results generally indicated that there were definite tendencies for heightened feelings to find vocal expression at the higher end of the performer's pitch range, and for neutral and depressed states to be expressed at the lower end of the pitch range.

In a series of studies by Pronovost and Fairbanks (1939), the relationship of pitch to simulated emotion was investigated, along with an analysis of the pitch characteristics of key affective states. Both Ruckmick's survey and the Pronovost and Fairbanks studies upheld the common observation that happy and angry persons who gave voice to their feelings did so at higher pitch levels than sad or indifferent persons. Skinner (1935), on the other hand, believed that force was a more reliable index than pitch for differentiating the vocal reactions of happiness and sadness. He found that vocal expressions in happy states were characterized by an increase in the use of force while in sad states were characterized by a reduction in force.

Differences in the ease or accuracy of communicating various feelings have been reported in several studies. Pfaff (1953) found that out of nine categories of affect which he investigated, joy and hate were most accurately communicated, while shame and love were the most difficult to recognize. These kinds of differences are consistently mentioned in the literature, but only one relatively minor study has focused specifically on an attempt to account for this phenomenon. Davitz and Davitz (1959) instructed their subjects to express ten different feelings by reciting parts of the alphabet. These vocal expressions were tape recorded and the recordings were played to 30 judges, who were given a list of 10 feelings and asked to identify the emotional meaning conveyed by each expression. Like other studies in this area, Davitz found that on the average, feelings were communicated far beyond chance expectation. However, speakers varied markedly in the accuracy with which their vocal expressions were recognized; one speaker's expressions were identified correctly in only 23 percent of the cases, while another speaker communicated accurately well over 50 per cent of the time. Listeners, too, showed a wide range of differences, varying in accuracy from 20 per cent to nearly 50 per cent. And finally, as other studies have reported, feelings clearly differed in the accuracy with which they were communicated; anger, for example was communicated accurately over 63 per cent of the time, while pride was identified correctly in over 20 per cent of the cases.

Beginning with the observation that identifying an emotional expresion is essentially a problem in discrimination, Davitz and Davitz (1959)

reasoned that subjective similarity of the feelings portrayed should be inversely related to the ease of discriminating among expressions of these feelings. Thus, it seemed reasonable to expect greater difficulty in discriminating between anger and impatience than between anger and sadness. The results of the Davitz research generally supported this position, though the data demonstrated that subjective similarity among feelings accounted for only a small portion of the variance in accuracy of communication. Davitz and Davitz also report that given expression of two similar feelings, such as anger and impatience, the subjectively stronger of the two feelings was communicated more accurately. However, beyond these preliminary findings, the investigators provided no answer to the question of why various feelings are communicated with differential accuracy.

The research literature strongly suggests that feelings apparently can be communicated accurately even with marked reduction in the range and specificity of the vocal stimulus. Knower(1941), for example, found that even when speakers whispered, which eliminated the fundamental frequency of the normal voice, the accuracy of listeners was four times that expected by chance. Pollack, Rubenstein and Horowitz (1960) also reported that the emotional meanings expressed by samples of whispered speech played under increasing signal-to-noise ratios were identified at above chance levels. Perhaps even more striking, Pollack et al. found that emotional communication was possible with speech samples as short as 60 milliseconds. Thus, regardless of the technique used, all studies thus far reported agree that emotional meaning can be communicated accurately by vocal expression. Also the research to date offers

a few limited clues about vocal characteristics of emotional expression, but these clues have not been consistently helpful in identifying speech correlates of particular emotional states.

More recently, Dimitrovsky (1962) conducted a study on the development of sensitivity to vocal communication of emotion during childhood. Her subjects were children ranging in age from five to twelve. They had to identify vocal expressions of four categories of emotional meaning: love, happiness, sadness and anger. The subjects heard tapes and were then asked to point to one of four stick figure drawings representing the four affective categories. The subjects were, in addition, given a test of verbal intelligence. Dimitrovsky found that with age, the ability to correctly identify the emotional meaning of vocal expression increased, as was to be expected. Yet, there was no marked consistent difference in the pattern of correct and incorrect responses made by the subjects at the various age levels from five to twelve. In addition, she found that children at all age levels favored the emotions with negative valence, giving the responses "sad" and "angry" more often than the responses "happy" and "loving." From this, she concluded that the tendency to respond in terms of negative emotional meaning appears to be peculiarly characteristic of children.

Dimitrovsky's findings suggested that children had a "negative set" in interpreting their world, or, at least in responding and interpreting the nonverbal emotional expressions of adults. However, her conclusions were questionable on the grounds that perhaps negative emotions were simply easier to identify, considering the experimenter's statement

that "expressions of sadness were most frequently identified." This was followed in frequency by anger. Yet, it seems plausible that children, rather than favoring emotions with negative content, perhaps only found these easier to identify. Moreover, in a follow-up study, Fenster (1967) compared children to adults and found that children did not respond negatively any more often than adults to vocal expressions of affect. He concluded that Dimitrovsky's (1962) findings were due to chance factors and did not reflect a consistent characteristic of children.

The research literature in the area of communication also suggests that it is imperative to investigate the auditory cues which can be discriminated by listeners, for in the final analysis, the cues heard and perceived by listeners must carry the emotional meanings conveyed in interpersonal vocal communication. Research focused on factors related to accuracy in recognition of vocal expressions of emotion is rather limited. There are nonetheless a few studies whose results suggest some correlates of sensitivity to vocal expressions.

Gates (1927) noted that both age and intelligence of children correlated with accuracy of identification of emotional expression in one speaker. Dimitrovsky (1962) found that girls were more accurate than boys as judges of vocal expressions of feeling. This raised the immediate question of sex differences in the ability to perceive and express emotional meaning. However, Levy (1962) found no significant differences in either ability among males and females. Her original hypothesis was that women would show greater accuracy in these abilities than men, yet this contention was not supported by the experimental

evidence. Dusenberry and Knower (1939) found that women in their sample were superior to men in the accuracy of their judgments, but the difference was not statistically significant. Pfaff (1954) reported a difference significant beyond the .001 level in the direction of greater accuracy for college women in comparison with an equivalent sample of men. But Fay and Middleton (1940), on the other hand, failed to find reliable differences in sensitivity between men and women. Thus, the studies concerned with sex differences in ability to recognize vocal expressions of emotion present on the whole, a confusing and contradictory picture.

Extending the research on sensitivity to vocal affect, Beldoch (1961) dealt with the interrelation among various modes of emotional communication. He posed the question, "Is there a general factor of sensitivity, or are people sensitive to one mode of expression without being especially sensitive to other modes?" The study presented to the subjects tape recorded speech selections of male and female speakers reciting neutral paragraphs in an attempt to communicate various emotional states In addition, subjects were given musical selections and opaque projections of abstract art. A 300-item adjective checklist, a questionnaire which elicited background information on the subject's attitudes toward, and experience of, the various media, a self-report scale of sensitivity to other peoples' emotional expressions and a vocabulary test, comprised the materials used in this experiment.

Significant intercorrelations were obtained among the ability to identify the expression of feeling in all three media. Vocabulary

scores also correlated significantly with ability in all three modes and the total score. Background training or current interest in the arts did not contribute to success with any of the instruments. None of the adjectives on the check list discriminated between high and low scorers on the sensitivity measures, but self-reported sensitivity did distinguish between groups, the high scorers described themse'ves as more sensitive than the low scorers, (Beldoch, 1961).

Levitt, (1962) reached similar conclusions in his investigation of the relationship between vocal and facial emotional expressive abilities. He examined the comparative communication efficiency of the vocal, facial and combined vocal-facial modes by a sound film recording of posed emotions. He determined that feelings were communicated more effectively by the facial-vocal mode. He also found that vocal-facial communication, while superior to vocal communication, was not more effective than facial communication alone. Like Beldoch (1961), Levitt discussed his results in terms of a general factor underlying the communication of feeling. Levitt states that:

> "Since the experimental data showed that only a small part of the variance in emotional communication could be accounted for by a general factor, it is postulated that there are also specific factors involved in specific aspects or modes of communicating different feelings. (p. 87)."

Levy (1962) studied the relationship between the ability to express and to perceive vocal communications of feelings by a tape recording of posed affects. She began with the psychoanalytic notion that self-understanding was a prerequisite to understanding others.

The variables she investigated were: (1) expression, or ability to express feelings vocally to others; (2) other perception, or the ability to identify feelings expressed vocally by others; (3) self-perception, or the ability to identify one's own vocal expression of feelings. She found that these three variables were positively intercorrelated. These results added support to the ancient admonition, "Know thyself."

After an extensive search of the literature on the personality correlates of emotionally sensitive individuals, it appeared that there was no rigorous theory or previous research that suggested specific hypotheses about this aspect of vocal communication, with the exception of some of the research on person perception (Allport, 1964; Brown, 1965). Although the field of clinical psychology abounds in hunches about the personality of an emotionally sensitive person, there was a relative dearth of empirical studies on the relationship between personality characteristics and the perception and communication of vocal affect.

Davitz (1964) was among the few investigators to conduct a rather extensive exploratory study on the personality correlates of emotional sensitivity. He administered a battery of paper and pencil personality tests (the Guilford-Zimmerman Temperament Survey, The Allport-Vernon-Lindzey Study of Values, and the Edwards Personal Preference Schedule) to a large group of college students, and their ability to identify vocal expressions of emotional meaning was measured. Ability to identify vocal expressions of emotional meaning was measured by responses to a tape recording developed by Beldoch (1961), and subsequently used by Levy (1962). The recording involved 37 expressions of 10 different cate-

gories of emotional meaning. Beldoch (1961) reported a test-retest reliability of .74. However, Davitz (1964) failed to find any consistent evidence for possible personality correlates of emotional sensitivity. He noted that the personality variables measured by the various instruments were independent of the ability to identify vocal expressions of emotional meaning. In a subsequent study (Davitz, 1964), the Rokeach Dogmatism scale and a measure of ability to identify vocal expressions of emotional meaning was administered to 61 Ss. However, this study also failed to produce any significant findings. Davitz (1964) concluded that the absence of positive results could not be accounted for by unrealiability of the specific measures used, although he conceded that it was possible that other personality variables measured by other techniques might indeed be related to emotional sensitivity.

Consequently, repeated frustration in the personality area forced Davitz to shift his attention to perceptual and cognitive variables, trying to describe the communication process as a series of perceptual and cognitive events. However, it would seem that the shift away from the personality research was somewhat premature, for personality variables and factors are likely to exert a different kind of influence on the communication process. There may indeed be a relationship between personality variables and the errors, distortions, and misperceptions that occur in the process of affective communication. Consequently, specific personality characteristics, and perhaps psychological defenses, might very well play an important role in determining the nature of perceptual distortions in interpersonal communications. Moreoever, a tape recording of affective vocalization can also be viewed as a semi-projective

stimulus, thus enabling an investigator to focus on an analysis of differential sets, and differential errors in addition to overall accuracy. Such an investigation may help to clarify the relationship between personality characteristics and affective vocal communication.

REVIEW OF REPRESSION-SENSITIZATION RESEARCH

Anxiety reducing activities which are unconsciously motivated have been given the label of defense mechanisms (Fenichel, 1945.) Various descriptions of these mechanisms, originating in psychoanalytic theory have been proposed over the years. According to analytic theory (Freud, 1954), clinicians have long noticed that the more energy a person has tied up in his defenses (i.e., the more energy he needs to prevent certain instinctual impulses from coming through into consciousness), the less energy he has at his disposal for attention, concentration, perception and his general interaction with the world. Moreover, as development progresses, defense mechanisms serve to guide affective behavior in a wide variety of ways.

A unidimensional categorization which encompasses many diversive defense mechanisms grew out of the original research on the New Look in perception in the 1940's. This dimension has been labeled Repression-Sensitization. Erikson (1950) was one of the first investigators to make and pursue this distinction of types of defense mechanisms, while Gordon (1957) introduced the terms "repressor" and "sensitizer." Erikson (1966), in a more recent review of the literature on defensive styles approached the repression-sensitization dimension as a study of responses to internally-cued anxiety, more traditionally studied under the rubric of defense mechanisms.

The specific research which formed the background for much of the current work on the repression-sensitization dimension will be reviewed briefly.

According to Bruner and Postman (1947), the basic assumptions underlying most of the research on the New Look Approach were stated as follows:

> "Perception is a form of adaptive behavior. Its operation reflects not only the characteristics of sensorineural processes, but also the dominant perception involves a selection by the organism of a relatively small fraction of the multiplicity of potential stimuli to which it is exposed to at any moment in time. In perception, moreoever, certain stimuli are accentuated and vivified at the expense of others. Finally, what is 'habitually seen' in any given perceptual situation is a function of the fixation of past perceptual responses in similar situations. Through these three processes -- selection, accentuation, and fixation -- the adaptive needs of the organism find expression in perception." (p. 300).

Individual differences in perceptual adaptation to threatening stimuli soon became evident in emergent investigations. In their initial study, Bruner and Postman (1947) presented neutral and potentially threatening words tachistoscopically to Ss. The researchers found two distinct patterns of response among the Ss. Some Ss revealed a defense process in which recognition time for threatening words was longer. Bruner and Postman concluded that the greater the anxiety, the greater the perceptual defense. However, the responses of the other subjects suggested a sensitizing process in which recogntion time was actually faster for the most anxiety provoking words. Rather than avoiding the perception of threat, the latter individuals were characterized as vigilant in perceiving it.

The notion of repression-sensitization created an immediate new wave of research interest. In a review of the literature on repression-

sensitization, Byrne (1964) reported that those individuals who had difficulty in perceiving threatening material accurately gave evidence of blocking, repression, and avoidance when responding to conflictual stimuli in other contexts. Conversely, those who perceived threatening stimuli as accurately as or more accurately than neutral stimuli responded in other situations with intellectualization, sensitization, and general approach behaviors.

An examination of the perceptual studies (Erikson, 1951; Lazarus, 1951; Nelson, 1955; Shannon, 1962; etc.) suggests rather strongly the presence of a repression-sensitization dimension with respect to responses to emotional stimuli. Byrne (1964) notes that these behavior tendencies appear to be fairly pervasive ones in that they are identifiable in perceptual responses, responses given to projective tests, and in symptoms of maladjustment. Consequently, individuals identified as repressors or sensitizers on the basis of perceptual tasks have also been differentiated on the basis of a wide variety of clinical materials; case history and interview material, (Lazarus et al., 1951), responses on sentence completion tests (Carpenter et al;, 1956), and on TAT responses (Erikson, 1951). This rather extensive research has established the repression-sensitization dimension as a meaningful component of behavior.

To further the development of this research, Byrne (1961) devised a scale of MMPI measures as an "easily administered, reliable, valid method by which these defenses could be measured (p. 338)." While the MMPI (Hathaway and McKinley, 1951) was originally devised as a diagnostic

aid, it was subsequently used in both research and clinical work for a wide variety of different purposes. Since the individuals classified into the various psychiatric syndromes identified by the test tend to differ in characteristic defensive modes, and since some of the validity scales have been considered as reflecting defenses, Byrne (1964) felt it was inevitable that the MMPI scales would be utilized in research on repression-sensitization. Moreover, the R-S scale's construct validity had been established by correlating R-S scale scores with other paper and pencil tests designed to measure a similar dimension (Byrne, Barry, Nelson, 1963).

Consequently, the dimension of R-S provides an important glimpse of an aspect of ego organization that is obviously related to a broad class of adaptive situations. However, a familiar problem which arises is that of agreeing upon a suitable defining operation for repression-sensitization. According to Byrne, (1964), the repression-sensitization dimension is a bipolar categorization of defensive behaviors which is felt to characterize two different modes of defensive adaptation. He states:

> "At the repression end of the continuum of defensive behaviors are those which involve avoidance of anxiety arousing stimuli and its consequents. Included here are repression, denial and many types of rationalization. At the sensitizing extreme of the continuum are behaviors which involve an attempt to reduce anxiety by approaching or controlling the stimulus and its consequents. The latter mechanisms include intellectualization, obsessive-compulsive behaviors, and ruminative worrying. (p. 196).

Thus, repressing behaviors serve to avoid anxiety-arousing stimuli and sensitizing behaviors involve approaching or controlling the threat-

ening stimuli.

Current research (Byrne et al. 1966) has indicated a linear relationship between repression-sensitization and adjustment, with sensitizers appearing more maladjusted then repressors. This was based on a plethora of studies investigating the repression-sensitization scale (Byrne, 1961) and the revised scale (Byrne et al., 1965; Joy, 1963; Tucky and Grigg, 1964). In general, these investigations suggested that repressors were better adjusted than sensitizers. However, as Byrne (1968) later pointed out, repressors might appear better adjusted on a paper and pencil measure because they tend to deny that they have problems rather than because they are better adjusted. Yet, Altrocchi (1960) reported that sensitizers were found to have a more negative self-concept, described themselves as more rebellious, aggressive and self-effacing. Using the Rosenzweig P-F test and a 14 item rating scale as hostility measures, Altrocchi, Shrager, and McLeod (1964) found that repressors attributed less hostility to themselves than did sensitizers. Byrne (1964) therefore concluded, on the basis of research evidence, that as repression-sensitization scores increased, the more likely an individual was to describe his own behavior and feelings as hostile.

Predictions based on the assumption that scores on the repression-sensitization scale indicated individual differences in the tendency to repress or deny or avoid threatening affective stimuli have been relatively well supported. There was evidence that behavior which clinicians defined as repressive was related to the behavior measured by the test (Tempone, 1963; Davidson, 1964). Here clinical judgments of repressive

behaviors were compared to test scores and correlated significantly.

Responses to relatively ambiguous or unstructured stimuli have been found to be in part a function of the subject's characteristic defense mechanisms. Those Ss who repressed tended to respond to ambiguous material with neutral or nonthreatening interpretations, while individuals employing intellectualizing or obsessional defenses responded to such material with conflict laden and emotional content. (Byrne, 1961). Byrne (1961) found that when 9 TAT cards were administered, sensitizers had higher sexual content scores than repressors; while Tempone (1963) found that sensitizers gave significantly more aggressive content than repressors, but the difference in sexual response was not significant. However, these inconsistent results may be a function of the degree of threat provided by the stimuli. Finally, on the basis of Freudian theory, O'Connell and Peterson (1964) hypothesized differential responses to humorous material as a function of repressing vs. sensitizing defenses. The relative dislike of humor found with repressors was consistent with Freudian humor theory.

Byrne (1964) later extended the research on the dimension of repression-sensitization into developmental psychology. In examining the parental antecedents in the development of repression-sensitization, Byrne (1964) noted that child-rearing attitudes falling along a permissive-restrictive dimension should be related to the development of sensitizing versus repressive mechanisms in the offspring. Several investigators (Schafer and Bell, 1963; Winden and Rau, 1962; and Hereford, 1963) found that repressors came from a home atmosphere characterized

by permissiveness, acceptance, and confidence. Their mothers were consistent and high in self-esteem while the two parents had a positive affective relationship with one another. The sensitizer, on the other hand, reported a restrictive and rejecting home, and a lack of self-confidence in assuming the role of parent. The results of these studies also suggested that the mothers of sensitizers were inconsistent, low in self-esteem, and had a negative affective relationship with the father. Consequently, the limited developmental research lends further support to the notion of a repression-sensitization typology.

More recently, Merbaum and Kazaoka (1968) investigated the reports of emotional experiences by repressors and sensitizers during an interview transaction. An experimental procedure was devised in which S indicated emotionality by pressing an auditory signal apparatus while an interview was in progress. The verbal responses surrounding the signal were coded, and it was found that sensitizers endorsed significantly more positive material than the sensitizers. One other provocative and closely related finding was that sensitizers perceived others as inordinately more critical, angry and demeaning of them than the repressors.

Merbaum and Kazaoka(1968) also noted that family relationships, as reported by the sensitizer, were replete with stress, unhappiness, anger, criticism, and affective distance. In contrast, the repressor described family relationships in close affectionate terms. This finding was in agreement with those findings reported by Byrne, (1964). Merbaum and Kazaoka (1968) also reported that the sensitizer tended to

view social and peer relationships with suspicion and guardedness. He saw others as adversaries and profound threats to his self-esteem. The repressor, however, perceived peer relationships as satisfying and described them in cooperative terms. The sensitizer, in self-reports, floundered on feelings of inadequacy, while the repressor reported high self-esteem and self-regard.

In a subsequent study (Lefcourt, 1968) concluded that scores on the repression-sensitization scale may pertain to the question of "emotionality." He found that repressors and sensitizers differed in their use of affect ideation terms in describing TAT figures. Sensitizers used more affect-ideation words to describe persons in TAT stories. Repressors were found to generally view emotional expression as an indication of abnormality, and consequently, their use of emotional terminology was limited in this study.

As a tentative conclusion, Lefcourt (1968) proposed that repression-sensitization scores depicted subjects' evaluations and private interpretations of emotionality. Consequently, he speculated that when engaged in experiments containing conventionally defined emotional stimuli, sensitizers (subjects with positive evaluations of emotionality) would prefer to describe themselves as emotionally responsive. In other words, sensitizers would consider emotional reactions to emotional stimuli as appropriate. Repressors, on the other hand who view emotionality as a sign of instability, would more likely claim less responsiveness to emotional stimuli, since to become emotional may mean to become unstable. Because repressors tend to deny emotionality, Lefcourt (1968) proposed

that situations designed to elicit emotional reactions would prove stressful for them. However, these hypothesized relationships would have to be substantiated by subsequent research on the repression-sensitization dimension.

Overall, on the basis of research with the repression-sensitization scale (Byrne, 1968), sensitizers (in comparison with repressors) have been characterized as better able to perceive threatening words in an ambiguous perceptual situation, less likely to forget threatening materials, more likely to indicate that they are anxious or emotionally upset, more hostile and more introverted. It would appear that repressors may be viewed as interpreting the admission of emotionality as a sign of instability, while sensitizers view such admissions as revealing honesty with one's self, and a lack of fear of self-disclosure.

Any pervasive personality variable, such as repression-sensitization is potentially an important determiner of many aspects of interpersonal behavior. An individual's perception of others, his style of communication, his response to the demands of group situations, and his effect on others are all likely to be in part a function of his characteristic defensive mode of style.

RELATIONSHIP BETWEEN DEFENSIVE STYLES AND VOCAL AFFECT

Recent research has demonstrated the presence of measurable physiological and behavioral changes upon hearing a recording of one's own voice (Holzman, Rousey, and Snyder, 1966). By employing interviews, semantic differentials, and various voice confrontation scales, it was

found that the reaction was generally in a "dislike" or negative direction. In search of an explanation for their observations, the authors explored the postulate that what the subject experiences in voice confrontation situation is not merely the discrepancy between the voice he is familiar with and the recorded one he now hears, but a momentary awareness of aspects of his personality which are mirrored in his own voice. In accordance with their findings:

> "It thus seems plausible that among the things subjects heard in their voices, they heard something they had not wanted to hear, something expressed which nevertheless had been conveyed by voice qualities. For speech is particularly qualified as an expressive organ, since the larynx contains the highest ratio of nerve fibers to muscle fibers of any functional system, and it is therefore exquisitely responsive to intraorgsnismic changes."
>
> "This formulation implies a variable we call monitoring, a function of which may be the selective editing of one's verbal expression in communication. (p. 85)"

An equivalence is assumed on the part of the authors between Freud's hypothesis of a continuous expenditure of repressive energy (Freud, 1957), and the self-editing process of monitoring, with the further assumption that it is more efficient for editing to be less than perfect, allowing through at least some of what is censorable in ourselves. What the individual is aware of, then, in voice confrontations, is this incomplete repression.

Indeed individuals differ in their ability to communicate and perceive affective communications. Therefore, a promising area of research on the repression-sensitization dimension involves the possible relationship of this personality construct to the communication process.

The propsed investigation is an attempt to examine the relationship between defensive styles (repression-sensitization) and patterns of perception and communication of vocal affect. Since the communication process involves both sending and receiving messages, any understanding of the total process would require information about both aspects of communication, that is, information pertaining to characteristics of both speakers and listeners. Consequently, the proposed research is an attempt to investigate in what way the defensive style of repression sensitization influences the communication and perception of pleasant and unpleasant vocal affect.

This study was undertaken as a comparative investigation of possible perceptual differences and distortions of affective communications by repressors and sensitizers. Significant differences in the way in which repressors and sensitizers perceive and communicate pleasant and unpleasant affective vocalizations may represent differences in their interpersonal world, i.e., their defensive styles and modes of adaptation. It is expected that this study will provide meaningful information about the way in which repressors and sensitizers communicate and react to the emotional communications they receive from others with similar and dissimilar defensive styles. Consequently, this type of research may deepen our understanding of the communication gap that currently exists.

Statement of the Problems

The following problems were investigated in this study:

1. Is there a difference between repressors and sensitizers in the accuracy with which they respond to vocal expressions of affect?

2. Is there a difference between repressors and sensitizers in the accuracy with which their vocal expressions of affect are perceived?

3. Is there a difference between repressors and sensitizers in the accuracy with which they respond to vocal expressions of pleasant (i.e., happiness, contentment, love) and unpleasant (i.e. sadness, anger, fear) affect?

4. Is there a difference between repressors and sensitizers in the accuracy with which their vocal expressions of pleasant and unpleasant affect are perceived?

5. Is there a tendency for repressors and/or sensitizers to respond to vocal communications of affect with an excess of either positive or negative identification?

6. Is there a difference between repressors and sensitizers in the number of responses of each emotional category emitted in response to vocal affective expressions?

7. Is there a difference between repressors and sensitizers in the number of responses of each emotional category which their vocal expressions elicit?

8. Is there a difference between repressors and sensitizers in the number of false positive[1] and false negative errors[2] emitted in res-

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[1] False Postive Error: Negative affect erroneously identified as positive.

[2] False Negative Error: Positive affect erroneously identified as negative.

ponse to vocal expressions of affect.

9. Is there a difference between repressors and sensitizers in the number of false positive and false negative erros which their vocal expressions of affect elicit?

Hypotheses

1. Since the research literature indicates that repressors were found to view emotional expressions as maladaptive, it is predicted that repressors will be less accurate in their communication and perception of vocal affect. Sensitizers, on the other hand, who usually perceive emotional expressions more positively, are expected to be more accurate in their communication and perception of vocal affect.

2. More specifically, it is further predicted that sensitizers will be more accurate in their communication and perception of unpleasant emotions (i.e., sadness, fear and anger),while repressors will be more accurate in their communication and perception of pleasant emotions (i.e., happiness, love and contentment).

3. It is also predicted that sensitizers, because of their defensive style, will emit and elicit affective expressions with more negative identification, whereas repressors will emit and elicit affective expressions with more positive identification.

4. More specifically, it is further predicted that sensitizers will emit and elicit a greater frequency of anger, sadness and fear responses, while repressors will emit and alicit a greater frequency of contentment, love and happiness responses.

5. Finally, it is predicted that sensitizers will respond to affective expressions with a greater frequency of false negative errors,

while repressors will respond with a greater frequency of false positive errors.

CHAPTER II

METHOD

The method used in this study is similar to the one described by Davitz (1964) and employed by Dimitrovsky (1964) and Fenster (1967) in previous research on affective communication. This method provides a direct comparison between repressor and sensitizer responses to the same emotional expression, and provides a basis for determining both the accuracy and frequency of affective responses. Additional procedures were also employed because of the limitations inherent in the previous research.

Subjects

The Ss in this experiment were 60 white male undergraduate students enrolled in an introductory psychology lecture class at the Baruch College of the City University of New York. Ss were selected on the basis of their performance on the Repression-Sensitization scale (R-S scale, Byrne, 1961). This questionnaire was administered during the regular class hour in the 4th week of the Spring Semester to a lecture class consisting of 259 Ss. The Ss were mostly freshman and sophomores whose ages raged from about 17 to 21.

After scoring the R-S scale, 60 Ss were selected representing the extremes of the R-S scale, 30 male Repressors and 30 male Sensitizers. These Ss were carefully matched, and had normal hearing, assessed prior to the experiment during a brief interview. None of the Ss had any previous experience with the experiments, nor had they

any knowledge prior to them.

Communicators (Expressors)

Those 60 Ss selected on the basis of their scores on the R-S scale were also used on construct a tape of vocal affective expressions. This gave them an opportunity to serve as both speakers and listeners.

Materials: Repression-Sensitization Scale (Byrne, 1961)

The Repression-Sensitization scale was developed by Byrne (1961) to measure an individual's consistent mode of ego defenses. The scale consists of 156 scorable and 26 buffer items. One point is assigned for each item answered in the sensitization direction; thus, total scores could range from zero to 156. High scores indicate sensitization and low scores repression. The R-S scale was scored using Byrne's (1963) revised scoring system.

Sentence Evaluation Test: Obtaining a Verbally Neutral Sentence

One of the shortcomings of previous research involved the sentence used by speakers to express emotion. That is, the particular verbal material used in the vocalization may have biased the results in the direction of either positive or negative emotional valence. Consequently, since the primary aim of the present study was to investigate vocal affective communication, an important first step was to identify verbal content which was clearly emotionally neutral. Then, using this content a set of vocal expressions could be obtained in which the cues conveying specific emotional meanings depended entirely on the speakers' vocalizations.

Therefore, a sentence whose verbal content was emotionally neutral was produced by asking the original group of Ss (259 undergraduates, including the 60 experimental Ss) to rate a group of sentences in terms of their being "pleasant," "unpleasant" or "neutral." (A sample of the questionnaire appears in Appendix A). The sentence which was chosen on the basis of this questionnaire was, "I am going out of the room now and I will be back later." This sentence was selected because it was identified as neutral by 245 Ss. In addition, a similar sentence was used in previous research (Davitz, 1961). It also provided maximum latitude for superimposing various affects because of its personalized nature. This Sentence Evaluation Test was administered along with the Repression-Sensitization scale during the psychology lecture class.

PROCEDURE

First Experimental Session: Administration of the Repression-Sensitization Scale and Sentence Evaluation Test.

The first phase of this experiment was conducted at the Baruch College of the City University of New York. Permission to utilize the introductory psychology lecture class was obtained in advance from the instructor. E introduced himself to the members of the class, and Ss were told that he was trying to get some information about the attitude and feelings of Baruch College students. E informed Ss that he was trying to gather some information on how college students felt about different sorts of things. In addition, E emphasized that he needed the full cooperation of the students if the research was to be

successful. E also informed the Ss that he would return once the experiment had been completed and inform them of the results which would be group results and not individual results.

Booklets containing the R-S scale, answer sheets, and the Sentence Evaluation Test were distributed to Ss. Administration instructions for the R-S scale were printed on the front page of the booklets. In an attempt to minimize any possible apprehension and to make for an atmosphere most conducive to relaxation, Ss were instructed not to sign their names on the forms, but simply to indicate their sex, age, race, class status, psychology recitation class and recitation teacher.

The following instructions for the R-S scale, printed on the face of the booklet, were read aloud by the experimenter.

> "This questionnaire consists of a number of statements. Read each statement and decide whether it is true as applied to you or false as applied to you.
>
> You are to mark your answeres on the answer sheet you have. If a statement is TRUE or MOSTLY TRUE, as applied to you, put an X through the column headed T. If a statement is FALSE or NOT USUALLY TRUE, as applied to you, put an X through the column headed F.
>
> Remember to give you own opinion of yourself. Do not leave any blank spaces if you can avoid it.
>
> In marking your answers on the answer sheet, be sure that the number of the statement agrees with the number on the answer sheet. Make your X's heavy and dark. Erase completely any answer you wish to change. Do not make any marks on this booklet.
>
> Remember, try to make some answer to every statement.
>
> NOW OPEN YOUR BOOKLET AND GO AHEAD.
>
> E looked up at this point and emphasized to the class: "If you have any questions, please ask them now. Do not ask any questions once the experiment has begun."

After the instructions were read aloud, questions from the Ss were answered, but answers usually took the form of repeating the instructions, i.e., the appropriate portion of the instructions was re-read.

After completion of the R-S scale, Ss were instructed to turn to the last page in the booklets. Appearing on the last page was the Sentence Evaluation Test (See Appendix), consisting of 20 sentences with the following instructions:

> "Below you will find a number of sentences. I would like you to tell me how you feel about each sentence. Do you think it is a pleasant sentence, a neutral sentence, or an unpleasant sentence? There are no right or wrong answers. I am interested only in how you feel about each sentence. If you think a sentence is pleasant, put a "P" in the space in front of the sentence. If you think the sentence is neutral, (that is, neither pleasant or unpleasant) put an "N" in the space in front of the sentence. If you think the sentence is unpleasant, put a "U" in the space in front of the sentence. PLEASE READ ALL THE SENTENCES BEFORE YOU BEGIN TO WRITE IN YOUR ANSWERS. Remember:
> P-Pleasant
> N-Neutral
> U-Unpleasant

Following the administration of the Sentence Evaluation Test, Ss were asked to close their booklets and to wait for final instructions. Ss were told then that E was conducting some additional research in the area of perception and communication, and some brief individual experiments would be conducted in a few weeks, lasting approximately 15 minutes. The students were informed that some Ss would be randomly selected to participate in these brief experiments. Consequently, for identification purposes and to insure the random selection, Ss were asked to write in after the space marked "NUMBER" in the upper right hand corner of the answer sheet a four digit number.

Ss were given a choice of using either the last 4 digits in their telephone number, the last 4 digits in their social security number, or the last 4 digits in their college I.D. number. To avoid any potential "Experimenter Effect" Ss were coded according to their I.D. numbers. Therefore, E was unaware whether they were repressors or sensitizers until the data was analyzed.

This entire experimental session took approximately 50 minutes or one class period.

Second Experimental Session: Producing the Tape Recording of Vocal Affective Expressions

After the R-S scale had been scored, 60 Ss were selected on the basis of the extreme scores, thus producing 30 repressors and 30 sensitizers. E then returned to each recitation psychology classroom and listed on the blackboard the identification number of those Ss slated to participate in producing the tape recording, Ss were told that if their number appeared on the blackboard they had been randomly selected to participate in a brief 15 minute experiment on communication which they should find quite interesting. Ss were assured that the experiment would last no longer than 15 minutes. Appointments were thereby arranged at such times that the Ss had no pressing obligations. Appointments were set up over a three week span. All Ss were naive as to the purpose of the second experiment.

The second part of the experiment was conducted in a sound-proofed room at the Baruch College. The 60 Ss were each seen individually for about 15 minutes. Ss were brought into the room and seated

across the table from the experimenter. Before each S tape recorded the vocal affect, a brief interview was conducted to determine how S was feeling, how he felt emotionally that particular week, and what kind of person he regarded himself as emotionally. In addition, S was given a brief rating scale with the six experimental affects to determine which feelings he had difficulty in expressing and which he felt he could express well. This same procedure was followed for each subject.

The neutral sentence (I am going out of the room now and will be back later) was used by the 60 speakers to construct a tape recording of emotional expressions. Each speaker recorded the vocalization of this sentece making an affort to communicate a mild amount of one of the following six emotions: anger, contentment, fear, happiness, love and sadness. A random order method was used in assigning emotions to each of the individual speakers.

In composing the tape, the following instructions were given to each speaker:

> "This is a study in emotional communication by means of vocal expression, that is, your voice. I am going to hand you a card with a sentence printed on it. (The speaker will be given the card with the neutral sentence).

The instructions continue:

> "There are many different ways to say the same sentence. You are to express the following sentence as if you were mildly angry (to be replaced by each of the other five emotions where appropriate,) trying to express your voice vocally. In other words, try convincing someone that you experiencing a mild amount of this particular feeling. Practice saying

> the sentence three times before saying it into the tape recorder."

This procedure was followed for each speaker with the order of affects and speakers being randomized. The final tape consisted of 60 repetitions of the verbally neutral sentence wherein each of the six emotions were expressed 10 different times.

Third Experimental Session: Collecting the Data-Perception of Affective Communication

After completion of the second experimental session Ss were thanked for their cooperation, and informed that there would be one more brief (20-30 minute) experiment on perception and communication, and their assistance would be greatly appreciated. Thus, appointments times for the third experimental sessions were set up with Ss. Ss were tested in 6 group sessions, with 10 Ss in each group. The experiment was again conducted in the same soundproofed room at the Baruch College.

The 60 affective vocalizations were played on a tape recorder to the 60 Ss (30 Repressors and 30 Sensitizers) in small groups of 10. Each of the affective messages was of approximately 5 second duration and was followed by a 10 second interval of silence.

Ss were provided with answer sheets and told that this was an experiment to determine their perception of emotional communication. Ss were asked to identify which of the six emotions the speaker was trying to communicate. Each of the listeners was given the following instructions played over the tape recorder:

> "There are many different ways to say the same sentence. Each of the speakers on the following tape

> said the same sentence, but tried to communicate a different emotion. You are to indicate which of the following six emotions the speaker intended to communicate by responding on you answer sheet in terms of the following code:
>
> A-(mild) Anger
> C-(mild) Contentment
> F-(mild) Fear
> H-(mild) Happiness
> L-(mild)Love
> S-(mild) Sadness

The standardized answer sheets which contained the individual responses of the 30 Repressors and 30 Sensitizers provided the raw data for this experiment. The final desing was a 2 x 2 factoral with 30 replications in each cell. The answer sheets were first scored for accuracy of communicated and perceive affect by Repressors and Sensitizers. They were also scored for differential accuracy of the six affects; for frequency of positive and negative identification; for specific frequency of identification of each affect; and finally for differential errors among repressors and sensitizers.

Fourth Experimental Session: Test-Retest Reliability Measure of Perception of Affective Vocalization

The last experimental condition served as a test-retest reliability for the vocal affective tape. The affective tape was administered to 50 Ss twice over a two week period. The same administration instructions were read aloud by E and Ss were instructed to write down an identification number upon completion of the task. This identification number was either the last 4 digits in their phone number, the last 4 digits in their social security number, or the last 4 digits in their I.D. number. Then, E emphasized that it was important that Ss use

the same identification number when the tape recording was replayed a second time. After scoring the answer sheets for these Ss, identification numbers were matched in order to compute a test-retest reliability coefficient.

CHAPTER III

RESULTS

A two-by-two analysis of variance model was used in the analysis of most of the data. The several analyses considered: (a) the number of correct responses; (b) frequency of pleasant and unplesant responses; and (c) frequency of differential errors. In addition, analyses were made of the number of responses of each specific category of emotional meaning, and the frequency of identification of each emotional category. Where the analysis of variance model was inappropriate, matched-pair t-tests were used. The results will be discussed in three sections, first in terms of accuracy of response, second in terms of patterns of response to vocal communication, and lastly in terms of differential errors made by repressors and sensitizers.

ACCURACY OF REPRESSOR AND SENSITIZER RESPONSES TO VOCAL COMMUNICATION

This section focuses on the effect of repression-sensitization on the perception and communication of vocal affect. In order to determine the reliability of Ss accuracy of response to the vocal affective tape, a test-retest correlation was computed based on a sample size of 50 Ss. The results of this computation produced a test-retest correlation for total accuracy of .71 which was significant at the .001 level. The rest of the statistical analyses was designed to answer the following specific questions:

Question 1: Is there a difference between repressors and sensitizers in the accuracy with which they respond to vocal expressions of affect?

Table 1 shows the number of correct responses made by repressor and sensitizer listeners to the communication of repressor and sensitizer speakers. A 2x2 analysis of variance was performed on these data and constitutes Table 2. Reference to this table shows that there is no speaker, listener or interaction effect. Hence, there is no significant difference between repressors and sensitizers in the accuracy with which they respond to vocal affect on the particular test.

Question 2: Is there a difference between repressors and sensitizers in the accuracy with which their vocal expressions of affect are perceived?

Table 1 also shows that the average number of correct responses elicited by repressor and sensitizer speakers from repressor and sensitizer listeners. An analysis of variance (Table 2) again shows that there is no significant speaker, listener or interaction effect. Thus, no consistent difference was found between repressors and sensitizers in the accuracy with which their vocal expressions of affect are perceived.

The present study was also concerned with differences between repressors and sensitizers with regard to the number of correct responses in each category of emotional meaning, both in terms of those emitted (listener effects) and those elicited (speaker effects). The analysis was designed to answer the following specific questions:

Question 3: Is there a difference between repressors and sensitizers in the accuracy with which they respond to vocal expressions of pleasant (i.e., happiness, contentment, love) and unpleasant (i.e., sadness, anger, fear) affect?

Table 1

Average Number of Correct Responses *

Listener Group	Repressor Speakers	Sensitizer Speakers	Total Speakers
Repressors	8.81	8.42	17.23
Sensitizers	8.79	8.42	17.21
Total Listeners	17.60	16.84	

* Perfect score equals 30 in each cell.

Table 1A

Range of Scores for Average Number of Correct Responses

Listener Group	Repressor Speakers	Sensitizer Speakers
Repressors	4-13	6-12
Sensitizers	6-13	5-12

Table 2

Analysis of Variance for Number of Correct Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	0.8333	1	0.8333	4.8655	ns
Between Listeners (R-S)	4.8000	1	4.8000	1.1838	ns
Interaction: Speakers x listeners	2.7000	1	2.7000	1.5018	ns
Within Treatments	470.3334	116	4.0545		
Total	478.6667	119			

Question 4: Is there a difference between repressors and sensitizers in the accuracy with which their vocal expressions of plesant and unpleasant affect are perceived?

Table 3 shows the average number of correct responses of each emotional category made by repressor and sensitizer listeners to the affective communications of repressor and sensitizer speakers. Six 2x2 analyses of variance were performed on these data (See Appendix A), summariazed in Table 4. Reference to Table 4 shows that there are five speaker and one listener effect with regard to the perception and communication of various vocal affects. Sensitizer speakers elicited more accurate "anger" and "sadness" responses than did repressor speakers. In contrast to this, repressor speakers elicited more accurate "contentment," "happiness," and "fear" responses than did sensitizer speakers. In addition, repressor listeners emitted more accurate "contentment" responses than did sensitizer listeners. All of these results were found to be statistically significant.

Consequently, while there was no overall difference between repressors and sensitizers in the accuracy of their emitted responses (i.e., listener effects), or accuracy of responses elicited (i.e., speaker effects), there were some distinct differences with regard to the pattern of pleasant and unpleasant correct responses emitted and elicited by each group.

PATTERNS OF REPRESSOR-SENSITIZER RESPONSES TO VOCAL COMMUNICATION:

FREQUENCY OF PLEASANT AND UNPLEASANT RESPONSES

In dealing with patterns of repressor and sensitizer responses the primary concern is with the valence of responses to expressions of

Table 3

Average Number of Correct Responses For Each Emotional Category *

Listener Group	Repressor Speakers	Sensitizer Speakers	Total Speakers
Repressor Listeners	2.20 Anger	2.73 Anger	4.93 Anger
	2.20 Fear	0.70 Fear	2.90 Fear
	0.70 Sadness	2.23 Sadness	2.93 Sadness
	2.17 Content	1.43 Content	3.60 Content
	1.27 Happy	0.83 Happy	2.10 Happy
	0.27 Love	0.50 Love	0.77 Love
	8.81 Total	8.42 Total	17.23 Total
Sensitizer Listeners	2.53 Anger	2.83 Anger	5.36 Anger
	2.07 Fear	0.60 Fear	2.67 Fear
	1.10 Sadness	2.53 Sadness	3.63 Sadness
	1.43 Content	1.23 Content	2.66 Content
	1.23 Happy	0.60 Happy	1.83 Happy
	0.43 Love	0.63 Love	1.06 Love
	8.79 Total	8.42 Total	17.21 Total
Total Listeners	4.73 Anger	5.56 Anger	
	4.27 Fear	1.30 Fear	
	1.80 Sadness	4.76 Sadness	
	3.60 Content	2.66 Content	
	2.50 Happy	1.43 Happy	
	0.70 Love	1.13 Love	
	17.60 Total	16.84 Total	

* Perfect score equals 5 for each emotional category.

Table 1

Summary of Analyses of Variance for Number of Correct Emotional Responses of Each Type[1]

Emotion	Speaker Effect (R-S)	Listener effect (R-S)	Interaction (Speaker x Listener Effect
Anger	S* ($p<.05$)	ns	ns
Fear	R* ($p<.001$)	ns	ns
Sadness	S* ($p<.001$)	ns	ns
Contentment	R* ($p<.05$)	R* ($p<.05$)	ns
Happiness	R* ($p<.001$)	ns	ns
Love	ns	ns	ns

*S=Greater sensitizer effect
*R=Greater repressor effect

[1]For individual analysis of variance tables See Appendix A.

vocal affect. The focus is on any consistent tendency for repressor-sensitizer listeners to perceive the emotional meaning of vocal expressions as either negative or positive. More specifically, the analysis is concerned with determining whether or not there are any differences between repressor and sensitizer listeners in the number of pleasant-unpleasant responses emitted, and between repressor and sensitizer speakers in the number of pleasant-unpleasant responses elicited. The analysis was thus carried out to answer the following specific questions:

Question 5: Is there a tendency for repressors and/or sensitizers to respond to vocal communications of affect with an excess of either positive or negative identification?

Table 5 shows the average number of unpleasant responses (anger, fear and sadness combined) made by repressor and sensitizer listeners to vocal expressions of repressor and sensitizer speakers. A 2x2 analysis of variance was performed on this data and constitutes Table 6. Reference to this table shows that there is no speaker or interaction effect. However, a significant listener effect was found with sensitizers emitting more unpleasant responses than repressors to vocal expressions of affect.

Table 7 shows the average number of pleasant responses (happiness, contentment and love combined) made by repressor and sensitizer listeners to vocal expressions of repressor and sensitizer speakers. Here too, a 2x2 analysis of variance was performed, and similarly, Table 8 shows that there is no significant speaker or interaction effect. However, a significant listener effect was again obtained with repressors emitting more pleasant responses than sensitizers to the vocal affective

Table 5

Average Number of Unpleasant Responses *

Listener Group	Repressor Speakers	Sensitizer Speakers	Total Speakers
Repressors	13.60	14.70	28.30
Sensitizers	15.10	16.07	31.17
Total Listeners	28.70	30.77	

* Maximum score equals 30 in each cell.

Table 5A

Range of Scores for Average Number of Unpleasant Responses

Listener Group	Repressor Speakers	Sensitizer Speakers
Repressors	8-23	10-23
Sensitizers	10-21	8-21

Table 6

Analysis of Variance for Average
Number of Unpleasant Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	27.0750	1	27.0750	2.7096	ns
Between Listeners (R-S)	60.2083	1	60.2083	6.0255	.05
Interaction: Speakers x listeners	0.2084	1	0.2084	47.9472	ns
Within Treatments	1159.1000	116	9.9922		
Total	1246.5917	119			

Table 7

Average Number of Pleasant Responses *

Listener Group	Repressor Speakers	Sensitizer Speakers	Total Speakers
Repressors	16.40	15.30	31.70
Sensitizers	14.90	13.93	28.83
Total Listeners	31.30	29.23	

* Maximun score equals 30 in each cell.

Table 7A

Range of Scores for Average Number of Pleasant Responses

Listener Group	Repressor Speakers	Sensitizer Speakers
Repressors	7-22	7-20
Sensitizers	9-21	9-22

Table 8

Analysis of Variance for Average Number of Pleasant Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	43.2000	1	43.2000	3.4713	ns
Between Listeners (R-S)	58.8000	1	58.8000	4.7248	.05
Interaction: Speakers x listeners	1.2000	1	1.2000	10.3706	ns
Within Treatments	1443.6000	116	12.4448		
Total	1546.8000	119			

tape.

An overall t-test between the average number of unpleasant responses ($\bar{X}$=14.84) compared to the average number of pleasant responses ($\bar{x}$=15.13) showed the mean difference ($\bar{X}$ difference = 0.29) not to be statistically significant.

The present study was also concerned with possible differences between repressors and sensitizers with regard to the frequency of responses for each affect. This analysis was performed to answer the following questions:

Question 6: Is there a difference between repressors and sensitizers in the number of responses of each emotional category emitted in response to vocal expressions.

Question 7: Is there a difference between repressors and sensitizers in the number of responses of each emotional category which their vocal expressions elicit?

Table 9 shows the average number of responses of each affect emitted by repressor and sensitizer listeners to communications of repressor and sensitizer speakers. Six 2x2 analyses of variance were performed on these data, (See Appendix B), summarized in Table 10. Reference to this table shows that there are both listener and speaker effects with regard to the perception and communication of individual emotions. Thus, sensitizers emit more "anger" and "sadness" responses than do repressor listeners, while repressor listeners emit more "contentment" responses than do sensitizers. Also, sensitizer speakers elicited more "anger" responses than did repressor speakers, while

repressor speakers elicited more "happiness" and "fear" responses than did sensitizers. Consequently, there are some distinct differences with regard to the frequency patterns of pleasant and unpleasant responses emitted and elicited by repressors and sensitizers.

ANALYSIS OF ERRORS MADE BY REPRESSORS AND SENSITIZERS IN VOCAL COMMUNICATION: FREQUENCY OF FALSE POSITIVE AND FALSE NEGATIVE ERRORS

This section concentrates on an analysis of differential errors in the perception and communication of vocal affect. False positives were scored when negative affects (sadness, fear or anger) were erroneously identified as positive affects (love,happiness or contentment). False negative errors, on the other hand, were scored when positive affects were erroneously identified as negative affects. Analyses were performed to answer the following questions:

Question 8: Is there a difference between repressors and sensitizers in the number of false positive and false negative errors emitted in response to vocal expressions of affect?

Question 9: Is there a difference between repressors and sensitizers in the number of false positive and false negative errors which their vocal expressions of affect elicit?

Table 11 shows the average number of false positive errors made by repressor and sensitizer listeners to vocal expressions of repressor and sensitizer speakers. A 2x2 analysis of variance was performed on these data and the results are shown in Table 12. Reference to this table shows that there is a significant speaker effect between repressors and sensitizers, but no significant listener or interaction

Table 9

Average Number of Responses of Each Emotional Category

Listener Group	Repressor Speakers	Sensitizer Speakers	Total Speakers
Repressor Listeners	4.23 Anger	6.67 Anger	10.90 Anger
	4.34 Fear	3.06 Fear	7.40 Fear
	5.03 Sadness	4.97 Sadness	10.00 Sadness
	8.87 Content	8.60 Content	17.47 Content
	5.53 Happy	4.50 Happy	10.03 Happy
	2.00 Love	2.20 Love	4.20 Love
	30.00 Total	30.00 Total	60.00 Total
Sensitizer Listeners	4.93 Anger	8.00 Anger	12.93 Anger
	4.07 Fear	2.27 Fear	6.34 Fear
	6.10 Sadness	5.80 Sadness	11.90 Sadness
	7.23 Content	7.54 Content	14.77 Content
	5.27 Happy	4.30 Happy	9.57 Happy
	2.40 Love	2.09 Love	4.49 Love
	30.00 Total	30.00 Total	60.00 Total
Total Listeners	9.16 Anger	14.67 Anger	
	8.41 Fear	5.33 Fear	
	11.13 Sadness	10.77 Sadness	
	16.10 Content	16.14 Content	
	10.80 Happy	8.80 Happy	
	4.40 Love	4.29 Love	
	60.00 Total	60.00 Total	

Table 10

Summary of Analyses of Variance for Frequency of Each Type of Emotional Response[1]

Emotion	Speaker Effect (R-S)	Listener effect (R-S)	Interaction (Speaker x Listener Effect
Anger	S* ($p<.001$)	S* ($p<.001$)	ns
Fear	R* ($p<.001$)	ns	ns
Sadness	ns	S* ($p<.02$)	ns
Contentment	ns	R* ($p<.05$)	ns
Happiness	R* ($p<.01$)	ns	ns
Love	ns	ns	ns

*S=Greater sensitizer effect.
*R=Greater repressor effect

[1]For individual analysis of variance tables see Appendix K.

effect. Thus, there is a tendency for repressor speakers to elicit more false positive errors than sensitizer speakers based on their communication of vocal affect.

Finally, Table 13 shows the average number of false negative errors made by repressor and sensitizer listeners to vocal expressions of repressor and sensitizer speakers. Here too, a 2x2 analysis of variance was performed (Table 14), but no speaker, listener, or interaction effects were found.

In order to compare the average number of false positive errors ($\bar{X}$= 5.74) with the average number of false negative errors ($\bar{X}$= 5.67), a t-test was performed. However, the mean difference ($\bar{X}$ difference =0.08) was not statistically significant.

Table 11

Average Number of False Positive Errors

Listener Group	Repressor Speakers	Sensitizer Speakers	Total Speakers
Repressors	6.37	5.27	11.64
Sensitizers	6.30	5.03	11.33
Total Listeners	12.67	10.30	

Table 11A

Range of Scores for Average Number of False Positive Errors

Listener Group	Repressor Speakers	Sensitizer Speakers
Repressors	4-10	1-9
Sensitizers	3-9	2-9

Table 12

Analysis of Variance for Number of False Positive Errors

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	42.0083	1	42.0083	12.6867	.001
Between Listeners (R-S)	0.6750	1	0.6750	0.2038	ns
Interaction: Speakers x Listeners	0.2083	1	0.2083	15.8886	ns
Within Treatments	384.1000	116	3.3112		
Total	426.9917	119			

Table 13

Average Number of False Negative Errors

Listener Group	Repressor Speakers	Sensitizer Speakers	Total Speakers
Repressors	5.40	5.27	10.67
Sensitizers	6.23	5.77	12.00
Total Listeners	11.63	11.04	

Table 13A

Range of Scores for Average Number of False Negative Errors

Listener Group	Repressor Speakers	Sensitizer Speakers
Repressors	2-12	2-9
Sensitizers	3-9	1-10

Table 11

Analysis of Variance for Number of False Negative Errors

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	2.7000	1	2.7000	1.4201	ns
Between Listeners (R-S)	13.3333	1	13.3333	7.4772	ns
Interaction: Speakers x listeners	0.8334	1	0.8334	1.4009	ns
Within Treatments	444.8000	116	3.8344		
Total	461.6667	119			

CHAPTER IV

DISCUSSION

The results of the present research both confirm and contradict findings reported in previous research. The major findings will be discussed both in relation to previous studies and future research.

Differences Between Repressors & Sensitizers in Accuracy of Responses Emitted and Elicited in Affective Vocal Communication

The results of this study indicated that the responses of sensitizers to vocal expressions of affect were not significantly more accurate than those of repressors, and there was no consistent difference between repressors and sensitizers in the overall accuracy with which their vocal expressions of emotional meaning were perceived. However, when more specific analyses were performed, it was found that sensitizer speakers elicited "anger" and "sadness" responses with a greater degree of accuracy; whereas repressor speakers elicited "happiness," "contentment," and "fear" responses with a greater degree of accuracy. In addition, accurate responses of "contentment" were emitted more accurately by repressor listeners. Consequently, although the first hypothesis was not substantiated, these findings lend support to the second hypothesis about the differential communication and perception of pleasant and unpleasant vocal affect.

Sensitizers thus showed a greater capacity to express unpleasant vocal affect, while repressors showed a greater capacity to express positive emotions, with the exception of fear. Surprisingly, repressor

speakers expressed fear more accurately by eliciting a greater number of accurate fear responses from all listeners. This rather novel finding has some very interesting theoretical implications. In a recent paper, Byrne and Sheffield (1965) noted that the lack of verbalized anxiety found in repressor groups did not eliminate the possiblity that "denial of anxiety by repressors is accompanied by indirect indications of disturbance (p.117)." Byrne also aptly remarked that it was necessary to determine whether the repressor was, in fact, strenuously denying or whether he was relatively free from emotional disturbance. The results of the present experiment clearly indicated that repressor speakers elicited more fear responses to their affective vocalizations. This finding tentatively suggests that some anxiety may be reflected in the vocalizations of repressors, although they are probably capable of denying anxiety in responding to affective stimuli.

Byrne (1964) noted that it has not been conclusively demonstrated that repressors give physiological evidence of anxiety while verbally denying such feelings. Although the research literature suggests no measurable physiological concomitants of anxiety in repressors, the acutely sensitive medium of the voice may have been instrumental in picking up fear and anxiety. Consequently, some denial or selective inhibition may operate in repressors when confronted with affective materials, but as Holzman et al. (1966) suggest:

> "Speech is particularly qualified as an expressive organ, since the larynx contains the highest ratio of nerve fibers to muscle fibers of any functional system, and it is therefore exquisitely responsive to intraorganismic changes. (p. 85)"

These authors also suggest that vocal editing is less than perfect, allowing through at least some of what is censorable in ourselves. Therefore, the repression may be incomplete in the vocalizations of repressors, and underlying anxiety or fear is thus communicated via the voice.

While repressors and sensitizers differed in their ability to express pleasant and unpleasant vocal affect, they did not differ in the way they perceived pleasant and unpleasant affective vocalizations, with the exception of "contentment." Repressor listeners emitted significantly more accurate "contentment" responses than did sensitizer listeners. This finding suggests the possible operation of a "positive set" in repressors in interpreting and responding to the affective messages they receive in their interpersonal world. Although repressor and sensitizer speakers were instructed to communicate a mild degree of each emotion, their defensive styles were undoubtedly reflected in their vocalizations, as was evidenced by the differential accuracy in communicating the various vocal affects, as opposed to the process of perceiving and identifying the affects correctly.

It is possible that the ability to express emotions accurately involves a different pattern of development than does the ability to identify the vocal expressions of others. Perhaps the ability to express positive and negative emotions vocally requires relatively little social learning, at least in regard to the grosser aspects of expression. No one teaches us to scream when angry, to cry when sad, or to laugh when happy, as these seem to be natural expressive acts. On the

other hand, development of the ability to interpret the vocal expressions of others is quite a different matter, and undoubtedly involves a great deal of social learning. Consequently, the defensive style of repression-sensitization did not play a significant role in the ability to correctly identify vocal affective expressions, but it does indeed contribute to ability to express vocal affect.

Patterns of Repressor-Sensitizer Responses to Vocal Affective Communication

The major difference in the response patterns among repressors and sensitizers was that sensitizer listeners emitted more pleasant affective responses. This finding substantiated the third hypothesis and was in agreement with the findings reported by Merbaum and Kazaoka (1967). These investigators found that sensitizers endorsed significantly more positive material. The fact that repressors emitted more pleasant (positive) affective responses also supports the argument of Byrne and Sheffield (1965), who believe that repressors have difficulty in tolerating negative affective experiences.

To further account for the differences observed between repressors and sensitizers in their responses to vocal affect, Blau's (1964) notion of"affect attention" as a tendency to selectively attend or inattend certain emotional stimuli may be operative here. It is not unreasonable to postulate that individuals who tend to repress or are sensitive to aspects of their environment would tend to carry these defenses into the communication process.

Because of the generally negative social consequences of expres-

sing unpleasant feelings, repressors may be better at expressing pleasant emotions, and may more readily respond to affective messages positively. However, due to the survival value of recognizing danger and threat, sensitizers may respond to affective messages with negative identifications.

Another major finding in the patterns of responses was that sensitizer speakers elicited "anger" responses more frequently, while the vocal expressions of repressors elicited "happiness" and "fear" responses more frequently. Also, sensitizer listeners emitted a greater frequency of "anger" and "sadness" responses, while repressor listeners emitted responses of "contentment" more often. In the light of these results, one wonders if "anger" and "sadness" indeed characterize the interpersonal world of sensitizers, i.e., their world of affective communications. These findings suggest the operation of a negative adaptive set among sensitizers. The negative self-concept of sensitizers (Byrne, 1965; Altrocchi, 1960) may very well be projected in their identification and interpretation of emotional messages. This is in agreement with Altrocchi et al. (1964) who reported that sensitizers described themselves as more rebellious, aggressive and self-effacing.

Because repressors tend to deny negative affect, perhaps this experiment in being designed to elicit negative emotional reponses may have proved stressful for them. The fact that repressor speakers expressed fear more accurately and more often can begin to shed light on the findings in previous research (Byrne, 1964), where incongruity between verbalized and indirect measures of anxiety had been found.

Consequently, the findings in the present experiment lead the investigator to conclude that responses to plesant or unpleasant affective messages is a function of the defensive style of the listeners or receivers. However, defensive strategies such as repression or sensitization do not occur in vacuums, nor do persons utilizing such defenses use them all times. Rather, the behaviors clustered under the rubric of repression-sensitization must be seen as varying with situational demands, and the presence or absence of those stimuli which provoke and heighten defensiveness. Therefore, it would prove interesting to conduct the same experiment under different degrees of environmental stress. It is predicted that under probing and stress conditions, defensive modes will be accentuated, thus producing greater distortion in the affective communication process.

The findings of the present research were also in agreement with the developmental studies on the repression-sensitization (Byrne, 1966; Merbaum and Kazaoka, 1967). It appeared that individuals whose defensive style was characterized by the repressor type were developmentally different from individuals whose defensive style reflected sensitizing tendencies. Merbaum and Kazaoka (1967) noted that family relationships, as reported by the sensitizer, were replete with stress, unhappiness, anger, criticism and affective distance. This corresponded to the findings of the present research whereby sensitizers emitted more negative affective responses. Merbaum and Kazaoka (1967) also reported that sensitizers perceived others as inordinately more critical and angry. In contrast, the repressor described family relationships in close, affec-

tionate terms. This may have been reflected in the present experiment by the preponderance of happiness and contentment responses given by repressors. These results suggest the need for further investigation of patterns of family interaction and affective communication among permissive and restrictive families.

Affective Differential Errors Among Repressors and Sensitizers

A careful perusal of the research literature indicated that no attempt had been made at relating differential errors made in affective vocal communication to personality characteristics. Davitz (1964) called attention to this problem several years ago, but it has been left virtually untouched. Davitz (1964) concluded that personality factors, if they operated at all in the communication process, might influence the errors made in affective judgments rather than overall sensitivity. In the present experiment, it was found that repressor speakers elicited more false positive errors (i.e., listeners erroneously identified the negative affects of repressor speakers as positive significantly more often than those of sensitizer speakers). This finding lends partial support to the hypothesized relationship between defensive styles and differential errors. Moreover, it is consistent with the operation of a positive set in repressors in communicating negative affective stimuli, which they may deny or distort in order to reduce any potential threat or anxiety in interpersonal communication. Therefore, the specific nature of erroneous responses proved to be a worthwhile research problem.

It can be tentatively concluded that Ss with differential defenses in incstances of subtle emotional expression, when the discrimination involved is somewhat difficult, the defensive style of the speakers seems to play an important role in determining the nature of distorted responses elicited to the affective message. Consequently, one can view some of the more subtle and difficult items of emotional expression as stimuli for projective behavior, by focusing primarily on an analysis of errors instead of total accuracy in the investigation of personality correlates of affective communication.

The fact that the affect of love emerged as non-significant in all analyses in this experiment was not unusual. Of all the subjects studied experimentally, none asked what the other five affects meant. The only affective category that anyone ever asked about was love, suggesting considerable uncertainty and confusion about this emotion. This uncertainty was also reflected in the high proportion of variance, low accuracy scores and low frequency of identification. In addition, the affective response emitted and elicited most often from both repressors and sensitizers was "contentment." This affect may have served as an anchor or neutral stimulus category for both groups, who then designated this emotion when they were uncertain.

Overall, it is possible to account for the patterns that emerged in the present experiment largely on the basis of the differential defensive styles of repressors and sensitizers. It seems plausible that differential defense patterns give rise to differences in the communication and perception of affective messages. Consequently, highly intel-

lectualized, obsessional defenses may elicit and give rise to more negative affect in interpersonal communication, while repressive and denial defenses may elicit and give rise to more positive affect. The implications for research in psychotherapy are manifold, especially in investigating the affective responses of patients and therapists, as well as transferential and countertransferential phenomena.

The significant differences observed in the expression of positive and negative vocal affect between repressors and sensitizers draws immediate attention to the importance of defensive styles in the communication process which should be given more cognizance in subsequent research. The findings of this investigation were rather provocative in that they suggested the operation of differential affective sets in communication as a function of the defensive styles of both speakers and listeners. Therefore, the particular way in which an individual views affective communication may be closely associated with the nature of his defenses and structure of his character. Yet despite the obvious importance of affective communication in group dynamics, community mental health, family therapy, and international relations, there have been comparatively few studies of defensive styles and patterns of affective communication.

A further consideration from the results reported in this experiment and in the literature, concerns the possible relationship between the repression-sensitization dimension and the cognitive style approach to defensiveness as exemplified by the work of Luborsky, Blinder and Schimek (1965). The concept of repression-sensitization can perhaps be

regarded not only as a defense, but as a style, representing more pervasive mode of ego functioning than do purely defensive behaviors. Moreover, the dimension of repression-sensitization can be considered in terms of Shapiro's (1965) definition of style, as a mode of ego functioning that is identifiable in individuals through a wide range of specific acts, especially communication.

The implications of the present research are obvious. If we find a consistent relationship between defensive styles and patterns of affective communication, then this might prove helpful in devising procedures to select clinicians and other mental health professionals and paraprofessionals, whose work requires some degree of affective awareness and emotional sensitivity devoid of serious distortions. It also appears that utilization of a tape of affective vocalization as an auditory semi-projective test in future studies of defensive styles might help to validate hypotheses derived from personality theories and theories of psychopathology. It would certainly prove interesting to note how repressors and sensitizers respond to patterns of confused affective communication, double-bind messages in which there is a discrepancy between the verbal and nonverbal aspects of communication.

This study has undoubtedly failed to identify all the defense mechanisms that contribute to the process of affective communication. Emotional expression is multidimensional, comprising a variety of personality, perceptual and cognitive factors, each of which contribute a necessary but not sufficient factor to the total affective communication and response. Before developing any further theoretical speculations

about the relationship between repression-sensitization and the perception and communication of vocal affect, it would be more important to cross-validate the present findings with a more heterogenous population, including that often neglected member of the species ... the female.

CHAPTER V

SUMMARY

The purpose of this study was an attempt to investigate the relationship between the defensive style of repression-sensitization and the perception and communication of vocal affect. Byrne's repression-sensitization scale and a sentence evaluation test were administered to 259 undergraduates. 60 Ss were selected on the basis of their scores on the R-S scale (30 repressors and 30 sensitizers) to participate in some individual experiments. These Ss served as both speakers and listeners in producing a tape recording of affective vocalizations. The affective vocalizations consisted of 10 expressions of each of the following 6 emotions: anger, fear, happiness, sadness, love and contentment. Using the tape of repressor and sensitizer speakers, small groups of repressor and sensitizer listeners were asked to identify which of the six emotions each of the speakers was attempting to communicate.

The results indicated that although there was no overall difference in the accuracy of communication and perception of vocal affect among repressors and sensitizers, there were distinct differences that appeared as a function of the various affects. Sensitizers expressed anger and sadness more accurately, while repressors expressed happiness, contentment and fear with greater accuracy than sensitizers. Moreover, sensitizers responded with more unpleasant affective identifications, whereas repressors emitted more pleasant responses.

More specifically, sensitizers emitted sadness and anger responses more frequently than repressors, while repressors emitted con-

tentment reponses more often. Repressor speakers also elicited a greater proportion of false positive errors, i.e., their vocal expressions of negative affect were erroneously identified as positive.

The results were discussed in terms of their consistency or conflict with previous research in the area. Discussion of results focused on the operation of differential affective sets and differential sensitivity among repressors and sensitizers in responding and interpreting vocal affective communication in interpersonal relations. Some of the findings were provocative and suggestions for further research and verification were offered.

REFERENCES

Alpert, M. Kurtzberg, R.L. and Friedhoff, A.J. Transient voice changes associated with emotional stimuli. Arch. Gen. Psychiatry, 1963, 8,

Altrocchi, J. Interpersonal perceptions of repressors and sentiziers and component analysis of assumed dissimilarity scores. J. abnorm. soc. Psychol., 1961, 62, 528-534

Altrocchi, J., Shrauger, S., and McLeod, M.A. Attribution of hostility to self and others by expressors, sensitizers, and repressors. J. clin. Psychol., 1964, 20, 233-236.

Beldoch, M. The ability to identify expressions of feeling in vocal, graphic, and musical communication. Dissertation abstracts, 1961. 22, 1246.

Blau, S. The transposition of sensory modes among the blind: an ear for an eye. In J.R. Davitz (Ed.), The Communication of emotional meaning. New York: McGraw-Hill, 1964.

Bruner, J.S.,and Postman, L. Emotional selectivity in perception and reaction. J. Pers., 1947, 16, 69-77.

Byrne, D. Repression-Sensitization as a dimension of personality. In B.A. Maher (Ed.) Progress in experimental personality research. New York: Academic Press, 1964, 169-220.

Byrne, D. Child-rearing antecedents of repression-sensitization. Child Developm. 1964, 35, 1033-1039.

Byrne, D., Barry, J., and Nelson, D. Relation of revised repression-sensitization scale to measures of self-description. Psychol. Rep. 1963, 13, 323-334.

Byrne, D. The repression-sensitization scale: rationale, reliability, and validity. J. Pers., 1961, 29, 334-349.

Byrne, D. Golighty, C. and Sheffield, J. The repression-sensitization scale as a measure of adjustment: relationship with the CPI. J. consult Psychol., 1965, 29, 586-589.

Byrne, D., Steinberg, M.A. and Schwartz, M.S. Relationship between repression-sensitization and physical illness. J. abnorm. Psychol., 1968, 73, 154-155.

Davitz, J.R. The communication of emotional meaning. New York: McGraw-Hill, 1964.

Davitz, J.R. Auditory correlates of vocal expressions of emotional meaning. In J.R. Davitz (Ed.) The communication of emotional meaning. New York: McGraw-Hill, 1964.

Davitz, J.R. Personality , perceptual and cognitive correlates of emotional sensitivity. In J.R. Davitz (Ed.) The Communication of emotional meaning. New York: McGraw-Hill, 1964.

Davitz, J.R. and Davitz, L.J. The communication of feelings by content-free speech. J. Communication, 1959, 9, 6-13.

Davitz, H.R. and Davitz, L.J. Nonverbal communication of feelings. J. Communication, 1961, 11, 81-86.

Dimitrovsky, L.S. The ability to identify the emotional meaning of vocal expressions at successive age levels. In J.R. Davitz (Ed.) The communication of emotional meaning. New York: McGraw-Hill, 1964.

Dittman, A.T. and Wynne, C. Linguistic technique and the analysis of emotionality in interviews. J. abnorm and soc. Psychol., 1961, 63, 201-204.

Eisenson, J. Aver, J.J., and Irwin, J.V. The psychology of communications. New York: Appleton-Century-Crofts, 1963.

Eriksen, C.W. and Lazarus, R.S. Perceptual defense and projective tests. J. abnorm. soc. Psychol., 1952, 47, 302-308.

Eriksen, C.W. Some implications for TAT interpretations arising from need and perception experiments. J. Pers., 1951, 19, 282-288.

Eriksen, C.W., Responses to internally cued anxiety. In C.D. Spielberger (Ed.) Anxiety and Behavior. New York: Academic Press, 1966.

Fenster, A. Vocal affect in children and adults. Dissertation Abstracts, 1967, 28, 1562.

Freud, S. Repression (Orig. publ. 1915). In The Complete psychological works of Sigmund Freud. Vol. 14, London: Hogarth Press, 1957, 143-158.

Fenichel, O. The psychoanalytic theory of neurosis. New York: Norton Press, 1945.

Gates, G.S. The role of the auditory element in the interpretation of emotions. Psych. Bull., 1927, 24, 175-178.

Gordon, J.E. Interpersonal predictions of repressors and sensitizers. J. Pers., 1957, 25, 686-698.

Hathaway, S.R. and McKinley, J.C. Manual for the Minnesota Multiphasic Personality Inventory. (Rev. Ed.) New York: Psychological Corporation, 1951.

Hoffman, H. Use of avoidance and vigilance by repressors and sensitizers. J. Consult and clin. Psychol., 1970, 34, 91-96.

Holzman, P. and Rousey, C. The voice as a percept. J. pers. soc. Psychol., 1966, 4, 79-86.

Holzman, P., Rousey, C., and Snyder, C. On listening to one's own voice: effects on psychophysiological responses and associations. J. pers. soc. Psychol., 1966, 4, 432-441.

Kramer, E.R. Elimination of verbal cues in judgments of emotions from voice. J. abnor.soc. Psychol., 1964, 68, 390-396.

Knapp, P.H. Expressions of emotions in man. New York: International University Press, 1963.

Knower, F.H., Analysis of some experimental variations of simulated vocal expressions of the emotions. J. soc. Psychol., 1941, 14, 369-372.

Lazarus, R.S., Eriksen, C.W. and Fonda, C.P. Personality dynamics and auditory perceptual recognition. J. Pers., 19, 471-482.

Lefcourt, H.M. Repression-Sensitization: a measure of the evaluation of emotional experience. J. Consult. Psychol., 1968, 20, 444-449.

Levitt, E.A. The relationship between vocal and facial emotional communicative abilities. Dissertation Abstracts, 1962, 23, 1783.

Levy, P.K. The relationship between the ability to express and to perceive vocal communication of feeling. Dissertation Abstracts, 1962, 22, 4082-4083.

Lomont, J.F. The repression-sensitization dimension in relation to anxiety responses. J. consult Psychol., 1965, 29, 84-86.

Merbaum,M. and Kazackin, K. Reports of emotional experience by sensitizers and repressors. J. abnorm. Psychol., 1967, 72, 101-105.

Ostwald, P.F. Soundmaking: the acoustic communication of emotion. Springfield, Illinois: Charles C. Thomas, 1963.

O'Connell, W. and Peterson, P. Humor and repression. J. existential Psychiat., 1964, 4, 309-316.

Pfaff, P.L. An experimental study of the communication of feeling without contextual material. Speech Monographs, 1954, 21, 155-156.

Pronovost, W. and Fairbanks, G. An experimental study of the pitch characteristics of the voice during the expression of emotion. Speech Monographs, 1939, 6, 87-104.

Reik, T. Listening with the third ear. New York: Pyramid Books, 1948.

Ruckmick, C.A. The psychology of feeling and emotion. New York: McGraw-Hill, 1936.

Schacter, S. and Singer, J. Cognitive, social and physiological determinants of emotional states. Psych. Rev., 1962, 69, 379-399.

Schlosberg, H. Three dimensions of emotion. Psych. Rev., 1954, 61, 81-88.

Skinner, E.R. A calibrated recording and analysis of the pitch, force and quality of vocal tones. Speech Monographs, 1935, 2, 81-137.

Shapiro, D. Neurotic styles. New York: Basic Books, 1965.

Shannon, D.T. Clinical patterns of defense as revealed in visual recognition thresholds. J. abnorm. soc. Psychol., 1962, 64, 370-377.

Soskin. W.F., and Kauffman, P.E. Judgment of emotion in word-free voice samples. J. Communication, 1961, 11, 73-70.

Starkweather, J.A. Vocal Communication of personality and human feelings. J. Communication, 1961, 11, 63-72.

Sullivan, P.F. and Roberts, L.K. Relationship of manifest anxiety to repression-sensitization on the MMPI. J. consult. Psychol., 1969, 33, 736-764.

Tempone, V.J. and Lamb, W. Repression-sensitization and its relation to measures of adjustment and conflict. J. Consult. Psychol., 1967, 31, 131-136.

Tempone, V.J. Extension of the repression-sensitization hypothesis to success and failure experiences. Psychol. Reports, 1964, 15, 39-45.

Turner, J.L. Auditory perception of emotion by schizophrenic and normal persons. Dissertation Abstracts, 1959.

Ullman, L.P. Clinical correlates of facilitation and inhibition of response to emotional stimuli. J. Proj. Tech.. 1958, 22, 341-347.

Vetter, H.J. Language behavior and communication. Itasca, Illinois: Peacock, 1969.

APPENDIX

APPENDIX

SENTENCE EVALUATION TEST

____1. 98 and 45 is 143.

____2. The man won $500 on the television program.

____3. Paris is a city in France, and France is a country in Europe.

____4. The man's body was crushed by a tank in South Vietnam.

____5. Some of the books are in the first bookcase, and the second bookcase contains the rest of them.

____6. The house is made of brick and the window is made of glass.

____7. It is now 15 minutes past eleven.

____8. It is bright and sunny today.

____9. He just lost a big bet to the man he bet with.

____10. The child was hit so hard by his parents that he just sat and cried all day long.

____11. The weather is cold, rainy, and windy, and the weatherman said there would be a hurricane tonight.

____12. You can imagine how the student felt when he found out he got the highest mark in the class.

____13. I am going out of the room now and I will be back later.

____14. When his birthday came he finally got the gift he wanted.

____15. The pencil is on the table and the desk is near the door.

____16. More people have been killed on the highways than in all U.S. wars since 1776.

____17. He just won the Irish sweepstakes and is deciding what to do with the money.

____18. I would like to see you before you leave.

____19. He was late for his first class.

____20. The elevator stopped on the fourth floor.

Appendix A

Analyses of Variance for Number of Correct Emotional Responses of Each Type

Table 15

Analysis of Variance for Number of Correct Anger Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	[illegible]	1	[illegible]	[illegible]	.05
Between Listeners (R-S)	1.1002	1	1.1002	1.1202	ns
Interaction: Speakers x Listeners	0.1088	1	0.1088	0.1125	ns
Within Treatments	111.3000	116	0.9603		
Total	121.3250	119			

Table 16

Analysis of Variance for Number of Correct Fear Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	66.0083	1	66.0083	89.8411	.001
Between Listeners (R-S)	0.5083	1	0.5083	1.7701	ns
Interaction: Speakers x listeners	[illegible]	1	[illegible]	[illegible]	ns
Within Treatments	86.1167	116	[illegible]		
Total	152.5012	119			

Table 17

Analysis of Variance for Number of Correct Sentence Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	[illegible]	[illegible]	[illegible]	[illegible]	.001
Between Listeners (R-S)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Interaction: Speakers x listeners	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Within Treatments	[illegible]	[illegible]	[illegible]		
Total	[illegible]	[illegible]			

Table 18

Analysis of Variance for Number of Correct Discrimination Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	[illegible]	1	[illegible]	[illegible]	.05
Between Listeners (R-S)	[illegible]	3	[illegible]	[illegible]	.05
Interaction: Speakers x Listeners	[illegible]	1	[illegible]	[illegible]	ns
Within Treatments	[illegible]	112	[illegible]		
Total	[illegible]	119			

Table 19

Analysis of Variance for Number of Correct Happiness Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	8.5333	1	8.5333	16.1210	.001
Between Listeners (R-S)	0.5333	1	0.5333	1.1087	ns
Interaction: Speakers x listeners	0.3001	1	0.3001	1.9703	ns
Within Treatments	64.6000	116	0.5913		
Total	77.9667	119			

Table 20

Analysis of Variance for Number of Correct Love Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	1.3023	1	1.3023	3.8229	ns
Between Listeners (R-S)	0.6750	1	0.6757	1.9725	ns
Interaction: Speakers x listeners	0.0024	1	0.0024	10.7360	ns
Within Treatments	39.7000	116	0.3422		
Total	41.6917	119			

Appendix B

Analyses of Variance for Frequency of Each Type of Emotional Response

Table 21

Analysis of Variance for Frequency of Anger Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	226.4750	1	226.4750	70.7657	.001
Between Listeners (R-S)	31.0083	1	31.0083	9.6879	.001
Interaction: Speakers x listeners	3.0083	1	3.0083	1.0656	ns
Within Treatments	371.9000	116	3.2060		
Total	432.7917	119			

Table 22

Analysis of Variance for Frequency of Word Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	81.6750	1	81.6750	18.0477	.001
Between Listeners (R-S)	12.6750	1	12.6750	2.8007	ns
Interaction: Speakers x listeners	0.6750	1	0.6750	6.7044	ns
Within Treatments	524.9667	116	4.5253		
Total	619.9917	119			

Table 23

Analysis of Variance for Frequency of Sadness Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	1.0083	1	1.0083	4.3898	ns
Between Listeners (R-S)	27.0750	1	27.0756	6.1171	.05
Interaction: Speakers x listeners	0.4083	1	0.4083	10.4403	ns
Within Treatments	513.4334	116	4.4261		
Total	541.9250	119			

Table 24

Analysis of Variance for Frequency of Contentment Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	0.0000	1	0.0000	0.0000	ns
Between Listeners (R-S)	64.0333	1	64.0333	6.4290	.05
Interaction: Speakers x listeners	2.1333	1	2.1333	0.0229	ns
Within treatments	995.5334	116	9.5821		
Total	1053.7000	119			

Table 25

Analysis of Variance for Frequency of Happiness Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	30.0000	1	30.0000	7.2030	.01
Between Listeners (R-S)	1.6333	1	1.6373	2.5499	ns
Interaction: Speakers x listeners	0.0333	1	0.0333	125.0720	ns
Within Treatments	483.1134	116	4.1649		
Total	514.8000	119			

Table 26

Analysis of Variance for Frequency of Love Responses

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Speakers (R-S)	1.2000	1	1.2000	2.5626	ns
Between Listeners (R-S)	9.6333	1	9.6333	3.1324	ns
Interaction: Speakers x listeners	4.8000	1	4.8000	1.3608	ns
Within Treatments	356.7334	116	3.0752		
Total	372.3667	119			