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DECODING INCONSISTENT COMMUNICATIONS: IMPORTANCE OF
BODY VERSUS VOICE CUES AND AN ANALYSIS OF
INDIVIDUAL DIFFERENCES

by

LINDA VON GELDERN KESTENBAUM

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Abstract

DECODING INCONSISTENT COMMUNICATIONS: IMPORTANCE OF
BODY VERSUS VOICE CUES AND AN ANALYSIS OF
INDIVIDUAL DIFFERENCES

by

Linda Von Geldern Kestenbaum

Adviser: Professor Gertrude Schmeidler

Inconsistent communications on a relaxed-tense dimension were presented via videotape to subjects. A control group that only heard the tape (N=57) reported a communication of relaxedness. A control group that only saw the tape (N=59) reported a communication of tenseness. The experimental group (N=64) that both saw and heard the videotape (a) reported a communication of tenseness indicating that the nonverbal channel of communication carried the dominant message, and (b) reported that they paid equal attention to both the verbal and nonverbal cues in decoding the communication. No race (Black versus White) or sex differences were found in how subjects decoded the inconsistent communication. However, females appeared to be more sensitive to the nonverbal message.

Secondary messages of approachability, friendliness, and hostility that were also carried by the videotaped communication followed more complex race and sex interactions. It appeared that as the level of intimacy of the communication increased, sex and race differences between encoder and decoder became more critical

variables in the selection of a dominant channel.

An attempt to account for individual differences in how the inconsistent communication was decoded on the basis of MMPI personality variables proved to be of little value. However, it was found that subjects whose most elevated MMPI scale was psychopathic deviate never chose the verbal channel as dominant. Clinical implications of this finding are discussed.

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I would like to thank my aunts, Dina Willner and Rose Low, for the investment of their time to help me and for their always present faith.

Finally, this dissertation is dedicated to my husband, Richard, and to my beloved father, Alfred Von Geldern. My deepest thanks and heartfelt love to my husband, whose creativity, insight and continual effort and energy was with me from the earliest conception of this dissertation through the final stages of its preparation. He was

always there and ever patient.

To my father, who is unable to share in the realization of this goal, goes my thanks, since it is my belief that is because of his values, his instincts, and his love that I could approach my dreams.

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INTRODUCTION

In the early 1900's there was great interest in whether or not nonverbal behavior played a role in the communicational network of human beings. Although it was well known that the lower primates used nonverbal behavior as a means of communication, the role of nonverbal behavior in the larger framework of human communication remained unexplored.

Interest was initially directed towards whether or not emotional meaning could be communicated by facial expression. In the early 1920's and 1930's it was determined that photographs of facial expression did in fact carry information about emotion. It was also found that an important variable was whether the expression of the emotion was spontaneous or stereotyped (Landis, 1924). Researchers also started to assess the contribution of other non-verbal channels and interest turned to issues such as whether tone of voice played influenced perception of emotional meaning, tone of voice being a channel of communication distinct and separate from verbal content. Questions regarding whether facial expressions were a necessary component of whole body cues were examined. There were yet other approaches that were concerned with the contribution of specific facial features to the understanding of an emotional message. Interest in nonverbal communication started to branch out in directions so numerous that today one has difficulty in integrating

the vast body of existing literature.

The new wave of interest and research in the area also brought with it a variety of methodological issues. At first, the approach used by most researchers was to have subjects examine drawings of various nonverbal behaviors and then indicate from a list of emotions that word which best corresponded to the emotional intent of the drawing, or to choose from their own vocabulary a word that best fit the meaning of the stimulus. This method of using drawings had severe limitations, the most important being its lack of correspondence to the real thing, and hence the method changed to one in which still photographs were employed.

In those studies in which people were concerned not only with facial expression but also tone of voice, an additional problem arose, viz. how to portray that aspect of communication. At first a single word was spoken or recorded, neutral in content, but with various affects superimposed on it. Then, with increased technology, experimenters were able to electronically filter out verbal content while keeping intact the tonal qualities of a message. Alternatively, letters of the alphabet were substituted for words so that there would be no confounding from verbal content. As sophisticated as the method of electronic filtering is, there evolved a more genuine, natural, and lifelike way of presenting nonverbal behavior, namely film and videotape. In addition, the ways of measuring the responses of subjects changed to allow them to respond across a greater range of intensities and dimensions as is typified by the semantic differential scales.

In the mid 1960's research in the area of nonverbal communication rapidly expanded and addressed itself to issues such as which channels were most important in interpreting a consistent communication, i.e. when information carried by the verbal channel is consistent with information carried by the nonverbal channel. Experimentation dealt not only with the nonverbal channel but also with the ways in which verbal and nonverbal combined with each other, and also with what happened in cases where the information carried by the verbal channel was contradictory to that carried by the nonverbal. Still other experimenters focused their attention on the "grammar" of nonverbal communication and studied the specific meaning of very minute pieces of a communication, dealing with nonverbal behavior in an analogous fashion to the way psycholinguists have dealt with verbal communication.

Interest focused on which channel, verbal or nonverbal, was more important. Along with this issue came an interest in which variables might account for individual differences. Researchers also began to study the connection between the ability to decode or interpret a message and the ability to encode or send a message.

While complete agreement has not yet been reached, it seems to be the case that given a consistent communication, one in which verbal content, tone of voice, and facial expression all carry the same message (e.g., pleasantness), the nonverbal channel accounts for how the communication is interpreted. Given an inconsistent communication, one in which verbal content and tone of voice carry one type of message and the nonverbal channel conveys a contra-

dictory message, it is less clear as to which channel receives more weight and under what circumstances this occurs. The nonverbal channel appears to be more important, although there are discrepant findings. Further, when it comes to variables that might account for individual differences in encoding and decoding skills, little has been found.

The present study utilizes as close to a real life situation as possible (videotape of a spontaneous contradictory communication) to examine three main issues: (a) whether an inconsistent communication is decoded by paying more attention to the nonverbal than verbal channel (b) whether individual differences in the decoding of an inconsistent communication can be accounted for by personality factors, and (c) whether there are racial differences in the attention paid to nonverbal versus verbal channels when decoding an inconsistent communication.

The following chapter is a review of the literature related to the issues to be studied.

CHAPTER I

LITERATURE REVIEW

I. The Judgment of Emotion from Facial Expression

The early studies in nonverbal communication dealt with a subject's ability either to define or pick out from a list of choices that emotion which most corresponded to a photograph depicting a specific affect.

In 1914, Feleky took pictures of the facial expressions of a female confederate while she displayed various emotions. The confederate was spontaneously allowed to conjure up the specific affect, or if unable was given a stimulus such as a paragraph from Shakespeare to help elicit a particular emotional response. Feleky directed his attention to whether or not subjects could correctly identify the emotional intent of the photographs. He found that subjects could not only accurately decode a nonverbal cue, but that they were also able specifically to hook up particular emotions with their corresponding nonverbal stimulus.

Ruckmick (1921) investigated the process by which subjects arrived at their decisions. He asked subjects to identify the emotion portrayed by photographs of a female confederate (similar to the method used by Feleky), then to relate why they identified that emotion, and tested whether their perceptions of the photographs changed over time. He found large individual differences in the way the subjects identified the emotion. Some subjects pic-

tured what the rest of the body looked like, others thought of the verbal counterpart of the picture, and others approached the task similarly to a TAT type story in order to identify the emotion. He also looked closely at the responses of subjects who differed in their daily temperamental reactions and found that response to a particular photo changed with a concomitant change in temperament.

Guilford (1929) was particularly interested in individual differences and investigated whether learning had an effect on one's ability to judge emotion from facial expression. His subjects were tested at the end of each of five learning phases on their ability identify emotions communicated by facial expressions. The learning phases progressed from one which just called for the subjects to identify the emotion through four additional stages each of which afforded the subject with an increased amount of information with which he could make his decision. The sequence of the stages was not varied. Although he found a 51% improvement from stage 1 to stage 5, he also noted that some subjects always did better than others. He thought that perhaps differences in learning styles, viz., an intuitive vs. analytic approach, was responsible for the differences between subjects.

Kanner (1931) tied together many of the issues plaguing researchers in the field of nonverbal communication and very insightfully identified four areas that needed attention. One of the areas addressed was the naturalness of the stimuli being used. Kanner stated this clearly in what perhaps was a suggestion for

the future: "Motion pictures of emotional reactions would come next to natural situations in giving a dynamic development of the performance." In essence the artificiality of static photographs could not give an adequate idea of what is absorbed by an observer in the viewing of facial expressions. In addition, Kanner broadened the area of nonverbal behavior to include not only facial features but also other nonverbal cues, "one sees very much more than a facial expression. . . In nature, one is confronted with the whole situation and its entire reaction and its result."

Interest in individual differences associated with the decoding of facial expressions was a topical area, one in which Kanner had a keen eye to the future. He stated, "A personality study would undoubtedly be of help in the evaluation of the judgements both in their linguistic and situational aspects." He extended this view to include cultural differences by stating, ". . . a marked geographically and racially determined difference is to be expected in the results of the same experiment with the Feleky pictures obtained from North American, South American, Italian, Mongolian, African and Negro individuals in their respective countries and languages." Kanner, in a study using the Feleky photographs of a female confederate, tried to test out one of his hypotheses, that of individual differences. He was interested in seeing whether there were any correlations between an individual's ability to judge facial expressions and his intelligence as measured by Thorndike's intelligence test. Although there were no significant correlations,

Kanner as others had before, substantiated that emotions could be judged from the nonverbal channel.

With the passage of time, increased technological developments, and growing interest in individual differences, a number of studies were done which specifically looked at personality variables associated with the decoding or encoding of nonverbal communication. One way of testing this was to get different groups of subjects to judge nonverbal behavior. The groups would vary along personality dimensions to ascertain whether different personality types decoded information differently.

Levy, Orr, and Rosenzweig (1960) looked at three groups: (s) a normal college sample, (b) a group of mental retardates, and (c) mental hospital patients, most of whom were psychotic. They found no significant differences between these groups in their ability to decode photographs of facial expression along a happy-sad dimension.

Using a different approach, Wiig and Harris (1974) compared the responses of subjects with learning disabilities to normal adolescents' responses to a number of different nonverbal emotional expressions portrayed by a female confederate, in a silent videotape. In addition, the WISC or WAIS was administered to see if any patterns could be inferred between intelligence and decoding skill. The results indicated that the learning disabled children mis-identified and mis-interpreted more emotions than did the normal group. The objective test results pointed to a specific deficit in visual-motor organization for the disabled group, which could explain their difficulty in choosing the correct affect to fit the nonverbal stimuli.

fit the nonverbal stimuli.

Another approach employed in ascertaining whether personality differences account for differences in encoding or decoding skills is to use a normal population tested on a variety of personality measures. Buck, Miller, and Caul (1974) using this approach employed a number of personality and physiological measurements. Their design enabled them to study encoder and decoder variables. Twenty-five emotionally loaded slides depicting various scenes were shown to subjects who were wired for skin conductance and heart rate measurements. After viewing a slide each subject was asked to talk about his response and to then rate this slide along a pleasant-unpleasant dimension. Concomitantly and unbeknownst to the subject, his face was televised to observers who were asked to rate the emotional category of the slide which the subject had just seen, and also the degree of pleasantness of it. Sex of the subjects and sex of the observers were counterbalanced so that all possible combinations of encoder and decoder pairs existed. The results indicate that there was a sex difference, but only for encoders: females more accurately sent out a message as measured by the observers' percentage of correct slide categorizations. While the personality measures did not correlate with encoding-decoding skills they did correlate with physiological responsiveness of the subjects. "Internalizers," those individuals who had a small overt response to the stimuli but who had a large physiological reaction, were found to be more introverted, more sensitive, and to have lower

self-esteem. In addition these subjects were not as effective senders as were "externalizers". It seems from this study that perhaps personality and physiological responsiveness may indeed differentiate encoder ability.

The studies reviewed in this section point to two main facts: 1) that the nonverbal channel carries information which can successfully be used in making a determination about the nature of a message and 2) that individual variability exists strikingly enough to warrant further research. The next developmental step was to specify other nonverbal cues used in communicating thoughts and emotions.

II. The Voice Has It

In an early study, Wolff (1933) investigated whether there was a relationship between the recognition of one's own forms of expression and that of others. Subjects were asked to identify and characterize samples from both their own and others' handwriting, gait, profiles, and voice. Interestingly, although subjects were able to identify and characterize the samples produced by other people they were unable to distinguish them from their own. In a replication and extension of Wolff's work, Huntley (1940) concurred that subjects could identify and rate samples from others, but that there was hardly any conscious recognition of one's own forms.

A study by Allport and Cantril (1934), while not immune to a large number of confounding variables, investigated whether three different voice profiles of male speakers, in which content was

held constant, could be matched with personality and physical traits. Judges were asked to match each of the different voice profiles with personality characteristics such as extroversion and introversion, as well as with physical attributes like age and height.

Over the years work has been done on the methodology of presenting voice cues without confounding them with the verbal statement inherent in the communication. A number of workers have successfully developed such a method (Beldoch, 1964; Davitz, 1964; Levy, 1964). Ten emotions were recorded by three male and two female speakers reciting a standard paragraph of neutral valence. From a pool of 60 voice recordings, 37 were chosen on the basis of a pre-test, which demonstrated that these recordings reliably reflected 10 emotions that the investigators were interested in studying. Subjects were then presented with the voice recordings and a list of emotions including the 10 that were intended to be communicated. As with facial expression, the voice profiles were distinguishable from one another, could be identified as communicating different affects, and could be matched with certain personality and physical traits. The results showed that subjects were able to accurately decode voice cues and that this ability was not specific to a particular emotion, but rather held equally for the ten emotional expressions. Davitz further explored personality and cognitive variables and Levy addressed himself to possible correlations between encoding and decoding skills in the studies described below.

Davitz (1964) gave objective (as opposed to projective) personality and perceptual-cognitive tests to the decoders of vocal recordings. There were no significant correlations between decoding abilities and personality test scores. However, significant correlations were found between each of the four cognitive tests employed and decoding ability. These four correlations taken together accounted for 40% of the variance. Davitz concluded that decoding ability seems to be multi-determined, that the abilities measured by each test contribute a necessary but not sufficient amount to the decoders' total sensitivity. He also suggests that perhaps different personality tests might be employed with more success, possibly ones of a projective nature.

Levy (1964) investigated the ability to express and perceive vocal communication of feelings. Subjects listened to content standard speech recordings of different emotions and were also asked to enact these emotions and later identify their own. The results indicated that encoding and decoding abilities were positively related; however, no sex differences were found.

Fortunately, other researchers were beginning to find correlations between personality factors and decoding ability by using tests that were not projective and that differed from those used by Davitz and Levy. Wolitzky (1973) used the Embedded Figures test and Rod and Frame tests as measures of field dependence and found that those subjects more adept at inferring emotional meaning from voice were more field independent. Other studies which support the notion that personality-cognitive differences play a part in

the decoding process are reported below.

Markel (1969) and Smith (1972) took the approach of measuring personality indices of encoders of voice cues and then looking at whether decoders interpreted the messages differently. By this method the researchers hoped to conclude that existing differences in decoding were attributable to encoder personality traits. The limitations of this technique is that there is no way of knowing if existing differences are related to the interaction between encoder and decoder personality variables because there was no measure of the latter.

Of particular interest, however, is that Markel took voice samples from patients in a V.A. hospital who were also administered the MMPI. Judges sorted the voice samples into three groups: peak pitch, peak loudness, and peak tempo. Mean MMPI scores were obtained for each of the three groups and analyses indicated that there were significant MMPI profile differences between the groups. The peak pitch group showed a psychotic profile, while the peak loudness group showed a psychoneurotic one. Since Markel's three groups were differentiated according to encoder tonal qualities rather than by emotional meaning inherent in their dialogue, the generalizability of the results is limited. However, as Markel has done with encoders, using the MMPI as a measurement of personality traits and determining its relationship to decoder ability might prove useful.

III. Verbal versus Nonverbal Sources of Communication: Consistent Information

Shapiro (1966, 1968) was interested in a number of different components of verbal and nonverbal behavior and tried to ascertain which channel carried the most similar information when comparing it to the total verbal-nonverbal message. He had judges rate the pleasantness of 56 videotaped interviews at 30 second intervals. Judges were randomly assigned to one of four conditions: 1) the complete videotape (audio-visual); 2) only the audio; 3) only the visual; 4) only the transcript. Shapiro then correlated scores of the audio-visual presentation with scores from each of the other modes in the hope of determining which was most responsible or had the most weight, in the decoding of the communication. The results indicated that the transcript mode yielded lower correlations than the visual or audio mode with the audio-visual presentation. Each mode correlated significantly with the audio-visual presentation, and both the audio and the video modes contributed equally to the overall decoding of the degree of pleasantness of the communication. However it was found that the audio and video modes were not correlated. Shapiro suggests that this lack of correlation occurred because the audio and the video modes communicate different types of information, each of which is independently related to the overall audio-visual presentation. This conclusion appears unwarranted because it may be that the two modes are communicating inconsistent information and therefore one would expect to find no correlation between them.

Ekman and Friesen (1967) in a detailed empirical account of the meaning of different nonverbal body cues found that in judging the head vs. the body, subjects generally tended to identify specific emotional states from the head cues while body cues accounted for perception of "gross affectional states." Shapiro's (1972) results in which there was a higher correlation between face with "whole" person cues as compared to body with "whole" person cues in identifying general affectual dimensions, is contradictory to the results of Ekman and Friesen's study in which the face is a so-called better indicator of specific effects.

Turning now to some studies regarding the vocal and visual channels, Levitt (1964) in an attempt to look at these two channels recorded on film, male and female encoders' communication of various affects when verbal content was held constant. Judges acted as decoders for the three modes of presentation, i.e. facial, vocal, and face and voice. Analyzing the data by an ANOVA, between the scores of the judges for the three groups, and then doing individual Scheffes, Levitt found that the simultaneous presentation of both audio and visual cues was not significantly different from the video condition but was significantly different from the audio. Therefore, facial cues were more important in decoding the information than were voice cues.

Using an analogous procedure, Zaidel and Mehrabian (1969) also found that the face is generally superior to the voice for communicating variations in attitude. Their research also entailed measuring

subjects on a scale of social desirability and having them decode different degrees of like and dislike. Both photographs and tape recordings of the encoding process were taken. The encoders then acted as decoders, which enabled the authors to make a statement regarding the correlation between these abilities. Females were superior to males in the decoding process and were also better at the encoding of negative attitudes. Subjects scoring lower on the scale of social desirability were better than high scorers at the encoding of negative attitudes. No significant correlations were found between the encoding and decoding process.

Burns and Beier (1973) investigated the decoding of vocal and visual material, presenting the visual by means of a videotape and the vocal by means of an audio filter. This method permits the tonal qualities to come through while making unintelligible the verbal content. Their findings confirmed previous work: "Visual cues are dominant in affecting observer's responses during audiovisual presentations." However, an interaction was found to exist between the seductive and anxious moods, and mode of presentation.

Gartner (1972) used the entire body as visual stimuli. In this study four couples were videotaped. The material was then presented to observers by one of four modes: 1) audio, 2) video, 3) transcript, 4) audiovisual. The observers' task was to describe the couples and to indicate on which cues they based their descriptions. These descriptive statements were then grouped into six categories according to content. Generally the greatest number of responses occurred in the audiovisual mode. For two categories

dealing with "interpersonal style, situation specific behavior, enduring emotional characteristics," and with "cognitive traits" the greatest number of responses occurred in the visual mode. For the factual categories, which included information regarding intellectual abilities, physical characteristics, and specific interests, the audio and transcript modes provided the greatest number of responses. Thus the video mode was most important for carrying affectual information whereas the audio was more important for carrying factual information. Further, the personality styles of the decoders interacted with the nature of the message. As acknowledged by Gartner, "such things as sex-task-perceptual set and individual characteristics of observers influence his response."

Rosenthal and his co-workers (1974), in a monumental study all of which has not yet been released for publication, looked at the "nonverbal sensitivity" of a large number of individuals varying in age, sex, ethnic origin, educational backgrounds, and personality. The test of nonverbal sensitivity, "PONS," is a 45 minute sound film comprised of 220 two-second segments of 11 different combinations of auditory and/or visual segments, which are presented to decoders. The decoders chose from a pair of real life descriptions, i.e. leaving on a trip, expressing happiness, and indicated which description best corresponded to the two-second segment just observed. A decoder was assigned a score based on the number of correct descriptions. The more sensitive the decoder to nonverbal communication, the higher his score would be. The film varies along two dimensions: positive-negative and dominant-submissive. In what

appears to be the most comprehensive study of nonverbal sensitivity and corresponding personality-cognitive traits to date, Rosenthal et al. have administered numerous tests of this nature. Those individuals who were more sensitive to nonverbal communication were found to function at a higher level in social and intellectual areas as measured by various subscales of the California Personality Inventory. Teachers who were more democratic and less authoritarian in their classroom behaviors had a higher PONS score. Those individuals in occupations dealing with psychology and/or associated with a helping profession were more sensitive to nonverbal communication. Females always achieved slightly higher PONS scores than did males. Subjects from countries more dissimilar to America received lower PONS scores. An age difference was found: younger children received lower scores and paid more attention to the audio than video. This was also the case for psychiatric patients. Thus personality variables account for some of the variations in sensitivity to nonverbal communications.

In light of these findings, and of those aimed at discovering the importance of verbal versus nonverbal channels of communication, one can conclude with a fair degree of certainty that the nonverbal channel receives greater weight in interpreting a consistent communication, and the degree to which it does is associated with a number of different personality-cognitive variables. As Rosenthal (1974) wrote, "If we knew a great deal more about differential 'sending' and 'receiving abilities,' we might be able to learn what kind of person (in terms of sending abilities) can most effectively

influence what other kind of person (in terms of receiving abilities)."

Turning back to the question of relative importance of communication channels, the next question is whether the nonverbal channel also receives greater weight when inconsistent verbal and nonverbal communications are presented simultaneously. The next section addresses this question.

IV. Verbal versus Nonverbal Sources of Communication: Inconsistent Information

Mehrabian and Wiener (1967) designed a study that enabled them to determine the roles of the verbal and vocal channels in an inconsistent communication. They had female encoders record nine words which varied on a positive-negative dimension. Three of the words were positive, three neutral and three negative in content. The female encoders were asked to recite each word in a positive, negative, and neutral tone. However, only the content of the words was pretested and not the tone of voice. Different groups of decoders were then told to use either all the information, only the information carried in the meaning of the words, or only the information carried by the tone of voice in their rating of the person presented to them. The subjects were exposed to all possible combinations of the message in the two channels. An inconsistent message was defined either as one in which the verbal content was of a positive nature while the tone of voice was of a negative nature, or one in which a negative verbal output was paired with a positive vocal output. The analyses of the data suggested that the vocal channel was responsible for the resolution of the inconsistent

communication. No decoder sex differences were found. This finding was antithetical to the double bind hypothesis which suggests that inconsistent communications are not resolved and are in fact a necessary component for the existence of the double bind.

As Mehrabian and Wiener point out there were some difficulties with their study. No pretest of tone was undertaken, nor did the experiment allow for the subjects to rate the independent effects of tone relative to verbal content. Therefore one is unable to determine the absolute weight of the vocal as compared to the verbal component in the inconsistent communication. The conclusion that the vocal component carried greater weight is therefore somewhat questionable.

In an attempt to rectify these methodological errors, Mehrabian and Ferris (1967) controlled for these factors while assessing the effects of the vocal and visual channels. Three degrees of attitude (positive, neutral, negative) were relayed in tone of voice while verbal content was held constant. Photographs of the facial expression of a female were taken while she displayed these three attitudes. Independent vocal and facial ratings were obtained. In addition, only equally rated vocal and facial segments were selected for presentation to decoders, thereby permitting a determination of which channel was more important in decoding an inconsistent communication. The results of the study indicated that facial expression was the dominant force in resolving the communication. Since the three degrees of attitude were communicated in both channels one has evidence that the decoder paid attention to the visual

channel apart from a particular message, e.g. a positive one. This fact, along with the results of the previous experiment, led the authors to describe by means of a linear equation the weights given to the verbal, vocal and facial channels. They were .07, .38, and .55 respectively.

One drawback of the Mehrabian studies was the artificiality with which the verbal and nonverbal material was presented. One word stimuli and photographs do not provide a true representation of human communication. In the next set of studies videotape was used to circumvent this difficulty and allows greater generalization in the interpretation of results.

Argyle, Salter, Nicholson, Williams, and Burgess (1970) videotaped females encoding verbal and nonverbal information along a superior-inferior dimension. The verbal message was a paragraph indicating a superior, equal, or inferior attitude which was displayed nonverbally along the same dimensions. The entire body of the female encoders was visible. Pretests were performed for both the verbal and nonverbal channels and only those verbal and nonverbal segments which had equal ranges for a particular message were used in the study. The subjects recorded their responses by means of semantic differential scales. Besides the decoding task subjects were given a number of personality tests including Maudsley Personality Inventory (MPI) and the Psychopathic Deviate Scale (PD) of the MMPI.

The results of this experiment were analyzed by means of an analysis of variance for each of the scales. As with the Mehrabian

studies, Argyle et al. found the nonverbal channel to be most important. It accounted for 4.3 times as much of the variance as did the verbal channel. In this study though, sex differences were found: females were more responsive to the nonverbal cues than were males. In terms of personality differences, the authors found that those individuals high on the neuroticism scale reacted more to the verbal channel, and these same individuals found double binds to be more unpleasant and disturbing. It appears that in this study, Argyle et al. take "double bind" to mean a communication that is inconsistent but do not relate it to whether or not the inconsistency can be resolved.

In a later study Argyle, Alkema, and Gilmour (1971) explored the same issues but along a friendly-hostile dimension. They theorized that the nonverbal channel maintains interpersonal relationships and gives attitudinal information that is more external to the speakers. The findings of this study were similar to the former but pointed to an interaction between channel and message. When a hostile message was paired with a friendly nonverbal message dissonance occurred and the message was thought to be confusing. Yet in the opposite situation where verbal was friendly and nonverbal hostile, the message was interpreted along the nonverbal continuum. It is not clear why this "double bind" occurred. Yet, it should be mentioned that a negative injunction is a necessary part of a double bind (Bateson, Jackson, Haley, and Weakland, 1956) and perhaps some special rules govern an inconsistent communication along the positive-negative dimension.

Using a somewhat different population and addressing the question of developmental differences between adults and children Bugenthal, Kaswan, and Love (1970) studied how inconsistent verbal, vocal, and visual information was decoded. The method used was similar to Argyle et al., in that proper controls, pretests, and weighting of the channels were taken into consideration. A joking message was described as one in which the script was negative and the picture positive. A sarcastic message on the other hand, had a positive script and negative picture. Both males and females encoded sarcastic and joking messages which were then decoded by children and their parents.

The results lent support to the linear model described by Mehrabian and Ferris (1967) in that when an inconsistent message was portrayed in vocal-visual channels, the inconsistency was resolved according to the dominant visual channel. On the other hand, contrary to the results of Mehrabian and Wiener (1967), interactions existed. A joking message was interpreted as negative by children and as neutral by adults. This finding is similar to Argyle's (1971) in that the verbal channel received more weight when the message contained therein was negative. Also, there was an interaction between encoder sex and decoder age. For a female encoder, children as compared to adults decoded the message more negative. No sex differences were noted for decoders.

A brief summary of findings from the studies presented so far is as follows:

1) When decoding an inconsistent vocal and facial communication a linear model seems to hold such that the dominant channel, viz. facial, is responsible for the resolution of the communication.

2) When decoding an inconsistent verbal and nonverbal communication, one in which verbal content is compared to all other nonverbal cues including tone of voice, or when decoding an inconsistent verbal and vocal communication, the inconsistency is resolved according to the nonverbal channel. This applies for all attitudinal dimensions explored so far except the friendly-hostile one, where an interaction exists between channel and message: the verbal channel receives more weight when the message contained is a hostile one.

3) Individual differences in encoding and decoding appear to exist. The extent to which personality-cognitive and physiological variables explain these individual variations is as of yet an unresolved issue and appears to be dependent upon the particular measuring instruments employed.

4) Sex differences in decoding skills appear to be operative, yet different populations yield different findings.

The majority of the studies on nonverbal communication fall in line with the findings outlined above. However, there are some studies which yielded contrary results.

Vande Creek and Watkins (1972) conducted an experiment in which actors portrayed contradictory verbal and nonverbal messages along a calm-stressed dimension. The verbal content of the message

was not held constant. Judges rated the audio and video segments, from which criterion ratings were obtained. Only those segments in which a difference of two points or greater existed between the verbal and nonverbal were retained for the remainder of the study. One hundred subjects then rated the complete videotape segment. The results indicated a large difference in the degree to which individual subjects paid attention to a particular channel: some subjects appeared to interpret the inconsistencies according to the nonverbal, others to the verbal, and still others according to the message. This study differed in at least two major ways from the previous studies: a) although a two point difference existed between the verbal and nonverbal communications no baseline measurements were reported for these scales, making it impossible to compare these results with those of other investigations; and b) the statistics employed were correlations (not the ANOVA used in previous studies). Therefore the difference in the statistical analysis precludes making any reasonable comparison with other studies.

Shapiro (1968) employed drawings of facial expressions along with incongruent sentences in the assessment of the degree of pleasantness of these inconsistent stimuli. Separate groups of judges rated the drawings and the sentences. Out of 32 pairs of inconsistent stimuli one could have an artificially high rating of either the verbal (sentences) or nonverbal (drawings) depending on how pleasant a stimulus was paired with how unpleasant a stimulus.

Therefore, the inconsistent presentation of the verbal-nonverbal stimuli were not necessarily equally weighted.

The analyses were aimed at determining the consistency with which individuals pay attention to the verbal or nonverbal channel. There were high split half reliabilities when comparing individual responses from the group means for the separate conditions, thus indicating that some subjects consistently preferred one channel over the other as opposed to one channel being dominant for all subjects. Shapiro indicated "only a broad sampling of unacted, natural communication can determine the relative importance of linguistic, vocal, and facial cues." One can conclude from this study that there are specific, identifiable individual differences in the preference for a particular channel of communication as compared to the previous studies which indicated an interaction between channel and message.

Cline, Atzet, and Holmes (1972) investigated person perception with sound films of interviews of a number of different interviewees. The interviews were aimed at getting information about values, interests, beliefs, hobbies and the like. In other words, the interviews appeared to be tapping informational as compared to attitudinal and emotional items. On presentation of these filmed interviews to raters, the authors varied the available cues so that different raters had access only to body cues, only voice cues, or body and voice cues, as well as a host of other variations. Raters were to rate the interviewee on a behavioral

post-diction test (designed to assess how the interviewee would act in reality) and an adjective checklist of how the interviewee would rate himself. Therefore, these tasks differed from others in that raters were to second-guess how the interviewee would perceive himself rather than simply report how they perceived him.

It was found that different interviewees had very different styles of communicating. Some of them were "transparent" and others "opaque". The former refers to a communicative style that is clear and consistent, the latter to a style using inconsistent and confusing cues. For each of the raters' tasks it was shown that the verbal channel, most specifically the verbal content, enabled the best predictions of the interviewees' own responses. While on the surface these results seem to contradict the finding that the non-verbal channel is more important in resolving inconsistent communications, it must be pointed out that the task given to the raters was of a different nature, i.e. to guess how the interviewee would perceive himself as compared to reporting the rater's perception of the interviewee. Further, the interviewees' communication consisted of informational items and not affectual categorizations. As shown in Gartner's study the verbal message appears to more effectively communicate factual information as compared to the nonverbal which communicates the emotional.

A study by Giedt (1955) indicated that the verbal mode, whether in written or auditory form is superior to the visual in making diagnostic assessments of patients. This lends even further

support to Gartner's thesis, since it is the informational component that the raters adhered to in order to arrive at the diagnostic statements.

The literature survey suggests that communication of inconsistent messages occurs in both normal and pathological populations (Bateson, et al., 1956), and that in interpreting this type of message substantial individual differences exist. Yet the majority of individuals rely on the nonverbal channel, to provide information about emotional characteristics of the person presented to them.

V. Racial Differences in the Decoding of Nonverbal Communication

A great deal of the nonverbal communication literature stresses the importance of individual differences in encoding and decoding abilities. Studies have tried to assess the importance of personality, cognitive, and physiological variables in the hope of being able to explain these individual differences. In recent years, this interest has broadened to include the study of racial variables in the decoding process. Researchers who were interested in the coding of nonverbal behavior were well aware of possible cultural differences and the ramifications this had for the regulation of interpersonal communication. "We further suspect that the particular regulators and their frequency of occurrence are related to ethnicity, social class, and culture, and that their misuse or misinterpretation is one of the more perplexing sources of misunderstanding between members of different groups" (Ekman & Friesen, 1969).

For these reasons plus the particular interest this area holds for the present author, a short review of those studies dealing with racial differences is included. Due to the meager number of studies in this area, conceptual groupings are not possible.

Gardiner (1972) investigated whether differences existed in the decoding of particular nonverbal cues between Southern Black and Southern White 9th and 10th grade students. He presented videotaped recordings from 6 Black and 6 White teachers to these subjects. The students were randomly assigned to one of three conditions: face only, voice only, or face and voice. They were to rate, by means of semantic differential scales and a listing of personality traits, their impressions of the teachers. Both Black and White students rated teachers of their own race as more positive, i.e., better, more dynamic, more desirable. An analysis of variance revealed that Black students rated all the teachers regardless of race as more positive in the face only condition. Therefore, the Blacks attended more to facial cues than to voice cues in this Southern population.

Goldberg and Mayerberg (1973) investigated racial differences between groups of students in the decoding of nonverbal communication. This study differed from the former one in that the task was to rate different nonverbal behaviors as positive, negative, and neutral rather than to assess which channel more effectively communicated the information presented. They presented Northern Black and White 2nd and 6th graders with a film of a White teacher whose body presented differing nonverbal communication. The students in

both classes were randomly assigned to one of the three conditions in which a particular communicative style was enacted. These students then rated the teacher on the evaluative dimension of the semantic differential. Since verbal content was held constant across the three conditions, it was not a confounding variable. An interaction was found between race, grade level, and condition: Black 2nd graders rated the teacher as more positive in the neutral condition. The analyses of the data show this to be significant at the .05 level. Integrating this finding with Gardiner's presents a problem. Only 2nd grade Blacks rated a White teacher more positive here whereas the entire Black population did so in Gardiner's study. Perhaps this discrepancy is the result of the different populations employed, i.e., a Southern rural group vs. an urban Northern one. Regardless, these studies taken together do show a tendency for Blacks as compared to Whites to differentially respond to nonverbal communication and to interpret neutral nonverbal behavior as more positive. Given the lack of extensive research and replication in this area, the results are to be regarded as highly tentative.

Frankel and Frankel (1970) investigated whether nonverbal styles of Blacks and Whites differed when they were interviewed about their hospital care by a White confederate. They observed a Black nonverbal behavior of increased hand clasping and palms up, which implied helplessness and inhibitions. Unfortunately, as the authors indicate, the results are not entirely valid due to the fact that only one White observer rated the interviewees' behavior.

Furthermore, the subjects were surgery patients and in all probability the behavior exhibited is not representative of the population at large.

The inclusion of the Frankel and Frankel study in this review is for the purpose of highlighting the interest that surrounds this issue concomitant with the dearth of research. Many questions are being asked, yet the research at this point does not permit many clear, general conclusions. One additional study by Newmeyer (1972) was cited in Dissertation Abstracts International but unfortunately was not available for examination. The abstract stated "no racial differences in identifying emotion existed" yet it is impossible to put this statement into proper perspective. Levy (1964), whose study was cited earlier in this paper, did post hoc analyses between Blacks and Whites on decoding and encoding skills associated with the vocal communication of feeling. He found that Whites were better in these abilities yet stressed the tentative nature of this finding since the Black and White samples came from different geographic segments of the population.

Hopefully the foregoing material makes clear that no valid conclusions can be reached regarding racial differences and that further research is needed to determine its importance in the decoding of nonverbal communication.

VI. The Assessment of Personality and Psychopathology: The MMPI

Regardless of the particular area in the nonverbal communication

literature one chooses to address, there are countless references to individual differences in the coding of nonverbal communication. Researchers have employed different instruments designed to measure personality and cognitive styles in the hope of discovering factors to account for these individual differences.

Although a host of different personality tests have been used, only the Minnesota Multiphasic Personality Inventory (MMPI) will be elaborated upon here. This results from the particular interest this personality inventory holds for the present author, inasmuch as it provides a unique way to test out hypotheses regarding the contribution of personality differences to the decoding of non-verbal communication.

The MMPI is a well established, highly regarded, reliable instrument, that provides an objective assessment of some major personality configurations. The MMPI was developed by Hathaway and McKinley in 1941 and is comprised of 550 declarative sentences that the subject must respond to as either true or false. A number of different validity, clinical, and research scales have been factor analyzed from these questions. They are: 4 validity scales (V, L, F, K), 10 clinical scales (Hypochondriasis [HS], Depression [D], Hysteria [HY], Psychopathic Deviate [PD], Male-Female [MF], Paranoia [PA], Psychasthenia [PT], Schizophrenia [SC], Hypomania [MA], Social Introversion [SI]) and numerous research scales not all of which have been completely validated. (Dahlstrom & Welsh, 1960; Fowler, 1969; Good & Brantner, 1974). Both raw and standardized (T corrected) scores are available for each of the scales.

The item selections for each of the scales were based on the empirical separations between normal and psychiatric cases (Dahlstrom & Welsh, 1960). Subjects for the criterion groups for each of the different clinical entities came from the inpatient wards of the neuropsychiatry department of the University of Minnesota Hospitals. The normative group, also a Midwestern sample, consisted of normal individuals, most of whom were visitors to the same hospital as were the criterion groups.

An individual's T corrected score on each of the scales can be used to determine how far above or below the mean his response is and thereby assess whether there is an indication of pathology. Since interpretation of the clinical scales depends on the validity scales it is important to look at the overall pattern or 'profile' for any individual. This profile, which graphically depicts the patterns among the scales, enables the clinician to make interpretations regarding an individual's characterological make-up. The MMPI affords the clinician and researcher the opportunity to classify many personality types and combinations of types, so that no stereotyped or limited interpretation need be made.

Since the MMPI was mainly designed to assess psychopathology and personality within the 'abnormal' range, an important question arises as to whether or not the MMPI can be used with 'normal' populations in the assessment of personality.

As mentioned earlier, there are studies in which particular MMPI scales have been used to determine personality characteristics

associated with nonverbal communication (Argyle et al., 1970; Davitz, 1974; Markel, 1969) yet the appropriateness of using the MMPI with these more 'normal' populations was not clarified.

When the MMPI was given to more 'normal' populations, specifically to the general college population, researchers found that students obtained different mean scores on some of the clinical scales as compared to the original normative group (Clark, 1954; Gilliland & Colgin, 1951; Goodstein, 1956). The means were always higher than the T corrected mean score of 50 which had been obtained with the Midwestern normal sample. What this was taken to mean was that as a consequence of different social, educational, and regional factors the college population looked different on some of the scales; yet this difference could not be interpreted as meaning they were more pathological. Rather, what was needed were new sets of normative data for this population or greater caution on the part of the clinician in interpreting an elevated T score on scales as indicative of pathology.

All that this then means is that one should exercise caution in making statements regarding pathology for a college population, yet this does not address the issue of whether the MMPI is a valid indicator of personality and characterological make-up for this population.

There is a relatively large body of literature that indicates that for a college population one can indeed assess different personality patterns that occur with the MMPI (Cooke & Kiesler, 1967; Drake & Oetting, 1959; Faunce & Loper, 1972; Good & Brantner, 1974;

Gulas, 1973; Owen, 1970; Simono, 1968), In fact there are a number of codebooks that are specifically geared to aid one in making interpretations when dealing with a college population. The authors of one of these, Good and Brantner (1974), indicate that the various scales identify "aspects of personality falling in the 'normal' range." Black (1956) takes this a step further by stating "It appears that within this 'normal' population, a particular profile peak ordinarily has a significant meaning with respect to an individual's personality" and that "any individual deviation from the mean T score, is indicative of a tendency to behavior in that direction."

A similar question as exists for a college population also applies when using the MMPI for a racially different population from the one on which the normative data were obtained. Here one must address the issue of the appropriateness of using White norms with Black samples. In the past 16 years this area has received great attention and the question of whether or not race as opposed to socioeconomic or educational level accounts for the majority of observed variance has undergone much scrutiny.

The vast majority of the literature indicates that race does account for much of the variance, that Blacks, like the college samples, show different mean T scores from the original normative group. Here again, it is stressed that these differences are not due to greater pathology but are reflective of different customs. Not only is race seen as a significant factor but socioeconomic level

too must be taken into consideration when making interpretations regarding psychopathology (Ball, 1960; Butcher, Ball & Ray, 1964; Clark & Miller, 1971; Costello, Tiffany & Gier, 1972; Gynther, 1972; Gynther, Fowler & Erdberg, 1971; Miller, Wertz & Counts, 1961).

There is one study in which education in addition to race is examined. The authors conclude that if education is greater than 11 years the differences between Blacks and Whites are no longer significant (Davis & Jones, 1974).

The general conclusions one can draw from all these studies is that different norms need to be established for a Black population. Yet, in the absence of these norms, what is essential is that one interprets with extreme caution statements regarding psychopathology. In no way though does this invalidate the ability that the MMPI has to classify personality trends.

Finally, an important advance has taken place in the analysis of the MMPI with the development of computerized analyses of MMPI protocols by the Roche Psychiatric Service Institute. While other systems exist, the Roche package appears to be the most extensive and reliable (Fowler, 1969, 1972).

In summary then, the MMPI is a personality inventory that permits classification of an individual's personality in both pathological and normal populations in a manner that affords a great deal of reliability and validity.

CHAPTER II

PILOT EXPERIMENTS I AND II: A SUMMARY

In an attempt to understand how individuals decode a more life-like, unstaged, and spontaneous inconsistent communication, the author performed the experiments in which a spontaneous as opposed to acted videotaped segment was presented to subjects. In both experiments the same videotaped segment was used. The second experiment was a replication and extension of the first.

In the first experiment (Appendix I), inconsistent communications on a relaxed-tense dimension were presented via videotape to a population of white undergraduate psychology students. The videotape recording was of a confederate who spontaneously displayed relaxed voice cues and tense body cues. Fifteen recordings of the confederate were made, and of these fifteen one recording was chosen which most spontaneously displayed calmness of voice and verbal content while at the same time showing tenseness of body. In a pre-test only the soundtrack of the videotape was presented to naive judges. They rated the confederate 'calm'. Judges presented only the video track rated the confederate 'tense'. A relaxed-tense scale was used which went from -4 (relaxed) to +4 (tense). The pre-test also confirmed that the taping was judged to be spontaneous and not staged, a criterion that was most important in constructing an

experimental procedure as realistic as possible in order to simulate actual life communications.

The design of the first experiment consisted of three experimental conditions: presentation of only the audio track ('Voice' condition), presentation of only the video track ('Body' condition), and simultaneous presentation of both the audio and video ('Body and Voice' condition). A total of sixty-nine white introductory psychology students, approximately half male and half female, were run in the experiment with an N=22 in the Voice condition; an N=23 in the Body condition; and an N=24 in the Body & Voice condition. Subjects were randomly assigned to conditions.

Before hearing or viewing the prepared videotaped segment subjects were given the appropriate variant of the following instructions depending on the condition they were in. "In the next few minutes you will be involved in an experiment. A person will be presented to you on tape. Please listen to it (look at it, look and listen to it) carefully." After the videotaped presentation subjects were handed questionnaires which they were asked to fill out (Appendix III). The questionnaire consisted of four parts. Part I had four scales on which the subjects were to rate the confederate (relaxed-tense, approachability, friendliness, and hostility). Part II consisted of an open-ended question asking on which cues the subjects based their impressions of the confederate. A more detailed question, listing specific cues such as verbalization, tone of voice, facial expression, etc. followed. Part III consisted of a number of subjective questions, and Part IV consisted of personal data.

The experiment was designed to investigate how subjects in the Body & Voice condition would decode inconsistent communications. However this assumed that subjects who were in the Body condition would rate the confederate as tense and subjects in the Voice condition would rate the confederate as relaxed. This in fact occurred (the means respectively were +1.70 versus -1.50). How then would subjects in the Body & Voice condition decode the information presented to them? Would they rely more on body cues and rate the confederate as tense or would the reverse occur and the voice be more heavily attended to?

In order to determine whether there were significant differences between the modes of presentation (Body, Body & Voice, Voice) on each of the four scales, four different analyses of variance were performed. Each analysis of variance showed a significant mode of presentation effect which indicated that the information that was only heard reflected a relaxed message and the information that was only seen reflected a tense message on each of the four scales.

The results regarding the decoding of information that was simultaneously heard and seen were as follows. The mean ratings for the Body & Voice group fell virtually midway between the Body group and the Voice group mean ratings on virtually all scales. Scheffe tests showed a significant difference between the Voice and the Body & Voice conditions on the relaxed-tense scale. On the friendliness scale the opposite occurred with significance being reached between the Body and the Body & Voice conditions. For the approachability and hostility scales no significant differences

were found,

In initially interpreting the results it appeared that, contrary to the initial hypothesis that information that is simultaneously heard and seen will reflect the message as portrayed by one of the two channels of communication, some sort of integration of the verbal and nonverbal channels occurred. Yet in reanalyzing the data it became clear that although the mean values for ratings of the confederate in the Body & Voice condition were between the other two conditions, there was a bimodal distribution of scores that went into making up that mean. Thus subjects were split into two sets. Out of an N=24, 16 subjects rated the confederate tense (decoded body cues) and 8 subjects rated the confederate calm (decoded voice cues). No individual subject actually integrated the information from these two channels. On the basis of significant differences between 1) the Body and the Voice conditions and 2) the Voice and the Body & Voice conditions, it can be concluded that the inconsistent communication was resolved by paying attention to the body. The degree to which individual subjects did this varied, with some subjects paying attention to voice cues but the ratio being 2:1 in the direction of body cues.

A second experiment was performed employing the same procedures as in the first experiment (using the same videotaped confederate and three experimental conditions) with the hope of investigating the question of why subjects in the Body & Voice condition formed the above mentioned split. It was believed that some personality cognitive variable might account for this dichotomy,

and conjugate lateral eye movements (CLEM) were examined as a possible variable.

Thus the second experiment was performed 1) to replicate the results of the first experiment and 2) to assess whether directionality of eye movement correlates with one's preference for the verbal versus nonverbal channel when decoding inconsistent communications.

In the second experiment there was an N=20 in the Body condition, an N=21 in the Voice condition, and an N=60 in the Body & Voice condition. The questionnaire given to subjects (Appendix IV) was modified somewhat to take into account some additional factors and eliminate those found to be uninformative. The basic format was the same as the first experiment. Parts I and II of the questionnaire were identical to the first experiment.

What was new in this experiment was the testing of subjects who were in the Body & Voice condition for CLEM. Previous research (Bakan, 1969; Bakan & Lance, 1969; Day, 1967, 1968; Duke, 1968) had shown that individuals can be categorized on the lateral eye movement dimension as right lookers and left lookers. CLEM is simply the direction of eye movement in response to reflective questions. It has been shown that a variety of characteristics are associated with the right or left looker (Bakan, 1971; Day, 1970). Left lookers (who are thought to have dominant right hemispheres) are subjective as opposed to objective; manifest more imagery and alpha production than right lookers; are more susceptible to hypnosis, more oriented to auditory than verbal stimuli, and score higher on

the verbal than quantitative SATs. Right lookers (with a dominant left hemisphere) are more mathematical, analytical, and likely to pick hard majors in college.

The basic format of the second experiment remained the same with subjects observing the videotape and then filling out the basic questionnaire. Upon completing the questionnaire each subject in the Body & Voice condition was called in individually for testing on CLEM. The subject was told "There are some questions I would like you to answer. Take your time in verbalizing the answer to me." The experimenter read 26 questions to the subject (Appendix V) and recorded the first observable eye movement that the subject made for each of the questions. Out of 26 questions, 4 were from Bakan's original study, the rest being created and subsequently pre-tested for use in the present study. The subject was then debriefed. In the statistical analysis of the CLEM data a formula was used to convert the subjects' responses to a percentage indicating the degree and direction of CLEM: $\text{left movements} - \text{right movements} / \text{total \# of eye movements} \times 100$. These percentages were then correlated with how the subjects rated the confederate on the relaxed-tense, approachability, friendliness, and hostility scales.

The hypotheses that were proposed were the following:

1. Information that is heard will reflect the appropriate message (calmness)
2. Information that is seen will reflect the appropriate message (tenseness)
3. Information that is both heard and seen will result in a

dichotomy of responses such that some subjects will rate the confederate as tense while others will rate the confederate calm, with a greater proportion of the subjects rating the confederate as tense

4. Right lookers will rate the confederate as tense and left lookers will rate the confederate as calm; right lookers will rely on body cues while left lookers will rely on verbal cues.

As in the first experiment four separate analyses of variance were performed, one for each of the four scales, to test differences between the three modes of presentation (Body, Body & Voice, Voice). Scheffe tests were performed to ascertain which modes differed from each other. For the relaxed-tense scale there was a significant mode effect with the Body condition significantly differing from the Voice condition and the Body & Voice condition differing from the Voice condition. The identical pattern held for the friendliness scale. On the approachability scale a similar pattern resulted except that the Body condition did not differ significantly from the Voice condition. For the hostility scale the ANOVA for mode of presentation did not reach statistical significance. (The complete analyses of the results are to be found in Appendix V.)

The results were interpreted to mean that for two of the four scales (relaxed-tense and friendliness) hypothesis 1 and 2 were supported, viz., information that is heard will reflect calmness and information that is seen will reflect tenseness. The third

hypothesis was partially supported. A greater proportion of the subjects rated the confederate as tense (concentrated on body cues). This pattern emerged for all of the scales and reached significance on two of the four scales, viz. relaxed-tense and friendliness. There were a small number of subjects who integrated the information from the two channels ($N=2$) but the majority of subjects showed a split in their preference for mode of presentation, but this split was smaller than in the first experiment. Only 7 out of 60 subjects rated the confederate along the relaxed end of the continuum.

The mean response of the subjects for the approachability and hostility scales for the three experimental conditions followed the same pattern as the relaxed-tense and friendliness scales. In other words, it seems to be the case that the information carried in the nonverbal channel was given more attention than the information carried in the verbal channel when subjects decoded inconsistent communications. This finding is in accordance with the majority of studies cited in the literature review.

Since individuals have varying degrees of preference when attending to information carried in verbal and nonverbal channels, the second experiment was designed to look at whether or not these differences can be accounted for by personality cognitive factors as picked up by conjugate lateral eye movements. In order to test the fourth hypothesis correlations were obtained between each individual's CLEM and his rating of the confederate on the four scales. The fourth hypothesis was not supported; none of the correlations

reached statistical significance. On the other hand, when analyzing the data using a chi square statistic, a statistical operation which was not planned at the conception of the experiment, statistical significance was reached between directionality of eye movement and ratings of the confederate on the friendliness and approachability scales. It was found that left lookers rated the confederate as more friendly and approachable; they attended more to verbal cues. Therefore the hypothesis that left lookers would rely on verbal cues was partially confirmed for these two scales (Appendix V).

The second experiment shed light on some unanswered questions. Generally, the results confirmed the hypothesis that the non-verbal channel of communication is the more dominant channel when inconsistent communications are presented to subjects. This pattern was significant for the relaxed-tense and friendliness scales. On the approachability scale, although statistical significance was not obtained, the same trend as found for the two aforementioned scales was in evidence. On the hostility scale no significant differences were obtained. Perhaps the lack of statistical significance on the hostility scale can probably be attributed to the small range in the subjects' responses. Most of the subjects rated the confederate as either not at all hostile or slightly hostile which was coded numerically as either 0 or 1. This restricted range prevents the ANOVA from discriminating among these rather fine differences. It should be mentioned that the videotaped

recording was designed to transmit information along the relaxed-tense dimension only. The additional scales were included because it was thought that the information relayed by the tape might be related to these other affectual dimensions. However this may not be the case.

The question of whether personality cognitive variables correlate with how individuals decode inconsistent communications remains an unanswered question. Both experiments I and II attest to the presence of individual differences in responding to a communication. However no significant correlations with CLEM's appeared, and only post hoc statistical manipulations could pick up CLEM differences on two of the four scales. One possibility is that the CLEM variable is not a reliable indicator of personality cognitive differences. Further, if a particular judge happened to be looking at something other than the subject when the first observable eye movement occurred, or if the eye movement occurred within a fraction of a second, it is quite possible that an incorrect estimate of directionality could have been ascertained.

Another possibility is that those attributes CLEM is known to correlate with (as mentioned previously) are factors that have a higher loading on the affectual categories of approachability and friendliness than the relaxed-tense and hostility categories. Only a factor analytic study would give rise to more definitive answers.

The finding that on the approachability and friendliness scales left lookers rated the confederate as more approachable and

more friendly was interpreted to mean that left lookers paid more attention to the verbal channel. Given this trend and the fact that there are individual differences of a rather large magnitude on preference for verbal versus nonverbal channels, it is still the belief of the experimenter that some personality characteristics may account for the observed differences in subjects' decoding of inconsistent communications. What seems to be indicated is the use of a more reliable and broader instrument for picking up personality variables, an instrument that will permit a look at finer personality discriminations rather than global personality cognitive configurations.

CHAPTER III

RATIONALE AND STATEMENT OF HYPOTHESES

The findings of Experiments I and II, along with the majority of the experiments cited concerning decoding of inconsistent verbal and nonverbal communication, indicate that White college subjects rely heavily on a dominant channel, that channel being the nonverbal. Although the majority of subjects rely on the nonverbal channel they do so to varying degrees; some subjects rely on it more heavily than others. Further, there are those subjects, albeit a few, who rely on the verbal channel to decode inconsistent communications. The issue of whether personality variables, as measured by CLEM, could account for these individual differences in the decoding of inconsistent communications yielded inconclusive results.

The present study is addressed to the question of whether personality and racial variables can account for how individual decode inconsistent communications. Looking at racial differences appears to be a worthwhile pursuit because so little research has been done on this issue. In addition, with increased societal interest regarding greater integration within school systems and communities, it would be of value to know if any differences exist between races in their manner of communicating. The existing research gives so little information regarding personality and racial

variables that there is a need for further investigation of the role of these factors in nonverbal communication.

Clinicians have long been aware that nonverbal communication is part and parcel of an ongoing therapeutic experience. It has been hypothesized that nonverbal behavior is an "expression of drive, and defensive processes, as well as conscious and unconscious attempts to communicate. . . ." (Wachtel, 1967). Nonverbal behavior may take on many roles ranging from deception to dramatization of current verbal behavior (Sherman, Ackerman, Sherman, & Mitchell, 1965). Regardless of the specific role or meaning of the nonverbal behavior one can only be aided by paying attention to this channel of communication and using it as an aid to more fully understand the verbal channel and as an aid to determine whether conflict exists. One need only look at psychosomatics and conversion hysterics to observe the importance of nonverbal behavior in dealing with conflict (Barbara, 1956). Would it not be highly relevant if one could determine whether particular characterological types had preferences for attending to the verbal or nonverbal parts of a message? The implications this would have for matching therapist with patient are indeed quite clear.

Theories of nonverbal communication and behavior are not limited to unconscious motivations, but also apply to psychotherapeutic treatment and etiological considerations of schizophrenia. In treatment, nonverbal communication can be used therapeutically to point out to patients its occurrence while concomitantly discussing the meaning it has (Love, Kaswan, & Bugental, 1972; Satir, 1967).

The "double-bind" concept applied to etiology of schizophrenia entails the interplay of the verbal and nonverbal (Bateson et al., 1956, 1963). Further, regardless of whether the double-bind is a tenable hypothesis, the importance of inconsistent communication in the schizophrenic syndrome has been and still is of utmost significance (Lidz & Lidz, 1973).

These two issues, viz., racial differences in decoding inconsistent communications and personality variables associated with how a contradictory communication is resolved, are two areas that have been looked at only sporadically in terms of experimental investigation and are only now being explored in systematic and integrative ways. The methodology of Experiments I and II seems to be highly appropriate for investigating these two issues. While in the past videotaped recordings were a novel idea, they are now in wide use and have become accepted as a way of experimentally examining communications (Argyle et al., 1970; Bugental et al., 1970; Burns & Beier, 1973; Eisler & Hersen, 1973; Speer, 1972; Vande Creek & Watkins, 1972).

The specific goals of the present experiment are:

1. To determine how Black and White college subjects decode inconsistent communications relayed simultaneously by the verbal and nonverbal channels
2. To test out hypotheses relating personality factors of both Black and White subjects to the importance they place on verbal versus nonverbal cues in the decoding of inconsistent communications.

In order to explore the first objective, it is necessary to have a videotape that relays an inconsistent verbal and nonverbal communication along a particular affectual dimension. The communication should meet the criteria of spontaneity and naturalness. Therefore one possibility is to find an individual who without script or prompting has the ability to spontaneously communicate these contradictory communications. Such an instrument is available and has been pre-tested by the present author as has been described in Chapter II.

In order to explore the second objective, viz. whether personality-cognitive variables account for differences associated with the decoding of inconsistent communications, one must have a validated instrument that measures personality factors along a broad spectrum, one in which experimenter bias in administration and scoring does not account for a great deal of the variance. In addition it is desirable to use a measuring instrument that it is possible to administer to a large number of individuals at the same time. Such an instrument is available in the form of the MMPI, a personality inventory that has great breadth and consistency, which can be administered to large groups and can be analyzed and scored by the aid of a computer.

Statement of Hypotheses:

The following hypotheses relate to the first objective;

1. Information that is heard will reflect the appropriate message (calmness)

2. Information that is seen will reflect the appropriate message (tenseness)
3. Information that is both heard and seen will reflect the message as portrayed by the body (tenseness) with the Black subjects paying more attention to the body cues than the White subjects.

Hypotheses 1 and 2 are control conditions for examining hypothesis 3. Evidence of a contradictory message must exist before claims can be made as to how a contradictory message is decoded. Based on the results obtained using the same communication in two previous experiments, it is expected that 1. and 2. will be confirmed. Hypothesis 3 predicts that the inconsistent communication will be decoded according to the nonverbal channel in accordance with existing research in the field. The second part of this hypothesis, that Black subjects will pay more attention to nonverbal cues than will White subjects, is based on the results of Gardiner's (1972) study in which Black subjects paid more attention to facial cues as compared to voice cues. In addition, it takes into consideration the societal stereotypic view that Blacks are more tuned into "body" cues than are Whites.

The following hypotheses relate to the second objective concerning personality variables:

4. Subjects with a higher T corrected score on the Psychasthenia (PT) and Anxiety (A) scales of the MMPI will rate the confederate along the calm continuum - will rely on voice cues
5. Subjects with a higher T corrected score on Hysteria (HY) and

the Repression (R) scales of the MMPI will rate the confederate along the tense continuum - will rely on body cues

6. Subjects who rely more on body cues will have different high point and two point code compared with subjects who rely more on voice cues.

Hypothesis 4 is based on the following clinical consideration. The PT scale of the MMPI measures obsessive compulsive tendencies, which as a clinical syndrome includes a predisposition towards vacillation and rumination and varying degrees of anxiety, rigidity, and tension. In addition these individuals tend to use the defense mechanisms of intellectualization and externalization and like to deal with the factual elements of a situation rather than the emotional (Dahlstrom & Welsh, 1956; MacKinnon & Michaels, 1971; Shapiro, 1965). The Anxiety scale of the MMPI is known to correlate highly (+.75) with the Psychasthenia scale (Welsh, 1956), and as a trait has "important concomitants in characteristic perceptual behavior" (Mendelsohn & Griswold, 1967). This, coupled with Gartner's (1972) results in which verbal-vocal cues relayed factual while visual cues relayed emotional information predict that those individuals high on the PT and A scales of the MMPI will rate the confederate along the verbal continuum.

Hypothesis 5 is based on the following clinical consideration. The HY scale of the MMPI measures the hysteric syndrome which as a clinical entity includes an action oriented model, one in which lack of insight and control is manifested; where dependency, helplessness,

somatic complaints, selective inattention and forgetting predominate (Dahlstrom & Welsh, 1956; Lazare, 1971; Lion, 1974; MacKinnon & Michels, 1971; Reich, 1972; Shapiro, 1956; Sullivan, 1956). Also the results of intelligence testing with this population suggest that factual information is not retained although comprehension of information is evidenced (Rapaport, Gill, & Schafer, 1968). In addition, these individuals tend to use the defense mechanisms of repression and denial, and their whole world is colored by the emotional as compared to the factual. Just as the PT and A scales have high correlations so too do the HY and R scales of the MMPI, with R tapping repression, denial, and lack of insight (Welsh, 1956). Therefore the hypothesis that those individuals who score high on the HY and R scales will be those individuals who rate the confederate according to the nonverbal is reflective of their way of dealing with the world.

Hypothesis 6 predicts that subjects who rely more on non-verbal rather than on verbal stimuli will have different high point and two point codes. A high point code is the most elevated clinical scale on the MMPI in a particular individual's profile. These codes are indicative of personality and psychopathology. None of these subjects may have distinguishing T corrected scores for the scales specifically addressed by hypotheses 5 and 6 viz. PT, A, HY, R, but yet other personality differences may exist which correlate with how subjects decode inconsistent communications.

In summary, the main issues to which this research is addressed

are:

1. Whether or not racial differences exist in the decoding of in consistent verbal-nonverbal communications, and
2. Whether or not individual differences in decoding can be attributed to personality-cognitive factors as measured by the MMPI.

CHAPTER IV

METHOD

Subjects

A total of 287 subjects were run in the experiment. The subject pool consisted of City College students who were taking courses in the psychology department, the majority of whom were registered for introductory psychology (N=261) with the remainder being enrolled in advanced level psychology courses (N=26). Of these 287 subjects, 107 were excluded from consideration in the analyses of the data, leaving 180. The exclusion criteria employed were as follows:

1) those subjects (N=40) who were either "not at all" or only "slightly" serious about being in the experiment and answering the questions (Appendix VI, question #4); 2) those subjects (N=3) who did not follow instructions in filling out their questionnaires, and 3) those subjects (N=64) whose race was other than Black or White. The final category included Chinese, Spanish, Puerto Rican, Indian, and "not indicated."

Confederate

The confederate was selected because she spontaneously displayed inconsistent communications on the relaxed-tense dimension via the body and voice channels, without overexaggerating these characteristics. The confederate was a White, mid-twenties graduate student enrolled in the department of psychology at Stony Brook

University. On the day of the videotaping she wore typical attire consisting of a pair of slacks and a sweater. For the taping session the confederate spoke with a calm, slow paced, deep voice about a pleasant trip to Hawaii, but at the same time conveyed inner tension with her body language by clasping and unclasping her hands, crossing and uncrossing her legs while seated, pacing back and forth across the cubicle, fidgeting with her hair, and avoiding eye contact with the camera. Therefore the message contained in the body language was inconsistent with that of the verbalizations. (A complete verbal transcript can be found in Appendix VII.)

Videotape Recording

The confederate was televised by a camera with a wide angle lens located in the upper corner of an 8' x 10' cubicle. Thus the entire cubicle and the whole body of the confederate was visible. The only prop that was in the cubicle was a chair, which faced the camera, and which was used periodically by the confederate. The confederate was told prior to the tapings to reveal contradictory messages in her verbal and nonverbal communication, but was left to her own imagination, abilities, and natural tendencies during the taping. Fifteen recordings were made, each lasting for approximately 45 seconds. Of these one seemed especially appropriate in showing both calmness of voice and verbal content, and at the same time showing tenseness of body. A pretest with 8 judges indicated that the confederate was rated differently in two experimental conditions: body alone vs. voice alone. Four out of the four judges in the video

(Body) condition rated the confederate along the tense continuum, and 3 out of the 4 judges in the audio (Voice) condition rated the confederate along the calm continuum. The taping was judged to be virtually spontaneous and not staged. These results were confirmed in the first two experiments in which the same taped segment was employed (Appendix I and III).

Videotape Questionnaire

The questionnaire consisted of 5 parts (Appendix VI), and was designed to answer the question of how inconsistent communications are decoded in Black and White college populations. Part 1 had four scales (relaxed-tense, approachability, friendliness, and hostility) on which the subjects were to rate the confederate. The relaxed-tense scale went from 'extremely relaxed' (-4) to 'extremely tense' (+4) with the middle point of 'neither relaxed nor tense' assigned the value of "0". The approachability and friendliness scales went from 'extremely' (+4) to 'not at all' (0) with the intervening intervals represented by integers. For the hostility scale the range was the same as that of the approachability and friendliness scales, but the intervening values were multiples of .5. This was designed to allow subjects a greater range over which to rate the confederate.

Part 2 was an open ended question asking the subjects what they based their impressions of the confederate on. This unstructured question was followed by a more detailed and structured question asking subjects to rate the importance of six cues in their

formation of an impression of the confederate. The cues (listed in Part 3) were: verbalizations, tone of voice, eye contact, facial expression, movement of the upper extremities, and movement of the lower extremities. As with the scales in Part 1 the range went from 'extremely important' (+4) to 'not at all important' (0). Subjects were asked in Part 4 to indicate how seriously they had taken participation in the experiment. This was the basis for the first exclusion criterion (as indicated under "Subjects").

Part 5 consisted of personal data, most importantly 'race', which if left unanswered or other than Black or White was the basis for exclusion criterion number three.

Although a similar variant of this questionnaire had been used in experiments I and II, a pretest was thought advisable so as to ascertain the usability of the questionnaire with the City College population. The pretest (N=21) verified the validity of the questionnaire.

MMPI Questionnaire

The MMPI, a valid and reliable measure of personality, was employed in this study with the hope of answering the question of whether individual differences in decoding styles can be attributed to personality-cognitive factors. All the MMPI materials employed in the study, including the test booklets and the answer sheets, were those published by the Roche Psychiatric Service Institute. The computerized scoring and analyses were also carried out by Roche and included the following information: a narrative report, a list

of critical items (items that the individual has answered in the scored direction and which appear to be deviant), a listing of the content scales (including a description of how the individual views himself), the profile (a graphic representation of the scores on the validity and clinical scales), and a technical information sheet (which lists the raw and T corrected scores for the validity, clinical, and research scales and the Welsh code which describes the order and elevation of the clinical scales).

The administration of the materials and the instructions given to the subjects followed the standard procedures suggested by Roche with the following exceptions: 1) xerox copies of the test booklets rather than originals were distributed to subjects (so as to accomodate the large N), and 2) the deletion of the following sentence on the instruction page of the test booklet: "They will provide additional information for making decisions about your treatment." This sentence was inappropriate in the present situation.

Experimental Design

There were three experimental conditions: presentation of only the audio track (body condition), and presentation of both the audio and video (body & voice condition). Therefore, each condition differed in what subjects saw or heard. Only subjects in the body & voice condition were given the MMPI. Table 1 gives the overall N's for each condition, and the N's for sex and race within each group. Classes of subjects were randomly assigned to experimental conditions with one constraint: only those classes meeting for two hours could

be assigned to the body & voice condition. This was necessary because subjects in the body & voice condition were given the MMPI, a rather lengthy procedure which took additional time. Classes in introductory and advanced psychology were randomly assigned to one of the three experimental conditions. The body condition was run 7 times, the voice condition 5 times, and the body & voice condition 7 times.

Procedure

Approximately 3 weeks prior to the running of the experiment, instructors of the classes participating in the study read to their students some variant of the following announcement:

Body condition and Voice condition (50 minute classes);

"At some point during the semester I have arranged for you to have the opportunity to be involved in a psychological experiment. The experiment is in the area of communication and personality characteristics, two topics which are highly relevant to the semester's material. All that the experiment requires is for you to answer a variety of questions concerning your impressions of an individual presented to you. After you have participated you will be able to get feedback on your results as well as a comparison of your results with those of other classes which will have participated this semester."

Body & Voice Condition (2 hour classes);

"At some point during the semester I have arranged for you to have the opportunity to be involved in a psychological experiment.

The experiment is in the area of communication and personality characteristics, two topics which are highly relevant to the semester's material. All that the experiment requires is for you to answer a variety of questions concerning your impressions of an individual presented to you, and to complete a well known and widely used personality inventory. After you have participated, each of you will be able to set up an appointment to obtain feedback regarding your own personality make-up and character traits, and to learn the results of the experiment. Not only is this an opportunity for you to get to know yourself better, but it also enables you to get some first hand experience in some of the areas you normally just get to read about."

Then on a prearranged basis, the individual classes along with their instructors met the experimenter at a laboratory equipped with videotape apparatus. There were two laboratories located on different parts of the City College campus. Selection of the particular laboratory to be used that day was based on the proximity of it to the regularly scheduled classroom. All three experimental conditions (body, voice, and body & voice) were run in each of these two laboratories.

Subjects were run in groups, the number of individual present ranging from 3 to 22, with the average being 8. There were also three individual administrations. For approximately every 10 subjects that participated in the study, there was one T.V. monitor in the experimental room. To accomodate additional subjects an

additional T.V. monitor was added to the room. In one of the experimental rooms, A Shibaden 21" T.V. monitor was situated in the front left hand corner of the 8' x 12' room, and two Setchell Carlson 21" T.V. monitors were in the other room. One was situated in each corner of the 12' x 20' room. In the smaller room, subjects were seated approximately 6' in front of the screen; in the larger room they were at a minimum viewing distance of 12'. There were no obstructions between the subjects and the T.V. screens.

For those subjects in the larger experimental room, the entire procedure (across all 3 conditions) took place in the same room. Some subjects run in the smaller room (in the body & voice condition) were transferred across the hall after they completed the video questionnaire to a room with desks so that they could more easily write their responses to the MMPI.

The experimenter was present in the room during the running of the experiment. Lights were turned off and the T.V. monitors were either set with the volume control turned all the way down (body condition), the brightness control turned all the way down (voice condition), or the volume and brightness control set at normal levels to allow maximal viewing of both the audio and video tracks (body & voice condition). Thus subjects were presented a darkened blank screen in the voice condition, a picture without sound in the body condition, and both picture and sound in the body & voice condition.

Once the subjects were seated in the experimental room the following instructions were read to them:

All conditions:

"In the next few minutes you will be involved in an experiment. A person will be presented to you on tape. Please listen to it (look at it, look and listen to it) carefully." (The appropriate variant was given depending on whether it was the voice condition, the body condition, or the body & voice condition being run.)

After the videotaped presentation was over subjects were told:

"I will be handing out questionnaires and pencils, please take your time in filling them out completely."

Subjects were given as much time as necessary to fill out the questionnaire and the experimenter was continually available to answer any questions.

After completing the video questionnaire subjects were read the following instructions:

Body condition and Voice condition:

"Upon completing the questionnaire please bring all materials up to me. Within the month you will be notified as to when and where you can come to get the results of the experiment. Thank you for your cooperation."

Body & Voice condition:

"I will now be handing out a well known and widely used questionnaire designed to cover the important features of an individual's personality. You will be receiving a questionnaire booklet, answer sheet, and pencils. As I hand out these materials you will notice that on your answer sheet there is a pre-printed patient identification number. Please ignore the word patient, it does not apply to you."

Please copy this number onto your videotape questionnaire in the space provided on the first page. (Experimenter held up the video questionnaire and pointed to the appropriate place on it.) When you have done so please pass the questionnaires up to me.

"Please turn your answer sheet over so that your identification number is facing down, and fill in all the information on the left side of the answer sheet, but do not write your name on the sheet. In order to answer the questions, completely darken the circle corresponding to the answer you want. (Experimenter checked to see that this was understood.) In answering the question 'Which is the last year of school completed?', remember this is not the year you are presently in, but rather the last year of school which you have completed. (Experimenter gave an example.) When you have finished look at the test instructions printed on the cover of your questionnaire booklet."

The experimenter then read aloud as the subjects read along the Roche instructions printed on the face of the MMPI booklets. They were:

"The questions you are about to answer are designed to help you tell about your attitudes, feelings, and problems.

Some of the questions may seem puzzling or strange to you. They were designed to be used with a wide variety of people. If you are unsure about the meaning of any question, try to answer it as best you can. Do not ask for help, since the most important thing is how 'you' feel and how 'you' answer the questions.

"If a question is 'true' or mostly 'true' for you, blacken the

circle containing a 'T'. (An example was shown.) If a question is 'false' or mostly 'false' for you, blacken the circle containing an 'F'. (An example was shown.)

"Each question is numbered. Be sure the number next to the question corresponds to the number on the answer sheet. To mark your answers, 'use pencil only'. Please blacken each answer neatly within the circle (an example was shown). Erase completely any answer you wish to change. Do not make any other marks on the answer sheet or in this test booklet. Do not write your name on the answer sheet.

"Be sure to answer the questions rapidly but carefully. Do not spend too much time on one question--your first impression is best. Remember, answer the questions to the best of your ability and try to answer each question.

"Are there any questions?

"Now turn to the next page. The first question is 'I like mechanics magazines.' If the answer to that question is true, you should mark the circle on the answer sheet labeled 'T'. If it is false, mark the circle labeled 'F'. Now continue with the rest of the items in the same way." (The experimenter checked to make sure everyone understood the instruction.)

Shortly before the majority of subjects completed the MMPI the experimenter gave the following instructions:

"After completing the questionnaire please bring the booklet and answer sheet up to me. For those of you who would like feedback from your personality inventory it is necessary that you write down your name or a pen name, along with your identification number on

the sheets provided in front of the room, This is necessary because your answer sheets are anonymous. Within the month you will be notified as to when and where you can come to get the results of the experiment. Thank you for your cooperation."

This sequence, viz. presentation of the videotaped segment and completion of the video questionnaire prior to the administration of the MMPI, was not possible in all cases. There were a small number of subjects (N=6) who had the reverse occur: who completed the MMPI prior to viewing the videotaped presentation. In addition, although the majority of subjects were able to complete the MMPI during the scheduled class a few subjects needed additional time (N=8). In those cases special arrangements were made for them to return on another day to complete the personality inventory.

The instructors of all the classes that participated in the study indicated when and where feedback would be given. Only a small proportion of subjects came for feedback, but those who did were given feedback regarding the experiment on an individual basis.

TABLE 1.--Number of subjects in each condition broken down by sex and race

	Body (N=59)	Body & Voice (N=64)*	Voice (N=57)
Blacks			
Males	15	18	12
Females	<u>13</u>	<u>12</u>	<u>16</u>
	28	30	28
Whites			
Males	21	20	20
Females	<u>10</u>	<u>14</u>	<u>9</u>
	31	34	29

*59 of these subjects completed the MMPI

CHAPTER V

RESULTS

The results are organized into three sections. Section I is a summary bearing on each of the six hypotheses of the study. Section II is a detailed description of how subjects decoded the inconsistent communication on the four scales (relaxed-tense, approachability, friendliness and hostility) and the importance they placed on specific cues. Section III is a detailed description of the relationship between how subjects decoded the inconsistent communication and how they scored on the MMPI.

Section I: Summary of results by hypothesis

The first two hypotheses, that the information that was heard would reflect a relaxed message, and that the information that was seen would reflect a tense message, were clearly supported (Table 2). The analysis of variance showed a significant F ($p < .001$). The first part of the third hypothesis, that the same information when simultaneously heard and seen would be decoded to reflect the message portrayed by the body (tenseness), was also clearly supported (Table 2). The Duncan test showed a significant difference ($p < .05$). However, the second part of that hypothesis, that Black subjects would pay more attention to the body cues than White subjects, was clearly not supported. When males and females are pooled, both

TABLE 2.--Mean ratings of the three experimental groups (Body, Body & Voice, Voice) on the four scales (relaxed-tense, approachability, friendliness, and hostility). Overall means for each group, means for males and females within each group, and N's are shown.

	Body		Body & Voice		Voice	
	Males	Females	Males	Females	Males	Females
Relaxed-tense	(N=36) 1.28 1.61	(N=23) 2.13 1.61	(N=38) 0.53 1.13	(N=26) 2.00 1.13	(N=32) -0.75 -0.84	(N=25) -0.96 -0.84
Approachability	(N=36) 1.97 1.93	(N=22) 1.86 1.93	(N=38) 2.18 1.92	(N=26) 1.53 1.92	(N=32) 2.40 2.35	(N=23) 2.26 2.35
Friendliness	(N=36) 1.69 1.74	(N=22) 1.81 1.74	(N=38) 2.26 2.06	(N=26) 1.76 2.06	(N=32) 2.50 2.49	(N=23) 2.47 2.49
Hostility	(N=35) 0.65 0.55	(N=21) 0.21 0.55	(N=37) 0.16 0.23	(N=26) 0.34 0.23	(N=30) 0.25 0.18	(N=22) 0.09 0.18

Blacks and Whites decoded the inconsistent communication according to the non-verbal message, and both to virtually the same extent (Table 3). All differences between Blacks and Whites were insignificant (although as later analyses will show, some sex and race interactions were significant, as were some responses not specified in this hypothesis).

The fourth hypothesis, that subjects with a higher score on the Psychasthenia and Anxiety scales of the MMPI would rate the confederate along the calm continuum would rely on voice cues, was clearly not supported (Table 13). Scores on these MMPI scales did not significantly distinguish how subjects decoded the inconsistent communication.

The fifth hypothesis, that subjects with a higher score on the Hysteria and Repression scales of the MMPI would rate the confederate along the tense continuum, rely more on body cues, was clearly not supported (Table 13). No significant relationships were found between how subjects decoded the inconsistent communication and their scores on these MMPI scales.

The sixth hypothesis, that subjects who relied more on body cues would have different high point and two point codes compared with subjects who relied on voice cues to decode the inconsistent communication, was not supported. However, one high point code (Psychopathic Deviate) did differentiate those subjects who paid most attention to nonverbal cues.

The results are described in detail in the following two sections.

TABLE 3.--Mean ratings of the three experimental groups (Body, Body & Voice, Voice) on the four scales: relaxed-tense (RT), approachability (A), friendliness (F), and hostility (H). Overall means for Blacks and Whites as well as means for Blacks and Whites broken down by sex within each experimental group are shown. N's for each group are indicated in parentheses.

	<u>Body</u>				<u>Body & Voice</u>				<u>Voice</u>			
	Black		White		Black		White		Black		White	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Relaxed-tense	(N=15)	(N=13)	(N=21)	(N=10)	(N=18)	(N=12)	(N=20)	(N=14)	(N=12)	(N=16)	(N=20)	(N=9)
	1.06	2.07	1.42	2.20	0.44	2.16	0.60	1.85	-1.41	-1.25	-0.35	-0.44
	1.53		1.67		1.13		1.18		-1.32		-0.37	
Approachability	(N=15)	(N=12)	(N=21)	(N=10)	(N=18)	(N=12)	(N=20)	(N=14)	(N=12)	(N=14)	(N=20)	(N=9)
	2.00	1.75	1.95	2.00	2.22	1.41	2.15	1.64	2.25	2.28	2.50	2.22
	1.88		1.96		1.90		1.94		2.26		2.41	
Friendliness	(N=15)	(N=12)	(N=21)	(N=10)	(N=18)	(N=12)	(N=20)	(N=14)	(N=12)	(N=14)	(N=20)	(N=9)
	1.66	1.50	1.71	2.20	2.38	1.83	2.15	1.71	2.33	2.57	2.60	2.33
	1.59		1.87		2.16		1.97		2.46		2.51	
Hostility	(N=15)	(N=11)	(N=20)	(N=10)	(N=17)	(N=12)	(N=20)	(N=14)	(N=11)	(N=13)	(N=19)	(N=9)
	0.70	0.31	0.62	0.45	0.20	0.12	0.12	0.53	0.22	0.15	0.26	0.00
	0.53		0.56		0.17		0.29		0.18		0.17	

Section II: Results on Relaxed-Tense,
Approachability, Friendliness, and Hostility
Scales and on Importance of Specific Cues

How the three experimental groups (Body, Body & Voice, Voice) rated the confederate on the relaxed-tense, approachability, friendliness, and hostility scales is described separately for each scale below. For each scale a figure is presented showing the mean ratings of the three experimental groups and also showing the mean ratings for males and females within each experimental group, for Blacks and Whites in each group, and for Black males, Black females, White males, and White females within each group. The numerical values of these ratings are listed in Tables 2 and 3.

In addition, a table is presented for each scale which shows the results of a three way (Channel, Sex, and Race) analysis of variance, the results of Duncan Multiple Range tests for differences between the mean ratings of the three experimental groups, and also the results of Duncan Multiple Range tests for differences between the mean ratings of the experimental groups broken down by race and by sex.

Each analysis of variance showed a significant Channel effect. Since the largest difference on each scale was between the Body condition and the Voice condition, these are interpreted to be statistically significant. This result confirms the first two hypotheses, that information that is heard will reflect the appropriate message (calmness, approachability, friendliness, lack of hostility) and information that is seen will reflect the appropriate message (tenseness, lack of approachability, lack of friendliness, hostility),

and demonstrates that stable baseline conditions were in fact achieved. Information that was heard and seen (Body & Voice condition) reflected different messages depending on the scale, as is described below. No analysis of variance showed a significant Race effect, nor a significant interaction between race and any other factor. However, a significant Sex main effect was found on the relaxed-tense and approachability scales. There were no significant interactions between Sex and any other factors. The details of the results for each scale are described below.

Relaxed-tense scale

On the relaxed-tense scale (Figure 1a) the Body group rated the confederate tense (mean = +1.6), the Voice group rated the confederate relaxed (mean = -0.8), and the Body & Voice group rated the confederate tense (mean = +1.1). Table 4a shows the results of the three way (Channel, Sex, and Race) analysis of variance. Although the mean value for the Body & Voice group (Table 4b) was lower than the Body group there was no significant difference between these two means and they were both significantly different from the mean of the Voice group ($p < .05$). Thus subjects in the Body & Voice group resolved the inconsistent communication by paying attention to the nonverbal cues. This supports the first part of Hypothesis 3 which states that information that is both heard and seen will reflect the message as portrayed by the body (tenseness).

Figure 1b shows the breakdown by race. Both Blacks and Whites resolved the inconsistent communication by paying attention to the

Figure 1. Mean ratings on the Relaxed-Tense scale for the three experimental groups (a), and for the three experimental groups broken down by race (b), sex (c), and sex x race (d). The N's for the various groups are indicated in Tables 1 and 2.

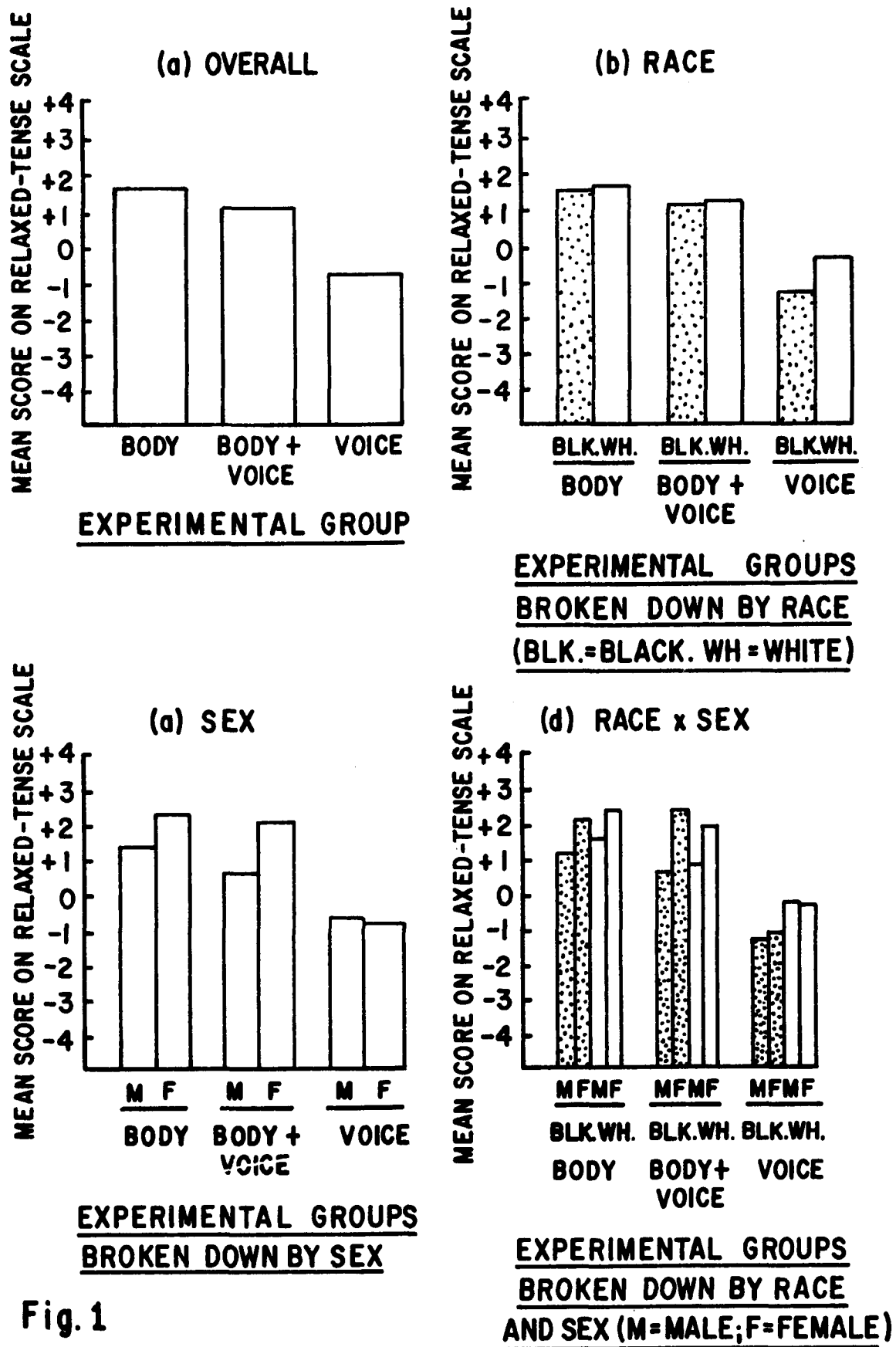


Fig. 1

TABLE 4.--Ratings of the confederate on the relaxed-tense scale:
analysis of variance and Duncan Multiple Range test results.

(a) Three-way (Channel, Sex, and Race) analysis of variance
table for ratings of the confederate on the relaxed-tense scale.

(b) Results of Duncan Multiple Range test for differences between the three experimental groups: Body (B), Body & Voice (BV) and Voice (V) on the relaxed-tense scale. The means for each experimental group are shown and the N's for each group are indicated in parentheses. Any two means not underscored by the same line are significantly different at $p < .05$.

(c) Results of Duncan Multiple Range test for differences between the three experimental groups: Body (B), Voice (V), and Body & Voice (BV) broken down into Blacks (Bl) and Whites (Wh). The means for each experimental group for each race are shown. Any two means not underscored by the same line are significantly different at $p < .05$.

(d) Results of Duncan Multiple Range test for differences between the three experimental groups: Body (B), Voice (V), and Body & Voice (BV) broken down into Males (M) and Females (F). The means for each experimental group for each sex are shown. Any two means not underscored by the same line are significantly different at $p < .05$.

4a

		<u>F</u>	<u>df</u>	<u>p</u>
RT	Channel	32.626	2/168	< .001
	Race	1.728	1/168	> .05
	Sex	8.834	1/168	< .004
	Channel x Race	1.234	2/168	> .05
	Channel x Sex	2.484	2/168	> .05
	Sex x Race	.378	1/168	> .05

4b

	Group	V	BV	V
RT	Mean	-.8421 (57)	1.1250 (64)	1.6102 (59)

4c

RT	Group	B1 V	Wh V	Wh BV	B1 EV	E1 B	Wh B
	$\bar{X}$	-1.3214	-0.3793	1.1176	1.1333	1.57357	1.6774

4d

RT	Group	FV	MV	MBV	MB	FBV	FB
	$\bar{X}$	-.9600 (25)	-.7500 (32)	.5263 (38)	1.2778 (36)	2.0000 (26)	2.1304 (23)

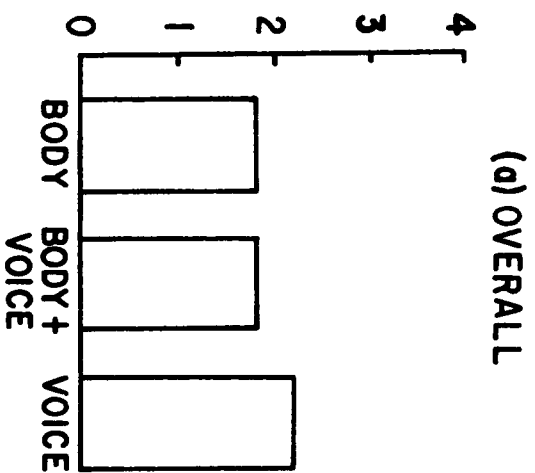
nonverbal cues. The difference between Blacks and Whites was statistically significant only in the Voice condition (-1.3 versus -0.4) as is indicated in Table 4c. Thus Blacks interpreted the Voice cues to mean that the confederate was even more relaxed than the Whites. Males (Figure 1c) tended to rate the confederate less tense than did females across all experimental groups (Sex main effect is significant at $p < .004$). Although the sex x channel interaction did not come out significant in the analysis of variance, the Duncans (Table 4d) showed a difference ($p < .05$) between the Body & Voice males (+0.53) and the Body & Voice females (+2.00) whereas males were not different from females for the other two experimental groups. However, since males in the Body & Voice condition did not differ from males in the Body condition but did differ from males in the Voice condition, and since females in the Body & Voice condition did not differ from females in the Body condition but did differ from females in the Voice condition, within each sex the inconsistent communication was decoded according to nonverbal cues consistent with the interpretation of the overall means. Figure 1d shows the breakdown of subjects by race and sex. As expected from the lack of a significant three-way interaction term in the analysis of variance, no single group showed a result different from the overall pattern.

Approachability

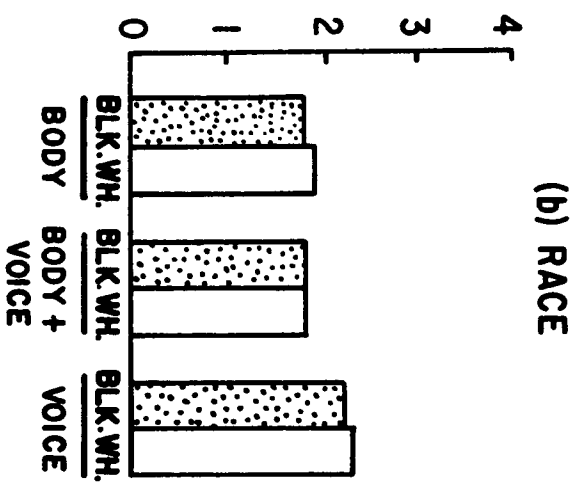
The overall results on the approachability scale (Figure 2a) followed the same pattern as the relaxed-tense scale. The Body group rated the confederate less approachable than did the Voice

Figure 2. Mean ratings on the Approachability scale for the three experimental groups (a), and for the three experimental groups broken down by race (b), sex (c), and sex x race (d). The N's for the various groups are indicated in Tables 1 and 2.

MEAN SCORE ON APPROACHABILITY SCALE

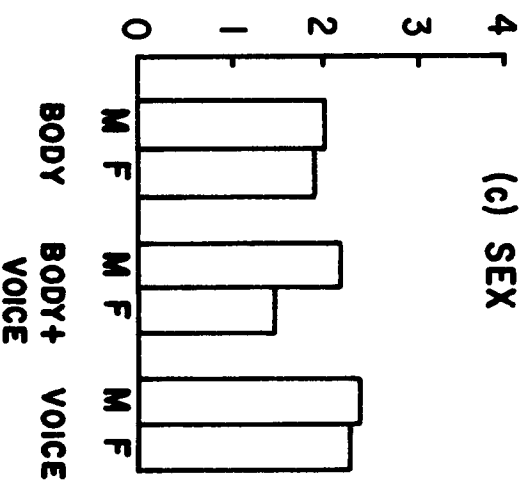


MEAN SCORE ON APPROACHABILITY SCALE



(BLK.=BLACK; WH=WHITE)

MEAN SCORE ON APPROACHABILITY SCALE



MEAN SCORE ON APPROACHABILITY SCALE

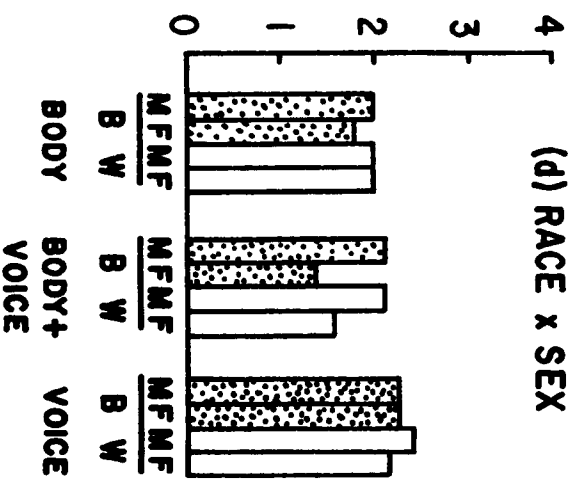


Fig. 2.

TABLE 5.--Ratings of the confederate on the approachability scale: analysis of variance and Duncan Multiple Range test results.

(a) Three-way (Channel, Sex, and Race) Analysis of Variance Table for ratings of the confederate on the Approachability scale.

(b) Results of Duncan Multiple Range test for differences between the three experimental groups: Body (B), Voice (V), and Body & Voice (BV) on the Approachability scale. The means for each experimental group are shown and the N's for each group are indicated in parentheses. Any two means not underscored by the same line are significantly different at $p < .05$.

(c) Results of Duncan Multiple Range test for differences between the three experimental groups: Body (B), Voice (V), and Body & Voice (BV) on the Approachability scale broken down into Blacks (Bl) and Whites (Wh). The means for each experimental group for each race are shown.

(d) Results of Duncan Multiple Range test for differences between the three experimental groups broken down into Males (M) and Females (F). The means for each experimental group for each sex are shown. Any two means not underscored by the same line are significantly different at $p < .05$.

5a

		<u>F</u>	<u>df</u>	<u>p</u>
A	Channel	6.345	2/165	<.003
	Race	.616	1/165	>.05
	Sex	7.660	1/165	<.006
	Channel x Race	.031	2/165	>.006
	Channel x Sex	2.708	2/165	>.05
	Sex x Race	.245	1/165	>.05

5b

	Group	BV	B	V
A	Mean	1.9219 (64)	1.9310 (58)	2.3455 (55)

5c

A	Group	B1 B	B1 BV	Wh BV	Wh B	B1 V	Wh V
	$\bar{X}$	1.8889	1.9000	1.9412	1.9677	2.2692	2.4138

5d

A	Group	FBV	FB	MB	MBV	FV	MV
	Mean	1.5385 (26)	1.8636 (22)	1.9722 (36)	2.1842 (38)	2.2609 (23)	2.4063 (32)

group (mean ratings of 1.9 versus 2.3) and the Body & Voice group rated the confederate the same as the Body group (mean = 1.9). Thus subjects in the Body & Voice group resolved the inconsistent communication by paying attention to the nonverbal cues. The analysis of variance table for the approachability scale is shown in Table 5a. Duncan Multiple Range Tests (Table 5b) confirmed the lack of a difference between the Body and the Body & Voice groups, and also the significance of the difference between these two groups and the Voice group ($p < .05$).

Figure 2b shows the breakdown by race. There were no differences between Blacks and Whites in any of the experimental groups, consistent with the lack of a significant race main effect or interaction term in the analysis of variance (Table 5a). Examination of the means for Blacks and the means for Whites across experimental groups shows that each race interpreted the inconsistent communication according to the nonverbal message. However, the Duncan Multiple Range test (Table 5c) failed to confirm a statistical difference between Blacks in the Body & Voice group and Blacks in the Voice group.

Males tended to rate the confederate (Figure 2c) as more approachable across all experimental groups (Sex main effect is significant at $p < .006$, see Table 5). Although the sex x channel interaction did not come out significant in the analysis of variance, the Duncans (Table 5d) showed a difference between the Body & Voice males and the Body & Voice females ($p < .05$) which is analogous to the results found on the relaxed-tense scale. Males were not

different from females in the other two experimental groups. Females in the Body & Voice group did not differ from females in the Body group (Table 9a) but they did differ from females in the Voice condition; males in the Body & Voice group did not differ from males in the Body group, and also did not differ from males in the Voice group. Thus, for males, the results on the approachability scale do not confirm that the inconsistent communication was decoded according to nonverbal cues. However, examination of Figure 2d reveals that this lack of consistency with the overall result is specifically due to the Black males. Black males in the Body & Voice group rated the confederate almost identically with Black males in the Voice group (2.25 versus 2.22). However, White males in the Body & Voice group rated the confederate differently from White males in the Voice group (means of 2.15 versus 2.50) and close to the mean rating of White males in the Body group (1.95). Thus the results for White males are the same as for the overall results. However, a t-test between the ratings for White males in the Body & Voice versus Voice groups did not show a significant difference ($t = 1.47$; $df = 38$, $p < .10$). Thus all of the group means except for Black males followed the overall pattern of results on the approachability scale.

Friendliness

On the friendliness scale (Figure 3a) all groups were significantly different from each other. Table 6a shows the analysis of variance table and Table 6b the results of the Duncan test. The Body & Voice group (mean = 2.1) rated the confederate midway between

Figure 3. Mean ratings on the Friendliness scale for the three experimental groups (a), and for the three experimental groups broken down by race (b), sex (c), and sex x race (d). The N's for the various groups are indicated in Tables 1 and 2.

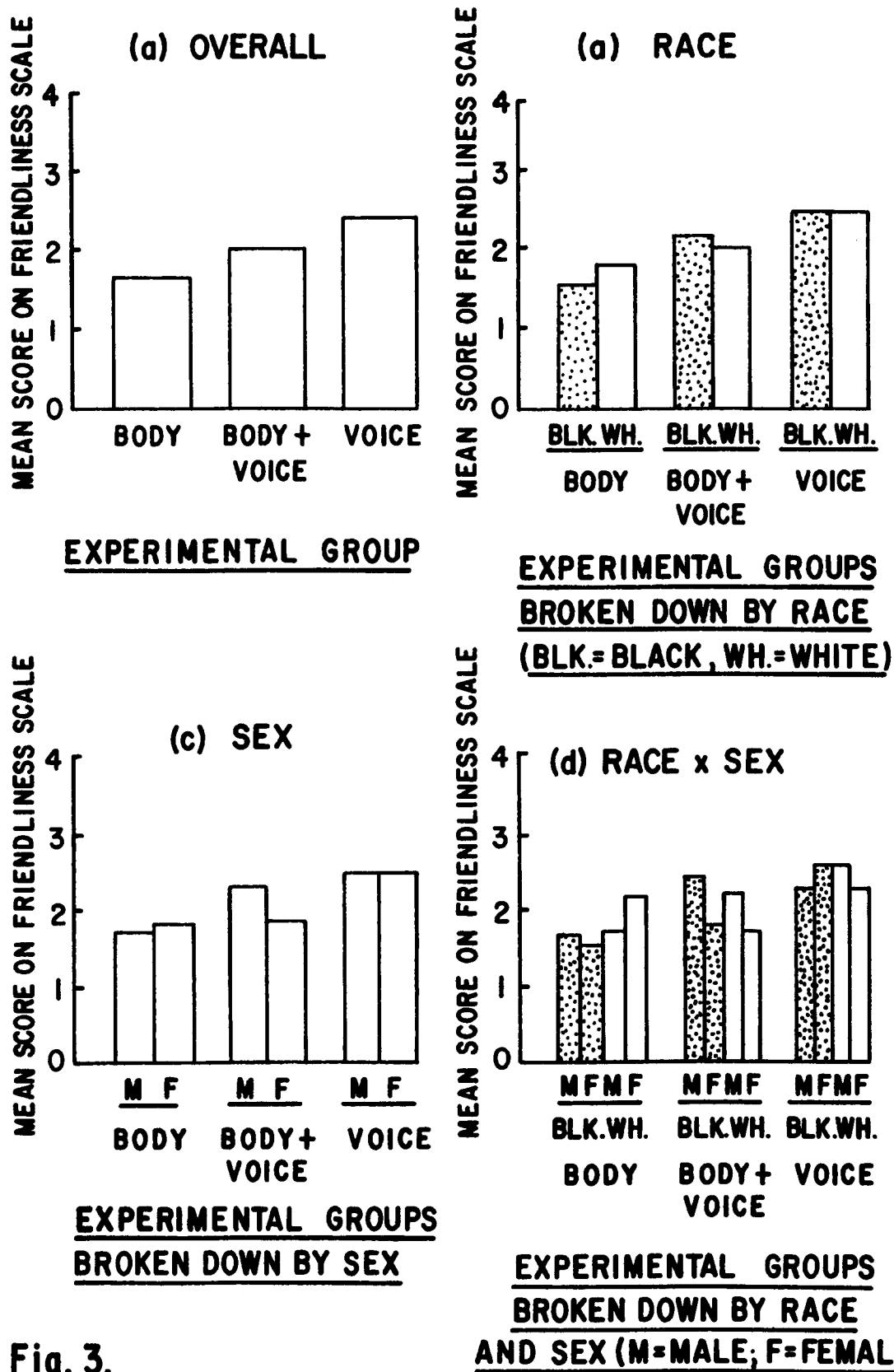


Fig. 3.

TABLE 6.--Ratings of the confederate on the friendliness scale: analysis of variance and Duncan Multiple Range test results.

(a) Three-way (Channel, Sex, and Race) analysis of variance table for ratings of the confederate on the Friendliness scale.

(b) Results of Duncan Multiple Range tests for differences between the three experimental groups: Body (B), Body & Voice (BV), and Voice (V), on the Friendliness scale. The means for each experimental group are shown and the N's for each group are indicated in parentheses. Any two means not underscored by the same line are significantly different at $p < .05$. Any two means underscored by the same line are not significantly different ($p > .05$).

(c) Results of Duncan Multiple Range tests for differences between the three experimental groups: Body (B), Body & Voice (BV), and Voice (V), broken down into Blacks (Bl) and Whites (Wh) for the Friendliness scale. The means for each group are shown. Any two means not underscored by the same line are significantly different at $p < .05$. Any two means underscored by the same line are not significantly different ($p > .05$).

(d) Results of Duncan Multiple Range tests for differences between the three experimental groups: Body (B), Body & Voice (BV), and Voice (V), broken down into Males (M) and Females (F). The means for each experimental group are shown and the N's for each group are indicated in parentheses. Any two means not underscored by the same line are significantly different at $p < .05$. Any two means not underscored by the same line are not significantly different ($p > .05$).

6a

		<u>F</u>	<u>df</u>	<u>p</u>
F	Channel	10.737	2/165	<.001
	Race	.084	1/165	>.05
	Sex	1.175	1/165	>.05
	Channel x Race	1.218	2/165	>.05
	Channel x Sex	2.280	2/165	>.05
	Sex x Race	.144	1/165	>.05

6b

	Group	B	BV	V
F	Mean	1.7414 (58)	2.0265 (64)	2.4909 (55)

6c

Group	Bl B	Wh B	Wh BV	Bl BV	Bl V	Wh V
$\bar{X}$	1.5926	1.8710	1.9706	2.1667	2.4615	2.5172

6d

Group	MB	FBV	FB	MBV	FV	MV
Mean	1.6944 (36)	1.7692 (26)	1.8182 (22)	2.2632 (38)	2.4783 (23)	2.500 (32)

the Body group (mean = 1.7) and the Voice group (mean = 2.5), Blacks (Figure 3b) did not differ from Whites within any of the experimental groups. Between experimental groups, however, whereas Whites in the Body & Voice group rated the confederate close to Whites in the Body group, Blacks in the Body & Voice group rated the confederate approximately midway between the Body group and the Voice group. The Duncan tests (Table 6c) confirmed the significance of the difference between Blacks in the Body & Voice group and Blacks in the Body group but did not confirm the differences between Blacks in the Body & Voice group and Blacks in the Voice group. Whites in the Body & Voice group did not significantly differ from Whites in the Body group, but did significantly differ from Whites in the Voice group.

As with the other scales, females in the Body & Voice group rated the confederate more towards Body than Voice cues, i.e. less friendly. Whereas females in the Body & Voice group interpreted the inconsistent communication almost identically with the Body group (mean of 1.76 versus 1.81), males interpreted the communication approximately midway between ratings for Body group and Voice group (mean of 2.26 for males in the Body & Voice group versus 1.69 for males in Body group and 2.50 for males in Voice group). The Duncans (Table 6d) indicate that for males Body & Voice differs from Body, but difference between Body & Voice and Voice did not reach statistical significance. For females, Body & Voice was not different from Body but was from Voice

As was true for the approachability scale, these race and sex

differences become clearer when examining the race by sex breakdown (Figure 3d and Table 3). It can be seen that Black males in the Body & Voice group decode the inconsistent communication virtually identically with Black males in the Voice group (2.38 versus 2.33). White males in the Body & Voice group score midway between White males in the Body and in the Voice groups (0.44 greater than the Body group and 0.45 less than the Voice group). Black females in the Body & Voice group (mean = 1.83) score closer to Black females in the Body group (mean = 1.50) than those in the Voice group (mean = 2.57), and thus appear to decode the inconsistent communication according to nonverbal cues. White females in the Body condition and White females in the Voice condition rate the confederate virtually the same (2.20 versus 2.33). Since the baseline condition which requires a difference between these two groups was not met, the friendliness rating of the White females in the Body & Voice condition is therefore not interpretable.

Hostility

The overall result on the hostility scale (Figure 4a) is the opposite of the other scales. The analysis of variance table is shown in Table 7a. On this scale, the Body & Voice group (mean = 0.23) rated the confederate virtually the same as the Voice group (mean = 0.18) and different from the Body group (mean = 0.55). The Duncan tests (Table 7b) confirm that the means for the Body & Voice and Voice group are not different, but that both are different from the mean for the Body group. No race differences (Figure 4b)

Figure 4. Mean ratings on the Hostility scale for the experimental groups (a), and for the three experimental groups broken down by race (b), sex (c), and race x sex (d). The N's for the various groups are indicated in Tables 1 and 2.

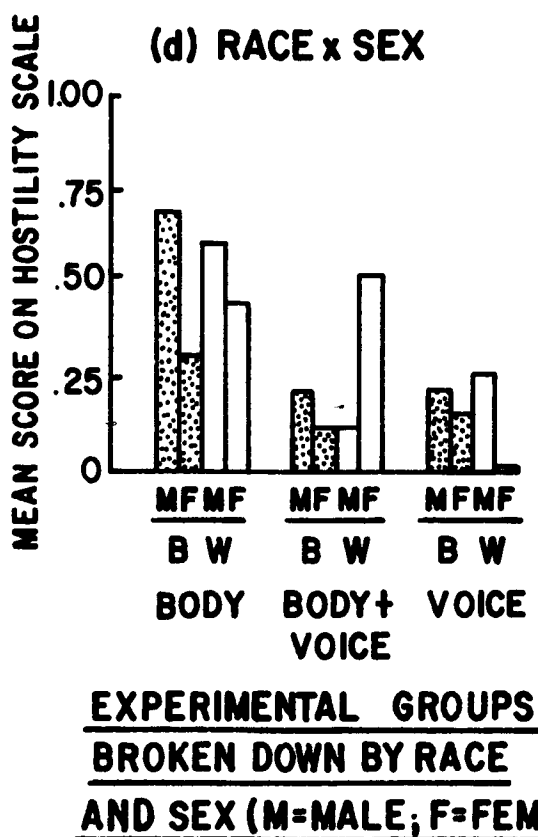
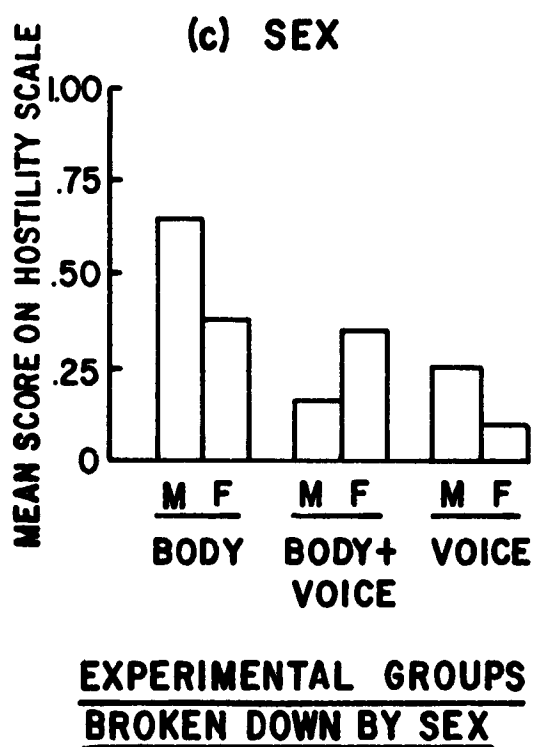
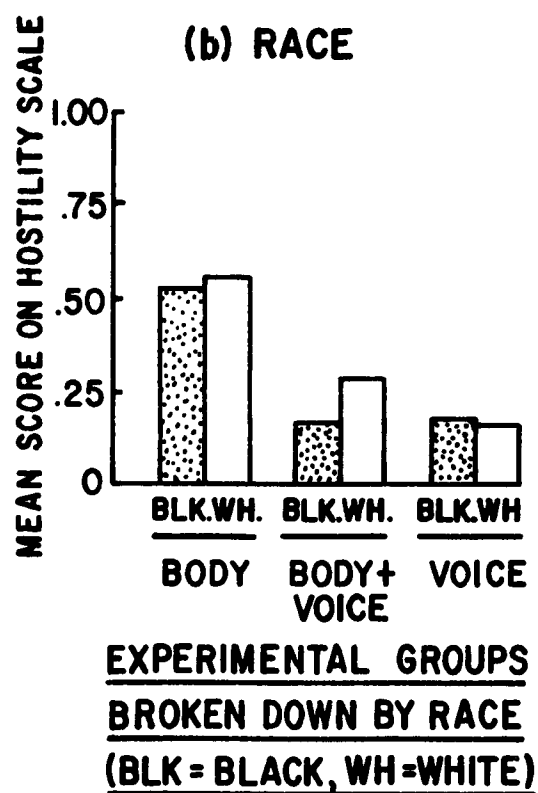
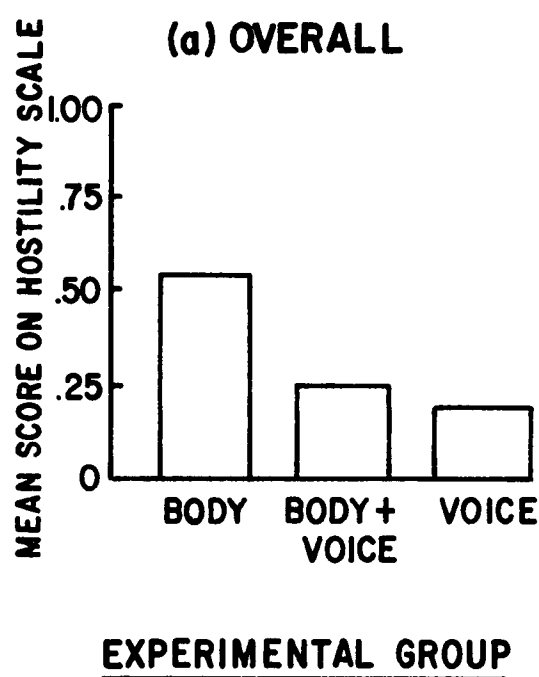


Fig. 4.

TABLE 7.--Ratings of the confederate on the hostility scale:
analysis of variance and Duncan Multiple Range test results.

(a) Three-way (Channel, Sex, and Race) Analysis of Variance
Table for ratings of the confederate on the Hostility scale.

(b) Results of Duncan Multiple Range tests for differences between the three experimental groups: Body (B), Body & Voice (BV), and Voice (V) on the Hostility scale. The means for each experimental group are shown and the N's for each group are indicated in parentheses. Any two means not underscored by the same line are significantly different at $p < .05$. Any two means underscored by the same line are not significantly different.

(c) Results of Duncan Multiple Range tests for differences between the three experimental groups: Body (B), Body & Voice (BV), and Voice (V), broken down into Blacks (Bl) and Whites (Wh). The means for each group are shown. Any two means not underscored by the same line are significantly different at $p < .05$.

(d) Results of Duncan Multiple Range tests for differences between the three experimental groups broken down into Males (M) and Females (F). The means for each experimental group are shown and the N's are indicated in parentheses. Any two means not underscored by the same line are significantly different at $p < .05$.

7a

		<u>F</u>	<u>df</u>	<u>p</u>
H	Channel	6.157	2/159	<.003
	Sex	.541	1/159	>.05
	Race	.236	1/159	>.05
	Channel x Sex	2.230	2/159	>.05
	Channel x Race	.299	2/159	>.05
	Sex x Race	1.061	1/159	>.05

7b

	Group	V	BV	B
H	Mean	.1827 (52)	.2381 (63)	.5536 (56)

7c

H	Group	B1 BV	Wh V	B1 V	Wh BV	B1 B	Wh B
	$\bar{X}$	.1724	.1786	.1875	.2941	.5385	.5667

7d

H	Group	FV	MBV	MV	FBV	FB	MB
	Mean	.0909 (22)	.1622 (37)	.2500 (30)	.3462 (26)	.3810 (21)	.6571 (35)

occurred within experimental groups. Between groups, both Blacks and Whites appeared, according to mean ratings, to decode the inconsistent communication according to Voice cues (Figure 4b). Whereas the Duncan tests (Table 6c) confirmed the difference between ratings for the Body & Voice group for Blacks and ratings for the Body group for Blacks, it did not confirm the significance of that difference for Whites. The White Body & Voice group rating was not significantly different either from the White Body or White Voice groups.

Whereas males in the Body & Voice group (Figure 4c) rated the confederate almost the same as males in the Voice group (0.16 versus 0.25) and different from males in the Body group (mean = 0.65), females did the opposite. Females in the Body & Voice group rated the confederate almost the same as females in the Body group (0.34 versus 0.38) and different from females in the Voice group (mean = 0.09). However, whereas the Duncan tests (Table 6d) support the significance of the difference between Body and the other groups for males, it showed no significance between experimental groups for females.

The sex x race breakdown (Figure 4d) reveals that White males, Black males, and Black females in the Body & Voice group decoded the inconsistent communication according to Voice cues, whereas White females decoded it according to Body cues. The difference between White females in the Body & Voice group and White females in the Voice group was statistically significant ($t = 2.40$, $df = 21$, $p < .05$).

Importance of Specific Cues

In order to determine which specific cues were paid most attention to when resolving the inconsistent communication, the Body & Voice group (as well as the two control groups, Body, and Voice) indicated which cues they thought they had paid most attention to in forming their opinion on the confederate. The mean results for each of the experimental groups broken down by race and by sex are shown in Tables 8 and 9 respectively.

Subjects in the Body group (Table 8) paid most attention to movement of the upper extremities (mean = 3.4); facial expression (mean = 2.9) was the cue which received the second most attention. The ratings for these two cues were significantly different from each other. The analysis of variance (Table 10a) "cue" main effect was $F = 25.12$; $p < .001$; and Duncan comparison (Table 10b) was significant at $p < .05$. Facial expression was rated significantly differently from the third most important cue--movement of lower extremities (mean = 2.1). Eye contact was not rated significantly different from movement of lower extremities. Whereas Blacks and Whites paid most attention to movement of upper extremities (3.46 versus 3.41), and although facial expression was the second most important cue for both races, Whites paid significantly less attention to movement of lower extremities and to eye contact than did Blacks. Mean differences between males and females (Table 9) were not significant. Duncan tests (Table 10d) showed no significant differences between ratings of males and females for any cue.

TABLE 8.--Mean ratings for the three experimental groups (Body, Voice, and Body & Voice) on the importance different sources of verbal and non-verbal communication played in their evaluation of the confederate. Overall mean ratings (All) for the three experimental groups are shown as well as the mean ratings for the groups broken down into Blacks (B) and Whites (W).

Group		Verbalizations	Tone of Voice	Eye Contact	Facial Expression	Movement of the Upper Extremities	Movement of the Lower Extremities
	All			1.854	2.923	3.436	2.091
Body	B			2.300	2.667	3.462	2.269
	W			1.536	3.143	3.414	1.931
	All	2.720	3.000				
Voice	B	2.810	2.957				
	W	2.655	3.034				
	All	2.460	2.688	1.857	2.095	2.906	2.250
Body & Voice	B	2.379	2.833	2.069	2.207	2.800	2.033
	W	2.529	2.588	1.676	2.000	2.971	2.441

TABLE 9.--Mean ratings for the three experimental groups (Body, Voice, and Body & Voice) on the importance different sources of verbal and non-verbal communication played in their evaluation of the confederate. Overall mean ratings (All) for the three experimental groups are shown as well as mean ratings for the groups broken down into Males (M) and Females (F).

Group		Verbalizations	Tone of Voice	Eye Contact	Facial Expression	Movement of the Upper Extremities	Movement of the Lower Extremities
	All	. . .	. . .	1.854	2.923	3.436	2.091
Body	M	. . .	. . .	1.719	2.912	3.353	1.192
	F	2.125	3.125	3.571	2.381		
	All	2.720	3.000	. . .	. . .	. . .	. . .
Voice	M	2.643	2.966	. . .	. . .	. . .	. . .
	F	2.818	3.043	. . .	. . .	. . .	. . .
	All	2.460	2.688	1.857	2.095	2.906	2.250
Body & Voice	M	2.486	2.526	1.632	1.947	2.737	2.079
	F	2.423	2.932	2.200	2.320	3.154	2.500

TABLE 10.--Ratings of importance of cues for the Body group: analysis of variance and Duncan Multiple Range test results.

(a) Three-way (Cue, Sex, and Race) Analysis of Variance Table for ratings of importance of cues for Body group.

(b) Results of Duncan Multiple Range Test for differences between importance of cues for the Body group. The mean rating of importance of each cue is indicated. Any two means not underscored by the same line are significantly different at $p < .05$.

(c) Results of Duncan Multiple Range Test for differences between importance of cues broken down by race (Blacks and Whites). The mean rating of importance of each cue for Blacks and for Whites is indicated. Any two means not underscored by the same line are significantly different at $p < .05$.

(d) Results of Duncan Multiple Range Test for differences between importance of cues broken down by sex for the Body group. The mean rating of importance of each cue for Males and for Females is indicated. Any two means not underscored by the same line are significantly different at $p < .05$.

10a

		<u>F</u>	<u>df</u>	<u>p</u>
Body	Importance of Cue	25.122	3	<.001
	Sex	1.388	1	>.05
	Race .534	.534	1	>.05
	Importance x Sex	.157	3	>.05
	Importance x Race	2.758	3	<.05
	Sex x Race	1.388	1	>.05
	Sex x Race x Importance	.147	3	>.05

10b

	Cue	Eye	Lower Extremities	Facial	Upper Extremities
Body	$\bar{X}$	1.8540	2.1250	3.0210	3.3960

10c

Body

Cue	WE	WL	BE	BL	BF	WF	WU	BU
$\bar{X}$	1.5360	1.8930	2.3000	2.4500	2.8500	3.1430	3.3930	3.4000



10d

Body

Cue	ME	ML	FE	FL	MF	FF	MU	FU
$\bar{X}$	1.7190	1.9690	2.1250	2.4380	2.9690	3.1250	3.4440	3.5000



Subjects in the Voice group (Table 8) paid more attention to tone of voice (mean = 3.0) than to verbalizations (mean = 2.7). The significance of this difference was confirmed by an analysis of variance main effect (Table 11a) for cue of $F = 5.05$, $p < .03$. There were no significant differences between Blacks and Whites for each of the cues (Table 11b), nor between males and females (Table 11c) since neither the main effects of sex, nor of race, nor any of the interactions in the analysis of variance were significant.

Subjects in the Body & Voice group, when decoding the inconsistent communication, paid most attention to movement of the upper extremities (mean = 2.9) and second most attention to tone of voice (mean = 2.7). Thus subjects paid most attention in decoding the inconsistent communication to a verbal as well as a nonverbal cue. The ratings of importance of these two cues were not significantly different from each other since the analysis of variance "cue" main effect (Table 12a) was $F = 8.16$, $p < .001$; but Duncan comparison (Table 12b) showed $p > .10$. However, the Duncan comparisons showed that upper extremities was significantly different from the third most important cue--verbalizations ($p < .05$); and that tone of voice was significantly different from the fourth most important cue--movement of the lower extremities ($p < .05$).

The analysis of variance did not show a significant race main effect ($F = .021$; $p > .10$), nor did the Duncan comparisons (Table 13c) reveal differences between Blacks and Whites for rating of importance of any of the cues except movement of lower extremities. Whites rated movement of lower extremities significantly more important (mean = 2.4)

TABLE 11.--Ratings of importance of cues for the Voice group:
analysis of variance and Duncan Multiple Range test results.

(a) Three-way (Cue, Sex, and Race) analysis of variance
Table for ratings of importance of cues for Voice group.

(b) Results of Duncan Multiple Range test for differences
between importance of cues broken down by race (Blacks and Whites).
The mean rating of importance of each cue for Blacks and for Whites
is indicated.

(c) Results of Duncan Multiple Range Test for differences
between importance of cues broken down by sex for the Voice group.
The mean rating of importance of each cue for Males and for Females
is indicated. Any two means not underscored by the same line are
significantly different at $p < .05$.

11a

	<u>F</u>	<u>df</u>	<u>p</u>
Importance of Cue	5.051	1	< .03
Sex	.234	1	> .05
Race	.150	1	> .05
Voice Importance x Sex	.125	1	> .05
Importance x Race	.046	1	> .05
Sex x Race	.314	1	> .05
Sex x Race x Importance	.017	1	> .05

11b

	Cue	MV	FV	MT	FT
Voice	$\bar{X}$	2.6430	2.8180	3.0360	3.0910

11c

	Cue	WV	BV	WT	BT
Voice	$\bar{X}$	2.6550	2.8100	3.0340	3.0950

TABLE 12.--Ratings of importance of cues for the Body & Voice group:
analysis of variance and Duncan Multiple Range test results.

(a) Three-way (Cue, Sex, and Race) Analysis of Variance Table
for ratings of importance of cues for Body and Voice group.

(b) Results of Duncan Multiple Range Test for differences
between importance of each cue for the Body & Voice group. The
mean rating of importance of each cue is indicated. Any two means
not underscored by the same line are significantly different at $p < .05$.

(c) Results of Duncan Multiple Range Test for differences
between importance of cues broken down by race (Blacks and Whites)
for the Body & Voice group. The mean rating of importance of each
cue for Blacks and for Whites is indicated. Any two means not
underscored by the same line are significantly different at $p < .05$.

(d) Results of Duncan Multiple Range Test for differences
between importance of cues broken down by sex for the Body & Voice
group. The mean rating of importance of each cue for Males and
for Females is indicated. Any two means not underscored by the
same line are significantly different at $p < .05$.

12a

	<u>F</u>	<u>df</u>	<u>p</u>
Importance of Cue	8.156	5	<.001
Sex	6.000	1	<.02
Race	.021	1	>.05
Importance x Sex	.814	5	>.05
Importance x Race	1.653	5	>.05
Sex x Race	.030	1	>.05
Sex x Race x Importance	.377	5	>.05

Body &
Voice

12b

Cue	Eye	Facial Expression	Lower Ex - tremities	Verbaliza- tions	Tone of Voice	Upper Ex - tremities
$\bar{X}$	1.8230	2.0810	2.1940	2.4680	2.6770	2.8710

Body &
Voice

12c

Cue x Race

Body & Voice	Cue	WE	BL	BE	WF	BF	BV	WL	WV	WT	BU	BT	WU
	$\bar{X}$	1.676	1.893	2.000	2.000	2.179	2.393	2.441	2.529	2.588	2.750	2.786	2.971

12d

Cue x Sex

Body & Voice	Cue	ME	MF	ML	FE	FF	FV	FL	MV	MT	MU	FT	FU
	$\bar{X}$	1.568	1.919	2.027	2.200	2.320	2.440	2.440	2.486	2.514	2.703	2.920	3.120

than did Blacks ($M = 1.9$) at $p < .05$. It is interesting to note that in the Body condition the opposite occurred--Blacks rated movement of lower extremities significantly more important than did Whites. Thus the importance of this cue varied as a function of whether or not the observer is faced with an inconsistent communication. Males (Table 10b) assigned lower scale values of importance to the cues than did Females, although the order of importance of cues (Table 13d) was virtually the same for each sex. The "Sex" main effect in the analysis of variance was $F = 6.00$; $p < .02$; whereas the sex x cue interaction was $F = 0.81$; $p > .10$.

Section III: MMPI Correlates of how Subjects Decoded the Inconsistent Communication

The fourth hypothesis, that subjects with a higher score on the Psychasthenia (PT) and Anxiety (A) scales of the MMPI would decode the confederate's communication according to the verbal channel, predicts a negative correlation between rating on relaxed-tense scale and score on these MMPI scales. The fifth hypothesis, that subjects with a higher score on the Hysteria (HY) and Repression (R) scales of the MMPI would decode the confederate's communication according to the nonverbal channel, predicts a positive correlation between rating on relaxed-tense scale and score on these two MMPI scales. Since the MMPI establishes internal validity checks, all results were analyzed two ways; one employing the validity cutoff criteria, and one without employing the validity cutoffs. In order for a subject's MMPI to meet these validity criteria, his score on

the L scale had to be less than or equal to 70; and his score on the F scale had to be less than or equal to 80; and his score on the K scale had to be less than or equal to 70. Of the 59 subjects in the Body & Voice group who completed the MMPI, 51 satisfied the validity criteria of the test. The 8 subjects who were excluded by use of validity cutoffs consisted of six Black males, one Black female, and one White female. It should be noted that Black males as a group decoded the inconsistent communication the same as all other groups on the relaxed-tense scale. Table 13 shows the correlations between rating on relaxed-tense scale and score on each of the four MMPI scales, both with and without employment of validity cutoffs. None of these correlations were statistically significant; they were all very close to zero. However, examination of the scatter-plots suggested the possibility of a nonlinear trend. An assessment of the significance of deviations from linearity (Table 14), however, failed to support this observation. Therefore the fourth and fifth hypotheses were not supported.

A post-hoc exploration of the apparent nonlinear relationships was carried out to determine whether any clues could be found on the four MMPI scales mentioned in the hypotheses, as well as for any other MMPI scales that appeared to be related to ratings on the relaxed-tense scale. These post-hoc analyses are described in a later section.

The sixth hypothesis predicts that subjects who rely more on body cues will have a different high-point code from subjects who rely more on voice cues. Figure 5 portrays the mean relaxed-tense scale ratings of subjects whose most elevated MMPI scales (Hi-point

TABLE 13.--Pearson correlation coefficients for subjects in the Body & Voice group between score on Relaxed-Tense scale and four MMPI scales: psychasthenia, anxiety, hysteria, and repression. The first row shows correlation coefficients for subjects who met MMPI criteria (N=51). The bottom row shows correlation coefficients for all subjects regardless of whether they met validity criteria (N=59).

	Psychasthenia	Anxiety	Hysteria	Repression
Overall with validity	.0459	-.1128	-.0691	.0324
Overall without validity cuts	-.1483	-.1550	-.1091	-.1306

TABLE 14.--F-values for deviations from linearity on six MMPI scales: depression (D), hysteria (Hy), psychopathic deviate (PD), psychasthenia (PT), anxiety (A), and repression (R). The top chart shows values computed using all subjects who met validity criteria (N=51). The bottom chart shows values computed using all subjects regardless of whether they met validity criteria (N=59).

With Validity Criteria		
MMPI Scale	F Value for Deviations from Linearity	P
D	.66	.708
Hy	.47	.851
PD	.26	.966
PT	.55	.796
A	1.01	.438
R	.75	.630
Without Validity Criteria		
MMPI Scale	F Value for Deviations from Linearity	P
D	.55	.793
Hy	.41	.893
PD	.77	.620
PT	1.00	.445
A	1.54	.176
R	1.54	.174

Figure 5. Mean ratings on Relaxed-Tense scale for groups of subjects with different MMPI High-point codes. High-point codes were determined using MMPI validity criteria (broken bars) and were also determined without imposing validity criteria (solid bars). N's are indicated in parentheses below each group.

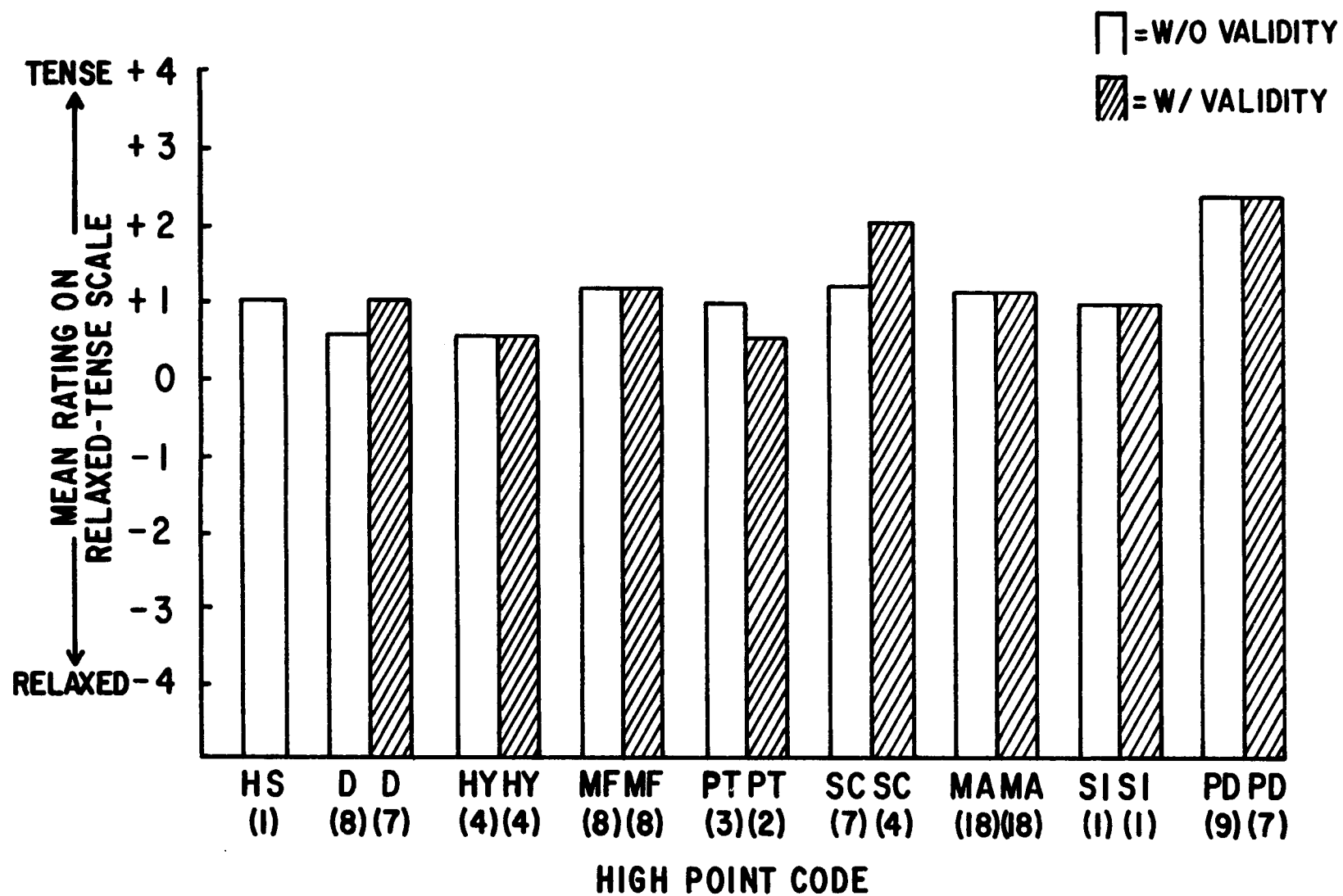


Fig. 5

codes) are shown on the X-axis. The number of subjects in each Hi-point category is listed on the graph. Table 15 a and 15b are the repeated measures analysis of variance tables, for with and without validity cutoffs respectively. It can be seen (Figure 5) that the subjects whose most elevated MMPI scale was Psychopathic Deviate (PD) rated the confederate most tense (most towards Body cues). Although the analysis of variance main effect of Hi-point code did not reach statistical significance (Table 15a, 15b), the Duncan tests showed a significant difference ($p < .01$) between PD and all other scales for the without validity cutoff data. The Duncans showed no differences between Hi-point codes for the with validity cutoff data. It should be noted that the means on the PD scale regardless of validity cutoffs were identical and the imposition of validity cutoffs had the effect of lowering the N (from 9 to 7) and raising the standard deviation (from .88 to .98) for the PD group. Thus the same pattern of result was found for both sets of data. There were no interactions between race and sex and high point code. There was a significant Sex main effect.

Table 16 lists the PD scores for each of the nine subjects in the PD Hi-point group to determine whether these subjects showed pathological scores on this scale. Only one individual scored clearly in the abnormal range (81). Thus this result holds for individuals who show the personality characteristic of the psychopathic deviant as opposed to individuals who show pathology along that dimension.

Of the subjects in the Body & Voice group only 13 paid

TABLE 15.--Three-way (High-point code, Sex, and Race) Analysis of Variance table for ratings of the confederate on the Relaxed-Tense scale. Table 15a shows results using subjects who met MMPI validity criteria. Table 15b shows results using all subjects regardless of whether they met MMPI validity criteria.

15a

		<u>F</u>	<u>df</u>	<u>p</u>
RT	High point Code	.746	7/29	>.05
	Race	.118	1/29	>.05
	Sex	6.496	1/29	<.02
	High point x Race	.541	6/29	>.02
	High point x Sex	.772	3/29	>.05
	Race x Sex	1.258	1/29	>.05

15b

		<u>F</u>	<u>df</u>	<u>p</u>
RT	High point Code	.745	1/35	>.05
	Race	.014	1/35	>.02
	Sex	6.698	1/35	<.02
	High point x Race	.409	6/35	>.05
	High point x Sex	1.163	4/35	>.05
	Race x Sex	1.234	1/35	>.05

TABLE 16.--Score on the psychopathic deviate (PD) scale for each of the nine subjects with a PD High-point code.

Subject	PD Score
1	60
2	67
3	67
4	71
5	71
6	64
7	69
8	71
9	81

attention to Voice cues (rated the subject relaxed). Since these subjects did not separate themselves out by Hi-point code the sixth hypothesis was not supported. Interestingly, although these 13 subjects showed no MMPI characteristic in common, nor a common racial trait, 12 were males and only 1 was a female.

In order to determine whether the standardized MMPI means were indicative of the means obtained in the present sample, the mean values were computed for each of the groups and sub-groups of the present study. Table 17 shows the mean scores on each of the MMPI scales for the overall group, and for Blacks, Whites, Males, and Females, with and without validity criteria imposed. The means are somewhat higher than those found for the normative group.

An analysis of "Two-point codes" (the two highest scales of each individual) revealed that there were 33 different codes attained by the set of 59 subjects. Since no code except one had an N greater than 4, an analysis of these results by statistical techniques was not possible. The one code (MA, PD) had an N=7, and the mean rating of the confederate on the relaxed-tense scale was +1.57 with a range of -3 to +4. This Two-point code was therefore not indicative of a style of decoding different from the overall results. The dispersion of scores suggests that Two-point codes are indeed not predictive of style of decoding of the inconsistent communication.

Post-hoc analysis of MMPI correlations

Since no correlations were found to exist between the four scales of the MMPI mentioned in the hypotheses and rating of con-

TABLE 17.--Mean ratings on the 10 clinical MMPI scales; hypochondriasis (HS), depression (D), hysteria (Hy), psychopathic deviate (PD), masculinity-femininity (MF), paranoia (PA), psychasthenia (PT), schizophrenia (SC), hypomania (MA), and social introversion (SI). Overall means (All) as well as means for Blacks (B), Whites (W), Males (M), and Females (F) are shown. The top chart was computed using all subjects regardless of whether they met MMPI validity criteria (N=59). The bottom chart was computed only using subjects who met MMPI validity criteria (N=51).

	HS	D	HY	PD	MF	PA	PT	SC	MA	SI
All	54.085	59.712	57.475	62.356	58.898	56.288	59.153	63.661	62.847	51.763
B	56.107	59.429	57.786	63.036	58.036	56.429	59.964	66.071	64.250	51.357
W	52.258	59.968	57.194	61.742	59.677	56.161	58.419	61.484	61.581	52.129
M	56.212	64.848	58.364	63.242	67.182	57.545	63.879	67.697	63.030	54.455
F	51.385	53.192	56.346	61.231	48.385	54.692	53.194	58.538	62.615	48.346
All	53.039	58.392	56.902	61.333	58.314	54.863	57.255	61.255	62.765	51.196
B	54.143	55.905	56.762	61.190	56.667	53.143	55.571	61.048	64.286	49.667
W	52.267	60.133	57.000	61.433	59.467	56.067	58.433	61.400	61.700	52.267
M	54.407	62.815	57.667	61.741	67.889	55.222	60.963	63.741	62.444	53.593
F	51.500	53.417	56.042	60.875	47.542	54.458	53.038	58.458	63.125	48.500

federate on the relaxed-tense scale (Table 13), an exploration of other MMPI scales was carried out. No significant correlation coefficients were found to exist for any of the MMPI scales. However, when the results were analyzed separately for Blacks, Whites, Males, and Females, some significant correlations were found. These were for the Depression (D), Social Introversion (SI), and Repression (R) scales as follows (Table 17).

For the SI scale, when validity cutoffs were used, Females' ratings of the confederate correlated $-.34$ ($p < .05$) with scores on this scale; Males' ratings of the confederate correlated $+.34$ ($p < .05$) with scores on this scale. However, the $-.34$ correlation for females was completely produced by two extreme cases (SI = 66 and 73; Relaxed-tense = $+1.0$ and 0.0) whereas the $+.34$ correlation appeared to reflect a group tendency for the males. The males who scored high on SI never rated the confederate relaxed (paid attention to Voice) whereas some males who scored low on SI rated the confederate tense (paid attention to Body) and some rated the confederate relaxed (paid attention to Voice). When validity cutoffs were not employed Females showed the same significant correlation (since neither of the two extreme cases were excluded) whereas Males showed a non-significant correlation of only 0.05 because three cases were added who scored high and rated the confederate relaxed.

Again, on the SI scale, when validity cutoffs were not employed, Blacks' rating of the confederate on the relaxed-tense scale correlated $-.40$ ($p < .02$) with score on the SI scale. However, this correlation was produced by 3 individuals whose SI and relaxed-tense

scores were: 81, -2; 69, -1; 62, -3. When validity cutoffs were employed these individuals were excluded and the correlation dropped to $-.06$ ($p > .10$).

On the D scale, when validity cutoffs were not employed Blacks' ratings of the confederate correlated $-.47$ ($p < .005$) with score on the D scale. However, this correlation was produced by 2 individuals whose D and relaxed-tense scores were: 99, -1; 99, -2. When validity cutoffs were employed these subjects were excluded and the correlation dropped to $-.07$ ($p > .10$).

On the R scale, when validity cutoffs were not employed, Blacks' rating of the confederate correlated $-.32$ ($p < .05$) with score on that scale. However, that correlation was completely produced by two cases which scored 27 on R and rated the confederate +4 tense. When validity cutoffs were employed the correlation was reduced to $-.01$ ($p > .10$) because of the exclusion of extreme cases.

In summary, examination of correlation coefficients and study of the scatterplots revealed the following significant findings: Males scoring high on SI who met validity criteria (extroverted males) did not pay attention to Voice; Blacks, when validity criteria were not employed, showed a negative relationship between score on SI and D such that the higher the score the more attention they paid to Voice and the lower the score the more attention they paid to Body.

As noted earlier in the Results section, examinations of the scatterplots for the four MMPI scales mentioned in the hypotheses

TABLE 18.--Pearson correlation coefficients for subjects in the Body & Voice group between score on Relaxed-Tense scale and three MMPI scales: Depression (D), Social Introversion (S), and Repression (R). Coefficients were separately computed for Blacks, Whites, Males, and Females, and were computed both with and without imposing validity criteria.

		Depression		Social Introversion		Repression	
		With Validity	Without	With Validity	Without	With Validity	Without
Black	r	-.06	-.47	-.06	-.40	-.01	-.32
	N	24	28	21	28	21	28
	P	.87	.005	.396	.016	.485	.048
White	r	+.12	+.10	+.10	+.08	+.04	+.10
	N	30	31	30	31	30	31
	P	.269	.294	.300	.324	.407	.304
Male	r	+.24	-.10	+.34	. . .	+.22	-.12
	P	27	33	27	. . .	27	33
	N	.111	.299	.039	. . .	.135	.245
Female	r	+.05	+.05	-.34	-.34	-.01	+.04
	N	24	26	24	26	24	26
	P	.407	.394	.049	.044	.478	.416

(Psychasthenia [PT], Anxiety [A], Hysteria [HY], and Repression [R]) suggested the possibility of a nonlinear trend even though there was not a significant nonlinear component in the analysis. In order to further investigate this possibility, Fisher exact probability tests were employed as follows. Subjects were categorized according to two dichotomous variables: whether they had rated the confederate relaxed or tense, and whether they scored 60 or less on the MMPI scale.

When validity cutoffs were employed (Table 19) only the psychasthenia scale showed even a close to significant ($p = .13$) result. Subjects scoring greater than or equal to one standard deviation above the mean on this scale almost never paid attention to voice cues. These results tend to be opposite to those predicted by the fourth hypothesis. Since six of the seventeen subjects in the Tense ≥ 60 cell scored more than two standard deviations above the mean and none of these rated the confederate relaxed, the tendency holds up over a large range of high scores.

When validity cutoffs were not employed (Table 20) three subjects were added to the more than one standard deviation above the mean category for the PT scale. Since all three rated the confederate relaxed, the trend was no longer present. However, on the Anxiety scale, subjects scoring greater than or equal to 60 now tended not to pay attention to voice cues when decoding the inconsistent communication, but the trend was far from approaching statistical significance ($p = .30$).

On the other MMPI scales, the Depression (D) and Psychopathic Deviate (PD) scales showed evidence of nonlinearity when scatterplots

TABLE 19.--Fisher Exact Probabilities for subjects scoring less than 60 versus greater than or equal to 60 and whether they rated the confederate relaxed or tense, on four MMPI scales: hysteria (HY), psychasthenia (PT), anxiety (A), and repression (R). Only subjects who met MMPI validity criteria were used.

	<u>HY</u>	
	< 60	≥ 60
Tense (B)	29	13
Relaxed (V)	5	2
p=.68		

	<u>PT</u>	
	< 60	≥ 60
Tense (B)	25	17
Relaxed (V)	6	1
p=.13		

	<u>A</u>	
	< 60	≥ 60
Tense (B)	34	8
Relaxed (V)	7	0
p=.52		

	<u>F</u>	
	< 60	≥ 60
Tense (B)	35	7
Relaxed (V)	7	0
p=.62		

TABLE 20.--Fisher Exact Probabilities for subjects scoring less than 60 versus greater than or equal to 60 and whether they rated the confederate relaxed or tense, on four MMPI scales: hysteria (HY), psychasthenia (PT), anxiety (A), and repression (R). All subjects were used regardless of whether they met MMPI validity criteria.

	<u>HY</u>	
	< 60	≥ 60
Tense	33	16
Relaxed	6	4
	n.s.	

	<u>PT</u>	
	< 60	≥ 60
Tense	27	20
Relaxed	6	4
	n.s.	

	<u>A</u>	
	< 60	≥ 60
Tense	38	9
Relaxed	9	1
	p=.30	

	<u>R</u>	
	< 60	≥ 60
Tense	38	9
Relaxed	7	3
	p=.22	

were examined. When validity cutoffs were employed (Table 21) subjects scoring greater than or equal to 60 on the Depression scale tended not to pay attention to voice cues ($p = .13$). Eight of the eighteen high-scoring subjects scored two standard deviations above the mean, and none of these rated the confederate relaxed. Also, subjects scoring greater than or equal to 60 on the Psychopathic Deviancy scale tended not to pay attention to voice cues ($p = .048$). Of the 26 subjects scoring high on this scale, eight scored greater than two standard deviations above the mean and none of these rated the confederate relaxed. When validity cutoffs were not employed, the significant differences on these scales no longer held, because high scorers rated the confederate relaxed.

TABLE 21.--Fisher's Exact Probabilities for subjects scoring less than 60 versus greater than or equal to 60 and whether they rated the confederate relaxed or tense, on two MMPI scales: depression (D) and psychopathic deviate (PD). The top charts show results only using subjects who met MMPI validity criteria. The bottom charts show results using all subjects regardless of whether they met validity criteria.

	<u>D</u>	
	< 60	≥ 60
Tense (B)	24	18
Relaxed (V)	6	1
p=.13		

	<u>PD</u>	
	< 60	≥ 60
Tense (B)	16	26
Relaxed (V)	6	1
p=.048		

	<u>D</u>	
	< 60	≥ 60
Tense	29	19
Relaxed	6	4
n.s.		

	<u>PD</u>	
	< 60	≥ 60
Tense	16	31
Relaxed	6	4
n.s.		

CHAPTER VI

DECODING OF THE INCONSISTENT COMMUNICATION BY THREE POPULATIONS:

COMBINING THE RESULTS OF THE PRESENT EXPERIMENT

WITH TWO PREVIOUS ONES

As described in the Introduction, two previous experiments using the same videotape material had been done on two sets of students at SUNY, Stony Brook. The experimental design was identical to the one employed in the present experiment: one group only saw the video portion of the tape (Body group), one group only heard the audio portion of the tape (Voice group), and one group decoded the inconsistent communication on the basis of what they saw and heard on the videotape (Body & Voice group). Only Whites were used in these two experiments, and no significant differences were found between how males versus females decoded the inconsistent communication.

Since in each of these two previous experiments (Experiments I and II) subjects decoded the inconsistent communication by paying attention to visual (body) cues, consistent with the results of the present experiment, the data for all three experiments were combined as described below. The combination of data was performed for how the different experimental groups rated the confederate on each of the four scales (relaxed-tense, approachability, friendliness, and hostility). The reason for combining the data was to increase the N

employed in answering the questions posed by the first three hypotheses. Breakdowns by race and by sex were not employed in the combined analysis because of the makeup of the other two subject populations (only Whites), because of the lack of obtained sex differences in the first two experiments, and because the first three hypotheses are aimed at answering the general question of how an inconsistent communication is interpreted apart from sex and race differences. Combination of the data produced an N=100 for the Body condition, N=98 for the Voice condition, and N=147 for the Body & Voice condition.

The mean ratings of the confederate by the three experimental groups on each of the four scales are shown in Table 22. The combined results for each experimental group as well as the values obtained in each experiment are listed. A one-way analysis of variance was performed on the data for each of the four scales (Table 23). Each analysis of variance showed a significant F. Since the largest difference on each scale was between the Body group and the Voice group, these are interpreted to be significantly different from each other. In order to determine whether the Body & Voice group was the same or different from the other two groups, Duncan Multiple Range tests were performed on the data for each of the four scales (Table 24).

On the relaxed-tense scale the Body & Voice group decoded the inconsistent communication according to Body cues. There was no difference between the mean ratings for Body & Voice and Body, but there was a significant difference between Body & Voice and

TABLE 22.--Mean ratings of the three experimental groups (Body, Body & Voice, Voice) on the four scales: Relaxed-tense (RT), Approachability (A), Friendliness (F), and Hostility (H). Means for Experiment I, Experiment II, and Experiment III, as well as the overall mean for the three experiments are shown. N's are indicated for each group.

		Body				Body & Voice				Voice			
		Exp I	Exp II	Exp III	Overall	Exp I	Exp II	Exp III	Overall	Exp I	Exp II	Exp III	Overall
RT	$\bar{X}$	1.57	.70	1.61	1.42	.43	1.46	1.12	1.16	-1.46	-1.95	-.84	-1.20
	N	21	20	59	100	23	60	64	147	21	20	57	98
A	$\bar{X}$	1.66	2.15	1.93	1.92	2.00	1.96	1.92	1.95	2.38	2.60	2.34	2.41
	N	21	20	58	99	23	30	64	147	21	20	55	96
F	$\bar{X}$	1.65	2.00	1.74	1.78	2.21	2.23	2.06	2.16	2.52	2.85	2.49	2.57
	N	20	20	58	98	23	60	64	147	21	20	55	96
H	$\bar{X}$	.80	.35	.55	.56	.47	.33	.23	.31	.09	.15	.18	.15
	N	20	20	56	96	23	60	63	146	21	20	52	93

TABLE 23.--One-Way Analysis of Variance table for the combined results of Experiments I, II, and III on the Relaxed-Tense (RT), Approachability (A), Friendliness (F), and Hostility (H) scales.

		<u>F</u>	<u>df</u>	<u>p</u>
RT	Channel	70.926	2/342	<.0001
A	Channel	14.322	2/339	<.0001
F	Channel	25.315	2/338	<.0001
H	Channel	9.821	2/332	<.0001

TABLE 24.--Results of Duncan Multiple Range tests for differences between the three experimental groups: Body (B), Body & Voice (BV), and Voice (V), on the Relaxed-Tense scale (RT), Approachability scale (A), Friendliness scale (F), and Hostility scale (H). The means for each experimental group are shown and the N's for each group are indicated in parentheses. Any two means not underscored by the same line are significantly different at $p < .05$. Any two means underscored by the same line are not significantly different ($p > .05$).

RT	Group	V	BV	B
	Mean	-1.2041 (98)	1.1565 (149)	1.4200 (100)
A	Group	B	BV	V
	Mean	1.9192 (99)	1.9524 (147)	2.4063 (96)
F	Group	B	BV	V
	Mean	1.7755 (98)	2.1565 (147)	2.5729 (96)
H	Group	V	BV	B
	Mean	.1559 (93)	.3151 (146)	.5625 (96)

Voice (Table 24). It is interesting to note that in Experiment I the mean rating for the Voice group (-1.46) indicated that subjects judged the confederate to be as relaxed as the subjects in the Body group judged the subject to be tense (+1.57). In Experiment II, subjects in the Voice group judged the confederate to be disproportionately more relaxed (-1.95) than the subjects in the Body group judged the confederate to be tense (+.70). In Experiment III (the dissertation experiment), subjects in the Voice group judged the confederate to be disproportionately less relaxed (-.84) than subjects in the Body group judged the confederate to be tense (+1.61). However, in all three experiments Body & Voice subjects decoded the inconsistent communication according to body (nonverbal) cues. Thus the nonverbal channel is more important in resolving an inconsistent communication regardless of the relative weights of the verbal versus nonverbal channels.

On the Approachability scale the Body & Voice group also decoded the inconsistent communication according to Body cues. There was no difference between mean ratings for Body & Voice and Body, but there was a significant difference between Body & Voice and Voice (Table 24). This combined result is identical with the results of Experiment III.

On the Friendliness scale the Body & Voice group was significantly different both from the Body group and from the Voice group (Table 24). This combined result is also identical with the result of Experiment III.

On the Hostility scale the Body & Voice group decoded the inconsistent communication according to Voice cues. There was no difference between mean ratings for Body & Voice and Voice, but there was a significant difference between Body & Voice and Body (Table 24). This reversal for the hostility scale is again the same result as was obtained in the present experiment.

Of the 148 subjects in the Body and Voice condition, 116 (78%) rated the confederate tense (paid attention to body cues), 28 (19%) rated the confederate relaxed (paid attention to voice cues), and only 4 (3%) rated the confederate neither relaxed nor tense (integrated body and voice cues). Table 25 shows the frequency distributions on the relaxed-tense scale for each of the three experiments. Of the 28 subjects who rated the confederate relaxed, 19 were males and 9 females. However, in Experiment I there were a few more females than males (5 versus 3) who rated the confederate relaxed; in Experiment II there were almost equal numbers (3 females and 4 males); and in Experiment III there were virtually all males in the group rating the confederate relaxed (12 males versus 1 female). Thus these results support the major finding that subjects decode an inconsistent communication according to body cues, but still leaves the intriguing question of what variables might account for the individual differences observed.

TABLE 25.--Frequency distributions showing number of subjects in the Body & Voice group (BV) rating the confederate at each value of the Relaxed-Tense scale for each of the three experiments.

Exp I BV		Exp II BV		Exp III BV	
Score on RT scale	N	Score on RT scale	N	Score on RT scale	N
4	0	4	1	4	2
3	3	3	12	3	16
2	6	2	20	2	13
1	7	1	18	1	18
0	0	0	2	0	2
-1	0	-1	8	-1	4
-2	4	-2	3	-2	4
-3	4	-3	1	-3	4
-4	0	-4	0	-4	1
Total N=24		Total N=60		Total N=64	

		16 Body		51 Body		49 Body	
		0 Neither		0 Neither		2 Neither	
		8 Voice		7 Voice		13 Voice	

CHAPTER VII

DISCUSSION

I. Decoding of the Inconsistent Communication--
The Major Scale: Relaxed-Tense

The first two hypotheses, that the information that was heard would reflect a relaxed message, and that the information that was seen would reflect a tense message, were clearly supported. This provides a firm basis for believing that stable baseline conditions were in fact achieved. The first part of the third hypothesis, which predicted that the same information when simultaneously heard and seen would be decoded to reflect the message portrayed by the nonverbal channel, was also clearly supported. The dominance of the nonverbal channel is in agreement with the findings of other researchers who employed various affectual dimensions and found that the nonverbal channel was selected when subjects resolved an inconsistent communication (Argyle et al., 1970; Argyle et al., 1971; Mehrabian & Ferris, 1967; Mehrabian & Wiener, 1967). The dominance of the nonverbal channel appears to be independent of the initial weighting of the verbal and nonverbal channels (Argyle et al., 1970; Kestenbaum, p. 87 of the present manuscript).

The second part of the third hypothesis, which predicted that Black subjects taken as a whole would pay even greater attention to the nonverbal channel than would White subjects taken as a whole,

when decoding the inconsistent communication, was clearly not supported. Therefore no evidence was found to support the assumption that there is a basic difference in how inter-racial communications are decoded. Both Blacks and Whites decoded the inconsistent communication according to the nonverbal message, and both to virtually the same extent. Indeed in the present study Blacks in the control group for verbal cues appeared to be more responsive to those cues, whereas Blacks in the control group for nonverbal cues were virtually identically responsive to them as were Whites. This race difference is contrary to Gardiner's (1972) findings (on which the third hypothesis was based) that in a Southern High School population Blacks were more responsive to the nonverbal aspects of a communication than were Whites. One difference between the present study and Gardiner's which might account for the discrepant results is the subject population--a Northern college versus a Southern High School sample. (In order to determine whether that factor accounts for the differences, the same videotapes and questionnaires and procedures would have to be employed on both samples.)

Both Males and Females decoded the inconsistent communication according to the nonverbal message. However, it appeared that the females were even more sensitive to the nonverbal communication than were the males. These findings are in line with those of Rosenthal et al. (1974). They are also in accordance with those of other researchers who have examined sex differences (Argyle et al., 1970; Argyle et al., 1971). Since these other studies employed male and

female confederates and obtained the same finding as the present study, the result cannot be due to the sex of the confederate, but can be interpreted to result from the sex of the decoder. However, there are numerous studies in which no sex differences were obtained (Davitz, 1964; Mehrabian & Ferris, 1967; Mehrabian & Wiener, 1967) as well as the first two experiments performed by the present author. What then can one make of these sex differences?

Rosenthal's subject pool consisted of individuals from different regions of the United States and also some subjects from other countries. Subjects were not selected on the basis of similarity of occupation or age group. On the contrary, he attempted to sample a wide range of individuals who differed in occupation, age, socioeconomic status and personality. Comparison of the Rosenthal sample with that employed by Mehrabian and by Davitz leaves the present author struck by the heterogeneity of the Rosenthal sample. Mehrabian's sample consisted of psychology undergraduates at UCLA. Davitz' sample consisted of psychology graduate students at Columbia, and Kestenbaum's sample in the first two experiments consisted of State University of New York at Stony Brook psychology undergraduates. How the greater heterogeneity of the Rosenthal sample (and of the City College sample of the present author) accounts for sex differences showing up is not clear. However, it is evidently an important factor and it would be valuable to determine how it operates. An examination of a heterogeneous sample on such variables as age, occupation, geography, and socioeconomic status, would be necessary to see how such variables interact with

sex to produce the sex differences which show up in heterogeneous samples.

In summary, the results on the relaxed-tense scale indicated a) that when subjects are presented with an inconsistent communication they resolve it by decoding the communication according to the information present in the nonverbal channel; b) that no racial (Black versus White) or sex differences exist with respect to how the inconsistent communication is resolved; and c) that females are more sensitive to the nonverbal cues even though both sexes resolve the inconsistent communication according to their interpretation of the nonverbal message.

II. Decoding of the Inconsistent Communication-- The Secondary Scales: Approachability, Friendliness, and Hostility

Whereas the videotape presented to subjects was made with the primary intention of communicating inconsistent information via the verbal versus nonverbal channels on a relaxed-tense dimension, other dimensions of information were also obviously communicated. In an attempt to discern whether secondary messages were decoded following the same laws as the primary message, three other dimensions thought to be communicated by the videotaped material were also measured: approachability, friendliness, and hostility. Indeed contradictory information on these dimensions was found to be communicated by the verbal and nonverbal channels. The verbal channel alone was interpreted to convey a message of approachability, friendliness, and lack of hostility whereas the nonverbal channel

alone communicated a lack of approachability, a lack of friendliness, and hostility. How subjects decoded these inconsistent secondary communications is of interest. The secondary scales appeared to follow more complex (in the sense of interaction effects occurring) and even opposite (in the case of hostility) laws to the primary communication.

For each of the secondary scales described below, the difference in results from the primary scale could either be due to a different set of decoding principles applying to primary versus secondary scales, or to a different set of decoding principles applying to the dimensions (approachability, friendliness, and hostility) measured by each scale, or to an interaction between the two. In order to discriminate between these possibilities it would be necessary to create videotapes using the dimensions measured by each scale as the primary intended communication with the others as secondary communications. In this way it would be possible to parcel out the effect of primary versus secondary communication from the effect of the nature of the communication itself. An interaction between affectual dimension communicated and the channel employed to resolve an inconsistent communication has been observed (Argyle et al., 1971). However, no studies have been reported which explore the differences between primary and secondary messages. In the absence of such studies it is only possible to present alternative hypotheses for the obtained results.

Approachability

All of the groups except Black Males decoded the inconsistent communication according to the nonverbal message. The Black Males decoded the inconsistent communication according to the verbal message. An alternative to a primary versus secondary scale explanation for this result might lie in the nature of the communication measured by the approachability scale. The approachability scale may measure a more intimate interpersonal dimension than the relaxed-tense scale, one in which like and dislike comes into play. Subjects, when asked to decode this communication, may become more guarded or defensive if the communication comes from an individual of the opposite sex and race, and decode an inconsistent communication according to the more formal, less intimate channel of communication, which has been found to be the verbal channel (Gartner, 1971). This type of interaction between level of intimacy of the communication, race, and sex may be operating in conjunction with or independent of whether these communications are primary or secondary. Further, although the sex of the confederate did not appear to be a relevant factor in the decoding of the primary relaxed-tense communication, it may be relevant for the secondary approachability scale. Studies systematically varying encoder and decoder sex, encoder and decoder race, level of intimacy of communication, and primariness of message would be necessary to delineate the interactions.

Friendliness

Again, the Black Males decoded the inconsistent communication according to the verbal message. However, unlike the approachability scale, only the Black Females decoded the inconsistent communication according to the nonverbal message. Perhaps the White Females did also, but it is not possible to say for sure because this is the one instance in which the confederate was rated equally friendly in both the Body and the Voice conditions. Thus there was no inconsistent communication. The White Males decoded the inconsistent message somewhere between the verbal and nonverbal messages.

Perhaps the reason that White Males did not decode according to the nonverbal message is, as suggested above, that the level of intimacy of the conversation is greater for them than on the approachability dimension causing the subjects to become more guarded and decode according to the more formal channel of voice. This, however, implies that the friendliness dimension is more intimate than the approachability one, for here not only do Black Males resort to it but White Males do also. Osgood's semantic differential could be used to test whether the friendliness scale is in fact a more intimate affectual dimension for the White Males than is the approachability scale. Again, studies systematically varying encoder and decoder sex, encoder and decoder race, level of intimacy of conversation, and primariness of message would be necessary to delineate the interactions.

Hostility

All of the groups except for White Females decoded the

inconsistent communication according to the verbal message. White females judged the confederate to be more hostile; they decoded the communication according to the nonverbal message. It is interesting that the only group which had a nonverbal dominant channel was the group of the same sex and race as the confederate. This suggests that the level of intimacy interaction with sex and race may in fact be true, and that as the level of intimacy increases, sex and race differences between encoder and decoder become more critical variables in the selection of a dominant channel for decoding an inconsistent communication.

Whereas the present result that White Females decode the hostility message according to a dominant nonverbal channel is in accordance with other findings (Argyle et al., 1971; Bugental et al., 1970), the finding that all other groups decode the communication according to the verbal cues is not in accordance with those findings. Although the other studies did not employ Black subjects, they did employ males and females. It is not clear why they did not observe an interaction effect between sex and dominant channel, whereas the present study obtained that interaction.

Are relaxed-tense, friendliness, approachability, and hostility different affectual dimensions or are they merely different words describing the same dimension? If subjects had rated the confederate differently on these four scales it would have been possible to conclude that the scales did in fact measure different dimensions. However, since the ratings on all four scales went in the same direction, it is not possible to determine whether they represent the same

dimension or four different ones which show the same trend. An experiment specifically designed to test the independence of these scales would have to be done to resolve the issue.

III. Decoding of the Inconsistent Communication-- Combination of the Results of the Present Experiment with Two Previous Ones

Since only White subjects participated in the two previous experiments, and since in the present experiment which included Black subjects race x sex interactions occurred on the secondary scales, it is not possible to combine results from the three experiments on the secondary scales. However, such interactions did not occur on the major (relaxed-tense) scale, and therefore the results could be combined for the three experiments on that scale.

The major finding of the present experiment, that there is a dominant channel (the nonverbal channel) to which subjects attend when presented with an inconsistent verbal/nonverbal primary communication, was also found in each of the two previous experiments. It is important to note that this finding occurred whether the nonverbal channel communicated a message of tenseness equal to, greater than, or less than the message of relaxedness carried by the verbal channel. Thus in spite of the differential weightings of the verbal and nonverbal components, it was always the case that for the relaxed-tense scale the nonverbal channel was the dominant channel in the decoding of the inconsistent communication. These results are consistent with those of Argyle et al. (1971) in concluding that the operation of a dominant channel is independent of the weightings of

the inputs of the channels.

In all three experiments, for most subjects the nonverbal channel was dominant, for some the verbal channel was dominant, and for very few (4 out of 148) neither channel was dominant. The analysis of mean results should not mask the occurrence of these individual differences. Whether they can be explained in terms of personality or other variables remains an intriguing question, and is explored in section V or this discussion.

IV. The Importance of Specific Cues

It is critical to note that the question concerning which cues were most important was asked after subjects had rated the confederate on all four scales. Therefore the responses by the subjects of the importance the various cues played in the decoding of the communication reflects a total interpretation of the confederate's communication across all four scales. It is not reflective of only one particular scale.

Subjects reported that the two most (and equally) important cues they paid attention to were both a verbal cue (voice) and a nonverbal cue (movement of upper extremities). Therefore although the inconsistent communication was resolved according to a dominant nonverbal channel this in no way precludes the fact that individuals were aware of both verbal and nonverbal cues. Indirectly this research has then shown, that contrary to what one might expect, individuals are conscious of both verbal and nonverbal cues. What might be the case is that they put more trust in the nonverbal

cues, and make a conscious decision to decode the communication according to the message communicated by the nonverbal channel.

The specific verbal and nonverbal cues paid most attention to were the same cues paid most attention to in the control conditions in which subjects received only the verbal or nonverbal channels. The choice of movement of upper extremities as the most important nonverbal cue is probably an artifact of the camera angle employed in producing the videotape (shooting down on the confederate). Therefore generalization of the importance of this particular cue must be made cautiously. It would be necessary to assure equal perceptibility of all other cues before it would be possible to make any general statement concerning their relative importance in the decoding of an inconsistent communication. The present experiment was designed so that tone of voice and verbal content would reflect the same (relaxed) message. Both cues were paid attention to although tone of voice received a significantly higher rating.

The absence of significant race or sex differences in how the cues were utilized to decode the inconsistent communication is probably attributable to the generality of the question on cues. It seems likely that it was interpreted to apply to the major message and therefore would not be expected to mirror racial or sexual differences observed in how the confederate was perceived on the secondary scales.

This finding that both a verbal and a nonverbal cue were considered equally important by subjects appears to indicate that

it is not the kinesic or verbal breakdown of the total verbal/nonverbal communication that determines why some individuals interpret the communication according to the verbal or nonverbal mode. Rather it appears that some other variables must account for the individual differences observed.

V. Personality Correlates

Whereas the previous sections have addressed the issues of channel dominance and racial and sex differences in the decoding of an inconsistent communication, the present section will focus on whether personality correlates can account for individual differences observed in how subjects decoded the contradictory message.

The fourth hypothesis, that subjects with a higher score on the Psychasthenia (PT) and Anxiety (A) scales of the MMPI would decode the confederate's communication according to the verbal channel, was clearly not supported. In fact, the post hoc analysis of results showed trends in the opposite direction to that hypothesized; subjects who scored greater than or equal to 60 on these two scales tended not to decode the message according to the verbal channel. Interestingly, this same pattern was found to exist on post hoc analysis of the Depression (D) and Psychopathic Deviate (PD) MMPI scales. Only the PD trend reached statistical significance. It should be pointed out that the trends for the PT, D, and PD scales were obtained for the with validity criterion groups, while the trend for the A scale was observed only for the without validity criterion group. This qualification, however, is more

apparent than real, since on the A scale both the with and without validity groups exhibited the same pattern, viz. subjects scoring greater than or equal to 60 tended not to decode according to the verbal channel. Therefore, one can group together, for discussion purposes, the trends on the four scales PT, A, D, and PD.

This raises the question of why subjects who score greater than or equal to 60 on these four scales tend not to decode the inconsistent communication according to the verbal message. Is there something about obsessive compulsive, depressive, and psychopathic personalities together with the state of anxiety which would make understandable why these individuals do not decode the communication according to the verbal message? Although this is an intrinsically interesting question to pursue, it must be kept in mind that the answer will have only general theoretical interest as opposed to empirical insights concerning the personality make-up of the individuals who participated in the present study. This is because the data we are discussing are correlational data across subjects. For example, a subject who contributed to the finding on the four scales may have as his major personality configuration something other than the tendencies measured by these four scales.

Another issue that must be kept in mind before pursuing the question is that the MMPI means obtained across all the clinical scales in the population which participated in the present study are higher than the mean of 50 found for the Minnesota normative sample. In the present study the range of means across all the

clinical scales was between 51 and 63, and for the particular scales under consideration (PT, PD, D, and A) the means were close to 60. Since it is commonly accepted that the mean response reflects normalcy while deviations from the mean on the order of magnitude of two standard deviations indicates a tendency toward pathology, the use of 60 as a cutoff in the present findings can not be used to indicate pathology. Indeed, since there was a range of scores for subjects who did not pay attention to verbal cues from 60 to more than two standard deviations above the mean, some subjects who did not pay attention to verbal cues can be considered normal on the dimensions measured by these scales and some can be considered pathological. Hence these results can not be interpreted according to a normal versus pathological dichotomy since both categories reacted by not decoding the message according to the verbal channel.

Given these qualifications it is still interesting to determine whether the three personality measures share something in common from a clinical point of view. The PT scale of the MMPI measures obsessive compulsive tendencies, which as a clinical syndrome includes a predisposition towards vacillation and rumination and varying degrees of anxiety, rigidity, and tension. From a Freudian, structural point of view, the super-ego is extremely punitive and in a sense archaic, the ego tries to maintain some equilibrium and not succumb totally to the wishes of the super-ego (Nemiah, 1961). Guilt plays a part in the obsessive's conflict over being good or bad, obedient or defiant, and the defense

mechanisms of isolation, denial, undoing, and reaction formation are aimed at rendering unconscious or making more palpable the instinctual wishes associated with the anal stage of psychosexual development (Cameron, 1963; Freedman & Kaplan, 1972; MacKinnon & Michels, 1971). In addition, specifically in a college population, the PT scale is known to measure anxiety, insecurity, poor personal relationships, poor study habits, and difficulties with authority figures (Drake & Oetting, 1959; Fowler, 1966; Good & Brantner, 1974).

The D scale of the MMPI measures depressive tendencies which as a clinical syndrome includes a lowering of self esteem, dependency, worthlessness, and helplessness, along with self destructive and masochistic tendencies. Similar to the obsessive compulsive individual, with depression one also finds an extremely harsh and archaic super-ego. However in this syndrome the ego is in an even more tenuous position and accepts the judgements of the overly punitive super-ego (Nemiah, 1961). Furthermore, here too the defense mechanisms of denial and isolation are employed. However in depression the dynamics are related to rendering unconscious the affect associated with a lost love object and the ambivalence surrounding one's introjects (Cameron, 1963; MacKinnon & Michels, 1971). In addition to the clinical picture already presented, for a college population, the D scale correlates highly with situational problems, difficulties in relationships with the opposite sex, and anxiety (Drake & Oetting, 1959; Good & Brantner, 1974).

As Cameron (1963), MacKinnon and Michels (1971), and Salzman

(1968) all point out, there a number of very real similarities between the syndromes of depression and psychasthenia. Most importantly, as one analyzes the defenses of the obsessional, one characteristically hits upon an underlying depression. Furthermore, both syndromes have been termed 'guilt neuroses,' in which one witnesses regression to pre-oedipal conflicts.

Although it is not necessary to dig too far to uncover similarities between the obsessional and depressive syndromes, this is not the case when relating these clinical entities to psychopathy. Behaviorally, the psychopath is impulsive, immature, emotionally shallow and seeks immediate gratification. Guilt and anxiety generally are not considered part of the psychopathic picture. In addition the psychopath has a history of poor object relations, flitting from one relationship to another as a means of gratifying his own needs (Coleman, 1972; Freedman & Kaplan, 1972; Rado, 1959).

Whereas the majority of the clinical literature does not align psychopathy with either the depressive or obsessional syndromes, MacKinnon and Michels (1971) have described the obsessional who, at times, appears like the psychopath. They suggest that the defiant behavior of the psychopath can also be evidenced in the obsessional. In the latter's case the super-ego can be side tracked into punishing this defiance and acting out type behavior, rather than going after the more deep seated conflicts. Furthermore, contrary to others, MacKinnon and Michels feel that 'precursors of guilt' are evidenced in the psychopath, along with a manifestation of anxiety particularly when denial and lack of gratification fail.

In addition to the aforementioned traits of the psychopath, particularly in a college population, the PD scale indicates an adventurous, courageous, sociable and anthusiastic individual who also possesses hostile, aggressive, exhibitionistic and rebellious tendencies (Dahlstrom & Welsh, 1960).

The hope that there would be a common denominator between PT, D, and PD coupled with an anxiety state, that would account for how the tendency to score high on these scales is coupled with a strategy of not decoding an inconsistent communication according to the verbal channel, was not fulfilled. As described below, the strategy of looking for high point codes associated with how subjects decoded the inconsistent communication yielded some more useful information.

The fifth yypothesis, that subjects with a higher score on the Hysteria (HY) and Repression (R) scales of the MMPI would decode the confederate's communication according to the nonverbal channel, was not supported. No significant relationships were found between either of these scales and how subjects decoded the inconsistent communication.

The sixth hypothesis, that subjects who relied on nonverbal cues in decoding the confederate's communication would have a different high point and two point code compared with subjects who decoded the communication according to the verbal message, was not confirmed. Neither the high point nor two point codes made this differentiation. However, high point code did differentiate those subjects who paid the most attention to nonverbal cues. Those sub-

jects who had Psychopathic Deviate as the most elevated scale in their profile paid significantly greater attention to nonverbal cues. This is a curious finding since the majority of the population paid attention to nonverbal cues--this was the normal response. Therefore one would not expect a particular high point code to differentiate some segment of this group. If anything one might expect to find a high point code that differentiated those subjects who paid attention to the verbal message since this was a much smaller and perhaps more deviant group.

The high point code is the major facet of an individual's personality. All but one individual who had PD as a high point code scored within the normal ranges on these MMPI scales. Hence when discussing these individuals we are dealing with a group of subjects who show the personality characteristics of a psychopath, or as it is more commonly termed today sociopath, but who are not pathological on that dimension. It should also be noted that the results for the PD scale occurred whether or not validity criteria was applied to the MMPI data.

What is there about this personality group that makes them particularly sensitive to the nonverbal channel? It is widely held that psychopaths prefer actions to words or thoughts (MacKinnon & Michels, 1971). An action oriented model is manifest in their entire behavioral repertoire. Therefore it is possible that perceptually the psychopath is more tuned in to the nonverbal aspects of interpersonal exchanges. Just as the psychopath does not

put credence in his own words, so too may it be the case that when he observes others he does not put credence in their words. It is not uncommon for the psychopath to play a con game; to use words to glibly con or deceive others. It is interesting to note that Argyle et al. (1971) reported that the nonverbal/verbal ratio correlated with the PD scale score in their study. Thus the present result appears to have been replicated. Unfortunately the strategy of assessing high point codes to uncover personality correlates of decoding of inconsistent communications has yielded only minimal results.

When the MMPI scores were analyzed separately for males and females, Blacks and Whites, only one result appeared, that males (using validity criteria) who scored high on Social Introversion (SI) did not pay attention to verbal cues. Again, both individuals who were in the normal range and who were in the pathological range on this scale contributed to this result. This single finding from the extensive analysis of data does little to clarify personality variables relevant to individual differences in decoding of an inconsistent communication.

As has been suggested by Davitz (1974), the measurement of personality by objective personality tests may not be a fruitful approach for uncovering personality differences which account for individual differences in decoding style. Rather, personality instruments of a projective nature may be required to uncover these differences. Only further investigation will supply the answer. Alternatively, it may be the case that differences in decoding style reliable enough to be experimentally assessed only occur between

normal versus pathologic populations. Argyle et al. (1970) for instance found that neurotics as compared to normals responded more to verbal cues. Rosenthal et al. (1974) found similar results comparing psychiatric patients with normals. It might prove fruitful to conduct the experiment done by the present author with different pathologic populations in order to determine whether decoding styles of inconsistent communications can be differentially determined for various psychiatric populations.

The aim of the present research was to determine whether personality variables measured by the MMPI could account for individual differences in the decoding of inconsistent communications. The outcome was that personality correlates as measured by the MMPI did not differentiate between verbal versus nonverbal decoders. Extensive analysis of the data did little to clarify personality variables relevant to individual differences in decoding of an inconsistent communication.

V. Clinical Implications

As the present research has shown, the nonverbal channel of communication is the dominant channel in the decoding of an inconsistent communication. The research of others not only supports this finding, but also attests to the dominance of the nonverbal channel in transmitting consistent communications. The importance of the nonverbal channel in both the encoding and decoding of messages, and specifically in the communication of interpersonal emotional messages appears incontrovertible. Since individuals

both send and interpret messages along the nonverbal channel, it follows that in a therapeutic situation it is of utmost importance to examine what is communicated nonverbally.

Although there are therapeutic orientations which acknowledge the importance of information communicated nonverbally, and provide techniques for working with it, they are generally restricted to systems and group therapy approaches as opposed to individual one-to-one therapy. It appears certain that in the individual therapy situation as well, it is important to take into account nonverbal communications. This might mean interpreting nonverbal messages similarly to the way in which verbal messages are interpreted, to bring into conscious awareness what is communicated nonverbally and how it relates to verbal messages. Regardless of the specific approach one takes in interpreting the nonverbal, this aspect of communication should certainly be incorporated into the treatment plan.

In the case of the psychopathic personality, the present research has pointed to the extreme importance of the nonverbal channel. It may be the case that such a patient when reporting outside interactions is highly influenced by the nonverbal communication of others. However, in relating this information to the therapist he may concentrate on only the verbal interaction. Should this occur, and should the therapist not be tuned in to how important the nonverbal component of the interaction is, a misalliance can occur. Analogously, the therapist must be highly sensitive to his own nonverbal communications to the patient, since

countertransferential messages (those which the therapist may not be fully conscious of) may be communicated along this channel. The extreme sensitivity of the psychopathic patient to such messages can undermine the formation of a working alliance if the therapist is not aware of them. Since the present research has been concerned with decoding, as opposed to encoding, communications, it is not possible to say whether this type of patient also uses the nonverbal channels as the dominant means of enacting a transference. As with any patient it is important for a therapist to understand the underlying dynamics of the person being treated. However, in the case of the psychopathic personality there may be tremendous importance to also being aware of nonverbal communications.

Knowledge of the ways in which nonverbal communication is encoded and decoded by patients can potentially alter the kind of therapy offered, or at the very least highlight possible problem areas in the establishment of the therapeutic relationship.

APPENDIX I

Experiment I

IMPORTANCE OF BODY VERSUS VOICE CUES IN DECODING OF
INCONSISTENT COMMUNICATIONS

Linda A. Kestenbaum

1973

ABSTRACT

Inconsistent communications on a relaxed-tense dimension were presented via videotape to subjects. A group that only heard the tape (N=20) reported a communication of relaxedness. A group that only saw the tape (N=23) reported a communication of tenseness. The group that both heard and saw the tape (N=24) reported judgments midway between the other two. Results on approachability, friendliness, and hostility scales were also obtained. No correlations were found between how the subjects rated the videotape presentation and how they rated themselves. The results are discussed in terms of an integration and dominant channel model for the decoding of inconsistent communications.

Hypotheses to be tested

Three main hypotheses are to be tested: (1) that the information that is heard will reflect the appropriate (relaxed) message and that the information that is seen will also reflect the appropriate (tense) message; (2) that information that is simultaneously heard and seen will reflect the message as portrayed by the body language and not be influenced by the inconsistent verbalizations; (3) there will be a high correlation between how the subjects rated the figure presented to them on videotape and how they rate themselves on the same relaxed-tense dimension.

Method

Subjects

Sixty-nine introductory psychology students, approximately half male and half female, were run in the experiment. Of these 69 subjects some did not complete the questionnaire in its entirety, and therefore on some scales the N is decreased by one or two individuals.

Confederate

The confederate was selected because she spontaneously displayed inconsistent communications on the relaxed-tense dimension via the body and voice channels, without overexaggerating these characteristics. For the taping session the confederate spoke with a calm, slow paced, deep voice about a pleasant trip she had made to Hawaii,

but at the same time conveyed inner tension in her body language by clasping and unclasping her hands, crossing and uncrossing her legs while seated, pacing back and forth across the cubicle, fidgeting with her hair, and avoiding eye contact with the camera.

Videotape recording

The confederate was televised by a camera with a wide angle lens located in the upper corner of an 8' x 10' cubicle. Thus the entire cubicle and the whole body of the confederate was visible. The only prop that was in the cubicle was a chair, which faced the camera, and which was used periodically by the confederate. Fifteen recordings were made, each lasting for 45 seconds. Of these fifteen one seemed appropriate both in showing calmness of voice and verbal content, and also in tenseness of body language. A pre-test with eight judges indicated that the confederate was rated differently in the two conditions (body vs. voice) with four out of the four judges in the video condition rating the confederate along the tense continuum, and 3 out of the 4 judges in the audio condition rating the confederate along the calm continuum. The pretest also confirmed that the taping was judged to be virtually spontaneous and not staged.

Questionnaire

The questionnaire consisted of 4 parts. Part I had four scales (relaxed-tense, approachability, friendliness, and hostility) on which the subjects were to rate the confederate. The relaxed-tense

scale went from "extremely relaxed" (-4) to "extremely tense" (+4), and the other three scales went from "extremely" (+4) to "not at all" (0). Part II consisted of a question asking on which cues the subjects based their impressions of the confederate. A more detailed question, listing such cues as verbalizations, tone of voice, eye contact, facial expression, movement upper and lower extremities, followed. Part III asked the subjects to rate themselves on the same four scales concerning how they felt before, during, and after the experiment. Part IV consisted of personal data. Twenty-five minutes was allotted for filling out the questionnaire.

Experimental design

There were three experimental conditions: presentation of only the audio track (voice condition), presentation of only the video track (body condition), and presentation of both audio and video (body and voice condition). Table 1 gives the overall N's for each group, and the N's for males and females within each group. Subjects were assigned to groups randomly with the constraint that half the subjects in each group be males and half females. The three groups were run three times each, in a latin square design.

Procedure

Subjects were run in groups of four. Each group (2 males and 2 females) were seated approximately 12 feet in front of a 24" GE television monitor in a small room. The equipment was set up in such a way that the videotape could be fed into two rooms at once, enabling eight subjects to be run at a time. The instructions

given to the subjects were one of the following three depending on the condition they were in.

"In the next few minutes you will be involved in an experiment. A person will be presented to you on tape. Please listen to it (look at it, look and listen to it) carefully."

The experimenter was not in the room during the videotape presentation, but returned immediately after to hand out questionnaires. Subjects had 25 minutes to fill them out. The experimenter was continually available to answer any questions in reference to the questionnaire, and to debrief subjects after they finished.

Results

Table 1 shows the overall results of how the different experimental groups rated the confederate. Figure 1 portrays the results for the relaxed-tense scale, the major scale, broken down by experimental group and sex. Figure 2 shows the mean ratings of the experimental groups on the approachability, friendliness, and hostility scales. On the relaxed-tense scale (Figure 1) examination of the means reveals that the body group rated the confederate tense (positive score), the voice group rated the confederate relaxed (negative score), and the body & voice group rated the confederate almost exactly in between the other two groups on the relaxed-tense continuum. Ratings on the approachability and friendliness scales (Figure 2) follow the same pattern, and so do the ratings on the hostility scale. However, since hostility is the opposite of the other scales the direction of the results in appropriately reversed

for that scale.

In order to determine whether there were significant differences between the modes of presentation (body, body & voice, voice) on each of the four scales, four different analyses of variance were performed. Each analysis of variance showed a significant mode of presentation (Table 2). Since the largest difference on each scale was between the body group and the voice group, these are interpreted to be statistically significant. Neither sex nor the interaction between sex and mode of presentation reached significance for any of the four scales (no F-ratio was greater than 1.0). However, since the difference between males and females in the body & voice group on the relaxed-tense scale appeared relatively large (Table 1) an independent t-test was performed between these two means to provide a more powerful test. However, statistical significance was not attained. ($t=0.75$; $df=22$; $p>.10$).

To ascertain which modes of presentation differed from each other on the relaxed-tense scale (Fig. 1), Scheffe tests were performed. The difference between body and body & voice was not confirmed ($F=4.80$; $df=2/63$; $F'_{.05}=6.30$).

On the friendliness scale (Fig. 2) the Scheffe test showed a significant difference between body and body & voice groups ($F=7.22$; $df=2/61$; $F'_{.05}=6.30$). Even the more powerful t-test, however, failed to show statistical significance between voice and body & voice ($t=1.23$; $df=43$; $p>.10$). Similarly, on neither the approachability or hostility scales did the t-test reveal significant differences between these pairs of experimental groups.

Table 3 summarizes the mean ratings for each group on Part II of the questionnaire concerning which sources of communication they thought played the greatest role in their ratings of the confederate (question no.3). The body group rated movement of the upper extremities as the most important source. The analysis of variance for the body group confirmed that differences existed between sources ($F=10.34$; $df=3/33$; $p<.01$). The most highly rated source, upper extremities, was not rated significantly different from the lower extremities according to the Scheffe test ($F=8.47$; $df=3/33$; $F'_{.05}=8.76$). The upper extremities were, however, rated significantly different from the third most important source of information, facial expression ($MSD=28.17$; $df=3/33$; $p<.05$).

For the voice condition, tone of voice was rated as more important than verbalizations, but this difference did not reach statistical significance ($t=1.89$; $df=42$; $p>.05$).

For the body and voice group, movement of upper extremities was rated as the most important source of information. The analysis of variance for this group showed that significant differences exist ($F=9.86$; $df=5/115$; $p<.01$). To see whether body movements were more important than verbalizations a Scheffe test was performed between upper extremities and tone of voice. There was no significant difference ($F=3.86$; $df=5/115$; $F'_{.05}=11.50$). However, there was a significant difference between movement of upper and movement of lower extremities ($MSD=20.84$; $df=5/115$; $p<.05$). Thus the two major sources were a verbal and a non-verbal channel. It should also be noted that tone of voice was rated as more important

than verbalizations (as was true in the voice group), and that the order of importance of the four body-cues was the same as for the body condition.

In order to determine whether there was any correlation between how the subjects rated the confederate and how they rated their own feelings on the four scales Pearson correlation coefficients were calculated using the data in Part III of the questionnaire (Tables 4 and 5). Out of all the correlations performed only two were statistically significant (Table 5). However, the validity of these correlation coefficients is questionable because the range of ratings on the hostility scale was mostly between only two points: 0 and 1.

Lastly, the data in Table 1 on the relaxed-tense scale were broken down by time of day each subject was run to see whether that factor contributed to the results. The largest difference between two times within the same group within a sex was in the body condition. This difference of 2.0 was tested for significance but failed to reach criterion level ($t=1.85$; $df=6$, $p>.05$).

Discussion

The first hypothesis, that the information that was heard would reflect a relaxed message, and that the information that was seen would reflect a tense message, was clearly supported by the results. That it proved to hold true not only for the relaxed-tense scale, which the experiment was specifically designed for, but

analogously for the approachability, friendliness, and hostility scales, provides a firm basis for believing that stable baseline conditions were in fact achieved.

The second hypothesis, that this same information, when simultaneously heard and seen, would reflect the message as portrayed by the body language and not be influenced by inconsistent verbalizations, was partially supported. The analysis of variance and Scheffe tests for the relaxed-tense scale indicates that the subjects paid more attention to the body cues. Yet when looking at the group means for body, voice, and body & voice one finds the body & voice mean to fall virtually midway between the body group and the voice group ratings on virtually all scales, rather than being heavily weighted in the direction of the body ratings. This result indicates that perhaps some sort of integration of the verbal and nonverbal sources of communication occurred.

However, looking solely at the means is somewhat deceiving, for when one examines the individual scores that comprise the mean rating on the relaxed-tense scale in the body & voice condition, what results is that no individual subject actually integrated the information from these two channels. Rather a bimodal distribution of scores exists with 16 out of 24 subjects rating the confederate as tense (decoded body cues) while the remaining 8 subjects rated the confederate calm (decoded voice cues) (Fig. 3). What this is taken to mean is that the statistical analyses support the hypothesis that information that is simultaneously heard and seen will reflect

the message as portrayed by the body language, yet wide individual variability exists. This variability manifests itself by the observation that there are some subjects who nonetheless pay attention to voice.

For the three additional scales: approachability, friendliness, and hostility it is difficult to determine whether an integration argument or a dominant channel argument is the more suitable. Part of the difficulty rests with the fact that these dimensions were not the primary ones being manipulated. Rather they were included because of the possibility that perhaps the videotape relayed information regarding these dimensions in addition to relaxed-tense.

The analysis of variance and Scheffe tests for the friendliness scale indicate that in the body & voice condition the voice was more responsible for the decoding of the inconsistent communication. Yet in examining the mean ratings one finds the ratings for the body & voice condition to fall virtually midway between the ratings for the other two modes of presentation viz. body and voice. Thus the same restrictions in interpreting this result hold as did for the relaxed-tense scale. The body & voice condition was not significantly different from body or voice on the approachability and hostility scales. Therefore these two scales yielded ambiguous results.

The data concerning which source of communication the subjects thought they relied most heavily on adds additional weight to an integration argument. The body cues, contrary to the second hypothesis, did not receive the largest ratings. To the contrary,

movement of upper extremities was deemed most important followed by tone of voice, and these two sources did not differ significantly. Thus both a body and a voice cue were judged to be most importantly employed in the body & voice condition. Furthermore, the third most important source was judged to be verbalizations (again a voice cue) which was then followed by the three remaining body cues. Eye contact and facial expression received the lowest ratings. This may be due to the quality of the videotape and because these two cues were in fact used least by the confederate. One other interest point concerning these measures is that in the body & voice condition, out of a possible six different sources of verbal and nonverbal communication, five decreased relative to their impact in the separate presentation of the body and the voice conditions.

Given that this experiment was not designed to directly assess the responses for the approachability, friendliness, or hostility scales, these results when considered with the main finding for the relaxed-tense scale seem to warrant the conclusion that wide individual differences exist in the preference an individual has for paying attention to a particular channel. Until further research has been done which specifically addresses itself to investigating these other affectual dimensions no firm conclusions can be drawn for either an integration model or dominant channel model.

The third hypothesis, that there would be a high correlation between how the subjects rated the figure presented to them on the videotape and how they rated themselves on the same dimensions was

clearly shown to be untenable by overall lack of statistical significance. The only two significant correlations are very probably an artifact of the scaling technique because they both show up on the hostility scale at those times when there is virtually no range in the ratings of subjects, and most score either 0 or 1. This finding is somewhat pleasing if it can be interpreted to mean that subjects were so involved in just viewing and rating the confederate that subjective feelings were not aroused but left a clear field for communication of the information under study. An alternative explanation, however, is that because the scales for these subjective ratings were given after the experiment instead of before for fear of biasing the major results, the subjective ratings may not accurately reflect the feelings of the subjects.

Table 1

Mean ratings of the three experimental groups (body, body & voice, voice) on the four scales (relaxed-tense, approachability, friendliness, and hostility). Overall means for each group, means for males and females within each group, and N's are shown.

<u>SCALE</u>		<u>BODY</u>	<u>BODY & VOICE</u>	<u>VOICE</u>
Relaxed-Tense	Overall Mean	+1.70	+0.33	-1.50
	Males (N)	+1.73 (11)	+0.68 (12)	-1.50 (12)
	Females (N)	+1.68 (12)	0.00 (12)	-1.50 (10)
Approachability	Overall Mean	1.65	2.00	2.36
	Males (N)	1.72 (11)	1.91 (12)	2.17 (12)
	Females (N)	1.58 (12)	2.09 (11)	2.60 (10)
Friendliness	Overall Mean	1.68	2.22	2.50
	Males (N)	1.73 (11)	2.17 (12)	2.58 (12)
	Females N	1.64 (11)	2.27 (11)	2.40 (10)
Hostility	Overall Mean	0.77	0.48	0.09
	Males (N)	0.64 (11)	0.58 (12)	0.17 (12)
	Females (N)	0.91 (11)	0.36 (11)	0.00 (10)

Table 2

F-ratios for mode of presentation (body, body & voice, voice) for each of the four scales (relaxed-tense, approachability, hostility).

<u>Scale</u>	<u>F</u>	<u>df</u>	<u>p</u>
Relaxed-Tense	17.0	2/63	< .005
Approachability	5.38	2/62	< .01
Friendliness	6.46	2/60	< .01
Hostility	4.53	2/60	< .05

Table 3

Mean ratings of the subjects in the three experimental groups on the importance different sources of verbal and non-verbal communication played in their evaluations.

GROUP	Verbal-izations	Tone of Voice	Eye Contact	Facial Expression	Movement of Upper Extremities	Movement of Lower Extremities
Body (N=23)	-----	-----	1.09	2.13	3.70	2.48
Body & Voice (N=24)	2.29	2.66	1.33	1.46	3.33	2.04
Voice (N=22)	2.95	3.45	-----	-----	-----	-----

Table 4

Pearson correlation coefficients between subjects' ratings of the confederate and subjects' ratings of themselves before, during, and after the experiment, on the relaxed-tense scale. ($r_{.05/22} = .404$)

Group	SUBJECTIVE RATING ON RELAXED-TENSE SCALE		
	Before Experiment	During Experiment	After Experiment
Body	.10	.15	.23
Body & Voice	-.26	.22	.31
Voice	-.02	-.22	-.04

Table 5

Pearson correlation coefficients between subjects' ratings of the confederate, and subjects' ratings of themselves after the experiment, on the approachability, friendliness, and hostility scales. *($r_{.05/21} = .413$)

GROUP	SCALE		
	Approachability	Friendliness	Hostility
Body	.27	.22	.50 *
Body & Voice	-.14	.03	-.10
Voice	.27	-.04	.65 *

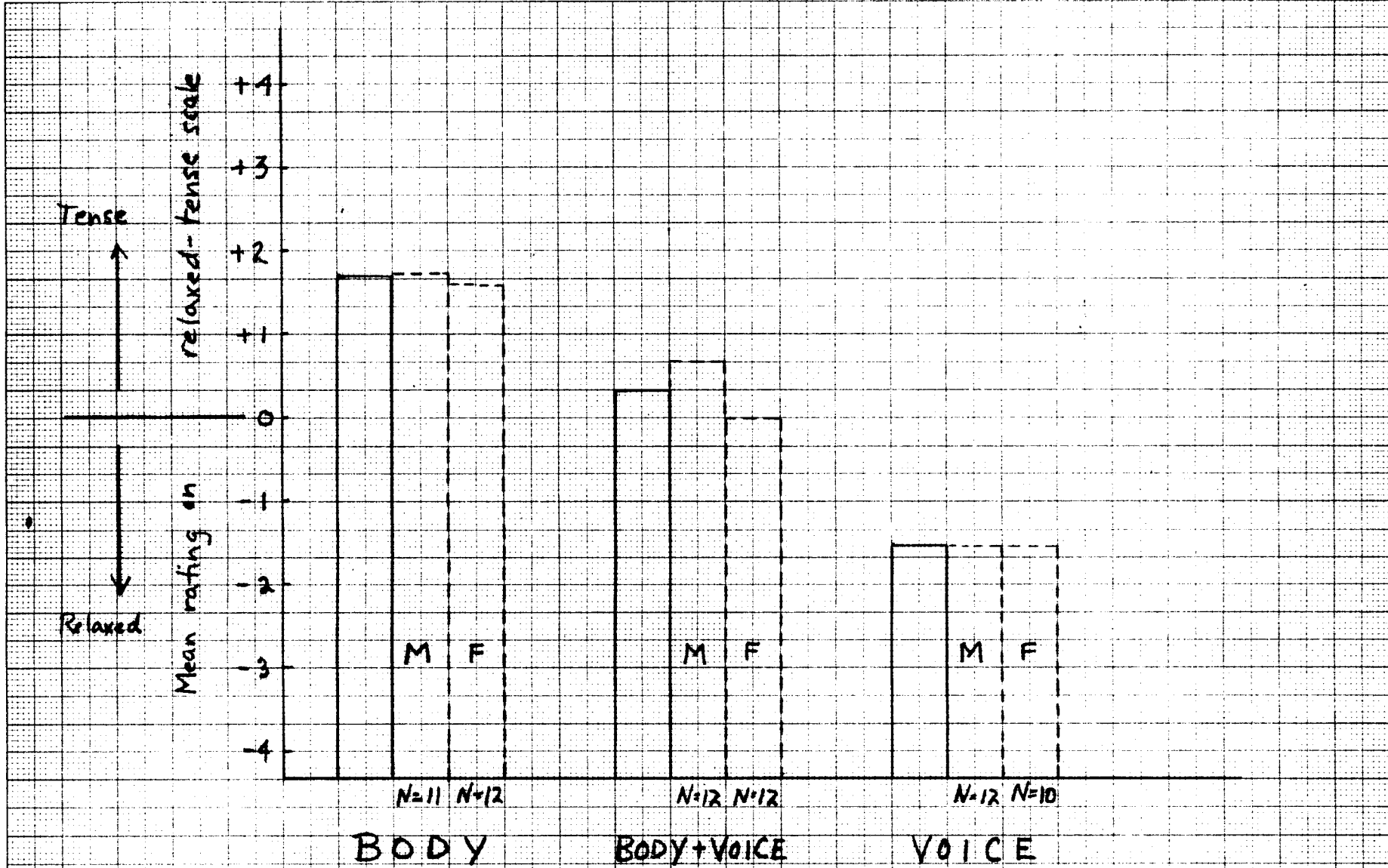


Figure 1. Mean ratings on the relaxed-tense scale of the three experimental groups (body, body and voice, voice). Overall means for each group are indicated by the solid bars. Means for males (M) and females (F) within each group are indicated by the dashed bars. The N's are indicated below the appropriate bars. Positive numbers on the scale indicate a judgement of tense. Negative numbers indicate a judgement of relaxed. Zero indicates a judgement of neither relaxed nor tense.

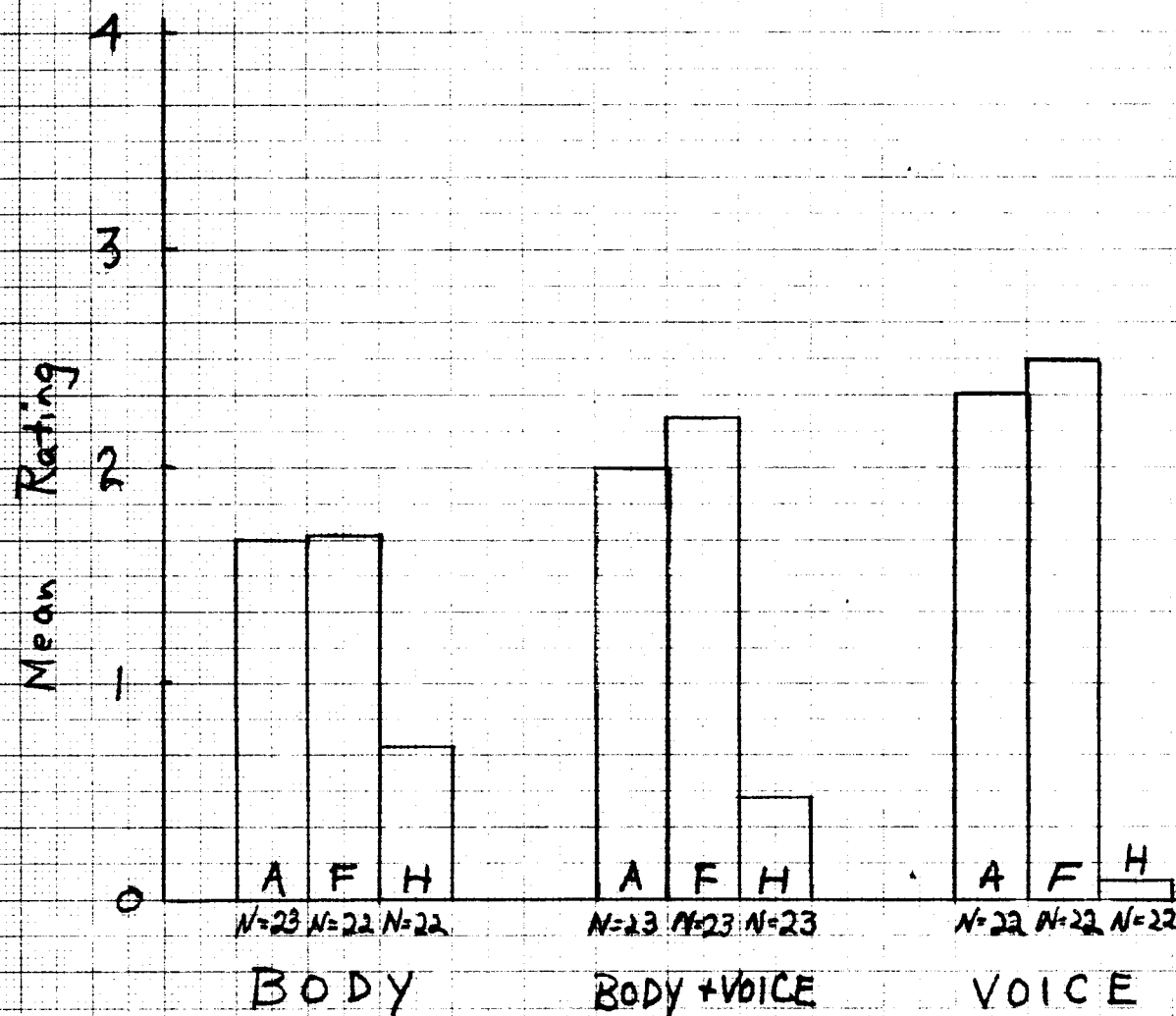


Figure 2. Mean ratings on the approachability (A), friendliness (F), and hostility (H) scales for the three experimental groups (body, body and voice, voice).

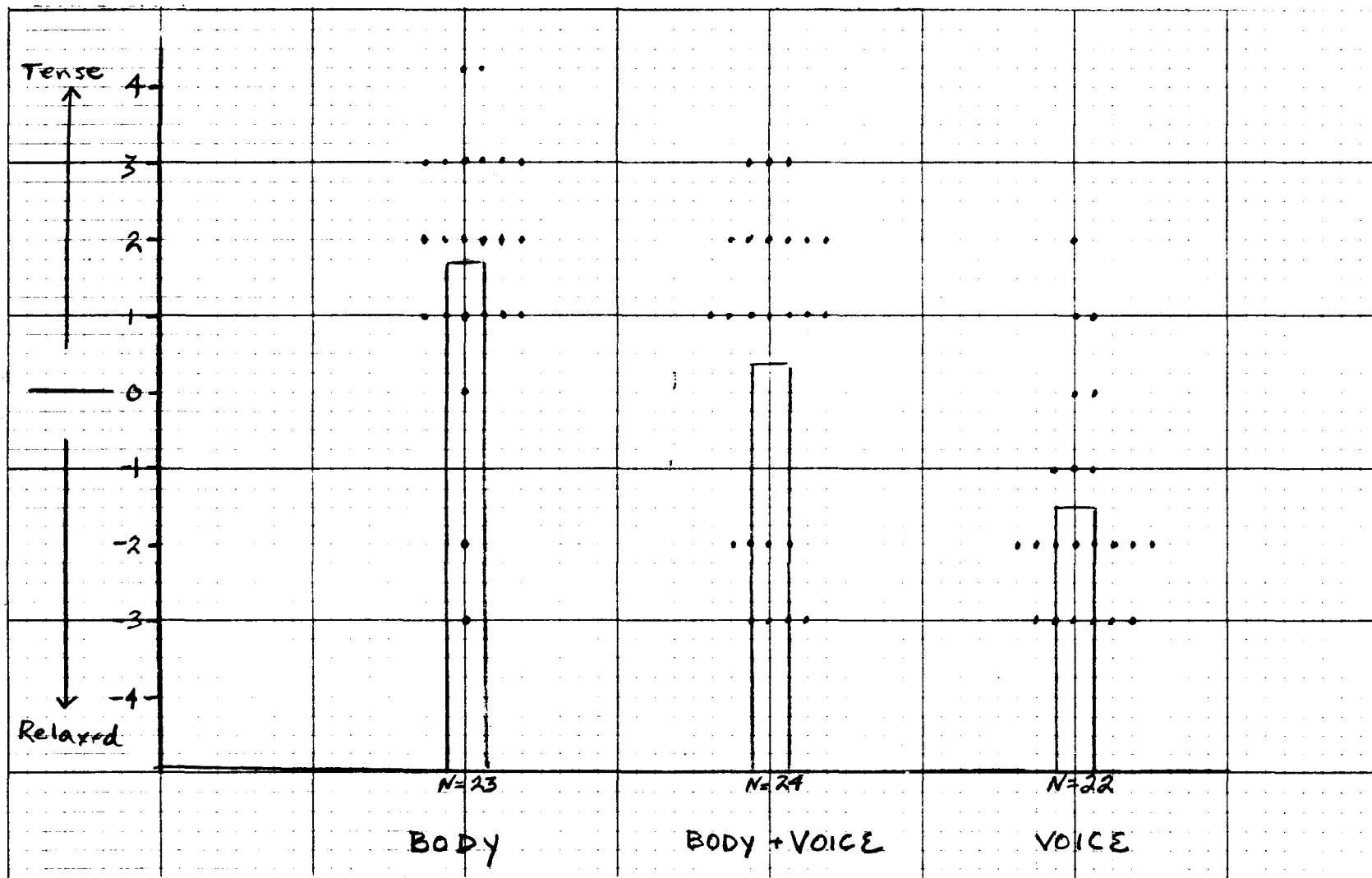


Figure 3. Mean ratings on the relaxed-tense scale of the three experimental groups (Body, Body & Voice, Voice). Individual responses for each group are indicated by dots. Positive numbers on the scale indicate a judgement of tense. Negative numbers indicate a judgement of relaxed. Zero indicates a judgement of neither relaxed nor tense.

APPENDIX II

Experiment I Questionnaire

Part I

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1. On each of the scales shown below, indicate your impression of the person presented to you, by placing a check above the most appropriate description. Please confine your ratings only to the lined segments. Do not check the space between lines.

extremely relaxed	very relaxed	moderately relaxed	slightly relaxed	neither relaxed nor tense	slightly tense	moderately tense	very tense	extreme. tense
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extremely approachable	very approachable	moderately approachable	slightly approachable	not at all approachable
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extremely friendly	very friendly	moderately friendly	slightly friendly	not at all friendly
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extremely hostile	very hostile	moderately hostile	slightly hostile	not at all hostile
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Part II

2. In your own words, please indicate what you based your impressions of the person presented to you on. Once you have completed this question do not add to your answer just go on to question number 3.

3. Place the number corresponding to each of the following factors on the appropriate segment of the line on the scale shown below. Please place the numbers only on the lined segments. You may place more than one number on the individual segments.

On what did you base your impressions of the other person presented to you?

- (1) verbalizations
- (2) tone of voice
- (3) eye contact
- (4) facial expression
- (5) movement of the upper extremities of the body (arms, hands, and shoulders)
- (6) movement of the lower extremities of the body

extremely influential	very influential	moderately influential	slightly influential	not at all influential
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Part III

4. On each of the scales shown below, place a check above the most appropriate description of how you feel AT THIS MOMENT. Please confine your rating only to the lined segments. Do not check a space between lines.

extremely relaxed	very relaxed	moderately relaxed	slightly relaxed	neither relaxed nor tense	slightly tense	moderately tense	very tense	extremely tense
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extremely approachable	very approachable	moderately approachable	slightly approachable	not at all approachable
---------------------------	----------------------	----------------------------	--------------------------	----------------------------

extremely friendly	very friendly	moderately friendly	slightly friendly	not at all friendly
-----------------------	------------------	------------------------	----------------------	------------------------

extremely hostile	very hostile	moderately hostile	slightly hostile	not at all hostile
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5. On each of the scales shown below, indicate how you felt DURING THE TIME YOU SPENT SITTING WITH THE OTHER PERSONS, JUST PRIOR to filling out this questionnaire, when the person to be judged was presented to you.

_____	_____	_____	_____	_____	_____	_____	_____	_____
extremely	very	moderately	slightly	neither	slightly	moderately	very	extreme
relaxed	relaxed	relaxed	relaxed	relaxed	tense	tense	tense	tense
				nor tense				

_____	_____	_____	_____	_____
extremely	very	moderately	slightly	not at all
approachable	approachable	approachable	approachable	approachable

_____	_____	_____	_____	_____
extremely	very	moderately	slightly	not at all
friendly	friendly	friendly	friendly	friendly

_____	_____	_____	_____	_____
extremely	very	moderately	slightly	not at all
hostile	hostile	hostile	hostile	hostile

6. On each of the scales shown below, indicate how you felt AT THE ONSET OF THE EXPERIMENT
WHEN YOU FIRST CAME INTO THE ROOM.

extremely relaxed	very relaxed	moderately relaxed	slightly relaxed	neither relaxed nor tense	slightly tense	moderately tense	very tense	extremely tense
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extremely unapproachable	very approachable	moderately approachable	slightly approachable	not at all approachable
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extremely unfriendly	very friendly	moderately friendly	slightly friendly	not at all friendly
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extremely hostile	very hostile	moderately hostile	slightly hostile	not at all hostile
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Part IV

7. Place the number corresponding to each of the following factors above the appropriate segment on the scale shown below. Please place the numbers only on the lined segments. You may place more than one number on any given segment.

- (1) participating in an experiment
 (2) being confined to a room
 (3) presence of others

extremely	very	moderately	slightly	not at all
influential	influential	influential	influential	influential
in personal	in personal	in personal	in personal	in personal
feelings	feelings	feelings	feelings	feelings

8. To what extent have you taken seriously being in this experiment and answering the questions?

extremely	very	moderately	slightly	not at all
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9. It would be appreciated if you would volunteer the following information:

Sex _____

Age _____

Religion _____

Race _____

APPENDIX III

Results of Experiment II

RESULTS OF EXPERIMENT II

Table 1 shows the overall results of how the different experimental groups rated the confederate. Figure I portrays the results for the relaxed-tense scale, the major scale, broken down by experimental group and sex. Figure II shows the mean ratings of the experimental groups on the approachability, friendliness, and hostility scales. On the relaxed-tense scale (Figure I) examination of the means reveals that the body group rated the confederate tense (positive score), the voice group rated the confederate relaxed (negative score), while the body & voice group rated the confederate as even more tense than did the body group alone. Ratings on the approachability scale (Figure II) follow the same pattern. For the friendliness and hostility scales (Figure II) a similar pattern exists with the exception that in the body & voice group the rating of the confederate did not exceed the ratings of the body group alone. Naturally, since hostility is the opposite of the other scales the direction of the results is appropriately reversed for that scale.

In order to determine whether there were significant differences between the modes of presentation (body, body & voice, voice) on each of the four scales, four different analyses of variance were performed. On three of the four scales the analysis of variance showed a significant mode of presentation effect (Table 2). Therefore the largest difference on each of the three

scales (relaxed-tense, approachability, and friendliness) between the three experimental groups (body, body & voice, voice) was interpreted to be statistically significant. These are: on the relaxed-tense and approachability scales, between the body & voice group and the voice group and on the friendliness scale, between the body group and voice group. For the hostility scale no significant differences were obtained. Neither sex nor the interaction between sex and mode of presentation reached significance for any of the four scales.

To ascertain which modes of presentation differed from each other, in addition to the already established difference between the body & voice and the voice group on the relaxed-tense scale (Figure I), Scheffe tests were performed. The difference between the means for the body and for the voice conditions was confirmed ($F=31.72$, $df=1/95$; $F'_{.01}=13.84$). The difference between body and body & voice was not confirmed ($F=3.742$; $df=1/95$; $F'_{.05}=7.90$). Similarly, on the friendliness scale (Figure II) the Scheffe tests showed a significant difference between body & voice and voice groups ($F=16.45$; $df=1/95$; $F'_{.01}=13.84$), while no significant differences appeared between the body & voice and body groups ($F=2.207$; $df=1/95$; $p > .05$).

For the approachability scale, the Scheffe tests revealed no significant differences between either the body and the voice groups or the body & voice and the body groups ($F=2.328$; $df=1/95$; $F'_{.05}=7.90$ for the former, $F \text{ ratio} < 1.00$ for the latter). Therefore, as ascertained from the analysis of variance only the body & voice and the voice groups differed significantly from each other.

As previously stated the analysis of variance for the hostility scale revealed no significant differences and hence no Scheffes were performed.

Table 3 summarizes the mean ratings for each group on Part II of the questionnaire concerning which sources of communication the subjects thought played the greatest role in their ratings of the confederate. The body group rated movement of the upper extremities as the most important source. The analysis of variance for the body group confirmed that differences existed between sources ($F=50.572$; $df=3/57$; $p<.001$). The most highly rated source, upper extremities, was thus judged to be significantly different from the least important source of information, eye contact. According to Scheffe tests, the second and third most important sources, movement of lower extremities and facial expression, were not rated significantly different from each other. However, the upper extremities were rated significantly different from both lower exrremities and facial expression ($F=49.65$; $df=3/57$; $F'_{.01}=21.36$).

For the voice condition tone of voice was rated as more important than verbalizations as was confimed by the analysis of variance ($F=10.27$; $df=1/15$; $p<.01$).

The analysis of variance for the body & voice groups showed that significant differences existed ($F=221.28$; $df=5/290$; $p<.005$). In order to determine whether there were significant differences between verbal and nonverbal sources Scheffe tests were performed between upper extremities and tone of voice. This difference was shown to be significant ($F=181.95$; $df=5/290$; $F'_{.01}=33.65$), as was

the difference between upper and lower extremities. Yet the difference between tone of voice and lower extremities was shown not to be significant, the means for these two sources being identical (Figure III). However, tone of voice and lower extremities were different from verbalizations ($F=20.89$; $df=5/290$; $F'_{.05}=19.40$). Thus the major sources by which the subjects make their determination regarding the confederate's communication appear to be nonverbal. It should be noted that tone of voice was rated as more important than verbalizations (as was true in the voice group), but the order of importance of the four body-cues was different when compared to the body group alone. It appears that movement of lower extremities gains importance as a source of nonverbal communication when viewed in the body & voice condition.

In order to determine whether there was any correlation between how the subjects rated the confederate with their directionality of eye movement, Pearson correlation coefficients were calculated. Table 4 portrays the correlation coefficients for conjugate lateral eye movements (CLEMS) which was calculated by the formula: $\text{left movements} - \text{right movements} / \text{total \# of eye movements} \times 100$, with each of the four scales for the body & voice condition. None of the correlations were statistically significant.

Figures III, IV, V, and VI represent for each individual the degree and direction of CLEM on each of the four scales. However on inspection of these graphs a pattern appears to exist for the approachability and friendliness scales in which left lookers appear to rate the confederate as more approachable and more friendly (a

higher score on these scales indicates greater attention to verbal cues) (Figures III and IV).

Post hoc statistical analyses of this trend by means of a Fischer's Exact Test in which the median category was omitted (-19 through +49) reveals a significant correlation for both the approachability and friendliness scales ($p=.0271$ and $p=.021$ respectively). This finding though tentative, indicates that left lookers as compared to right lookers pay greater attention to verbal cues.

TABLE 1

Mean ratings of the three experimental groups (body, body & voice, voice) on the four scales (relaxed-tense, approachability, friendliness, and hostility). Overall means for each group, means for males and females within each group, and N's are shown

Scale		Body	Body & Voice	Voice
Relaxed-Tense	Overall Mean	+0.70	+1.46	-2.00
	Males (N)	+0.63 (30)	+1.30 (30)	-1.70 (10)
	Females (N)	+0.77 (9)	+1.63 (30)	-2.27 (11)
Approachability	Overall Mean	+2.15	+1.96	+2.61
	Males (N)	+2.27 (11)	+2.03 (30)	+2.60 (10)
	Females (N)	+2.00 (9)	+1.90 (30)	+2.63 (11)
Friendliness	Overall Mean	+2.00	+2.23	+2.85
	Males (N)	+2.00 (11)	+2.23 (30)	+2.70 (10)
	Females (N)	+2.00 (9)	+2.23 (30)	+3.00 (11)
Hostility	Overall Mean	+0.81	+0.33	+0.19
	Males (N)	+0.55 (11)	+0.33 (30)	+0.19 (10)
	Females (N)	+0.22 (9)	+0.26 (30)	+0.18 (11)

TABLE 2

F-ratios for mode of presentation (body, body & voice, voice)
for each of the four scales (relaxed-tense,
approachability, friendliness,
and hostility)

Scale	<u>F</u>	<u>df</u>	<u>p</u>
Relaxed-Tense	39.767	2/95	$<.005$
Approachability	3.427	2/95	$<.05$
Friendliness	11.657	2/95	$<.005$
Hostility	1.35	2/95	$>.05$

TABLE 3

Mean ratings of the subjects in three experimental groups
on the importance different sources of verbal
and nonverbal communication played in
their evaluations

Group	Verbaliz- ations	Tone of Voice	Eye Contact	Facial Ex- pression	Movement of Upper Extremities	Movement of Lower Extremities
Body (N=20)	. . .	. . .	0.60	1.85	3.55	1.80
Body & Voice (N=59)	2.00	2.35	1.13	1.33	3.40	2.35
Voice (N=16)	2.50	3.31	. . .	. . .	. . .	. . .

TABLE 4

Pearson correlation coefficients between subjects' ratings of the confederate for the body & voice group, and subjects' CLEMS, on each of the four scales (relaxed-tense, approachability, friendliness, and hostility) $*(r_{.05/58}=.2546)$

Group	S C A L E			
	Relaxed-Tense	Approachability	Friendliness	Hostility
Body & Voice	.087	.164	.207	-.152

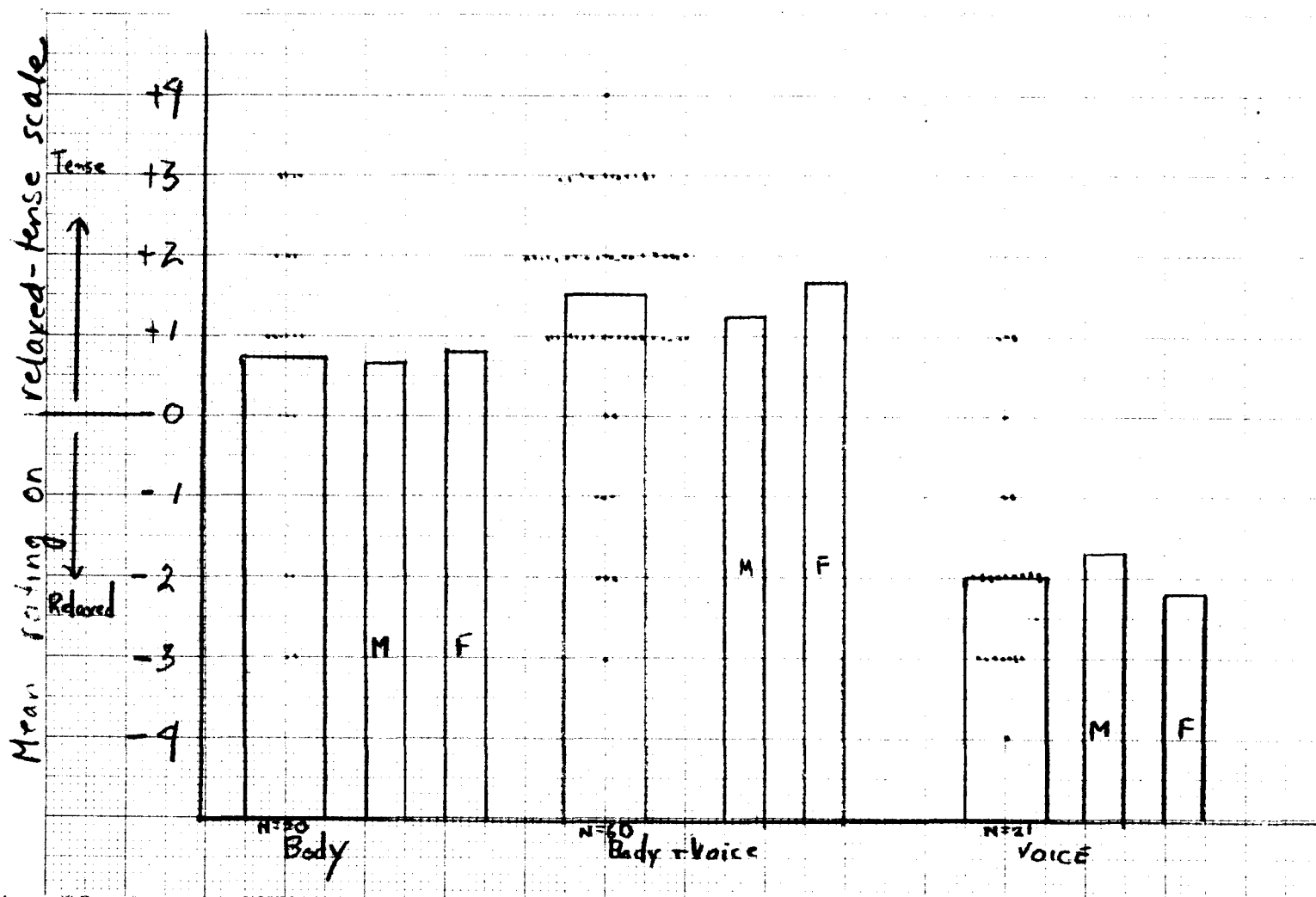


Figure I. Mean ratings on the relaxed-tense scale of the three experimental groups (Body, Body & Voice, Voice). Overall means and breakdowns for males (M) and females (F) are indicated for each group. N's are indicated below each bar. Individual responses for each subject are indicated by dots. Positive numbers indicate a judgement of tense. Negative numbers indicate a judgement of relaxed. Zero indicates a judgement of neither relaxed nor tense.

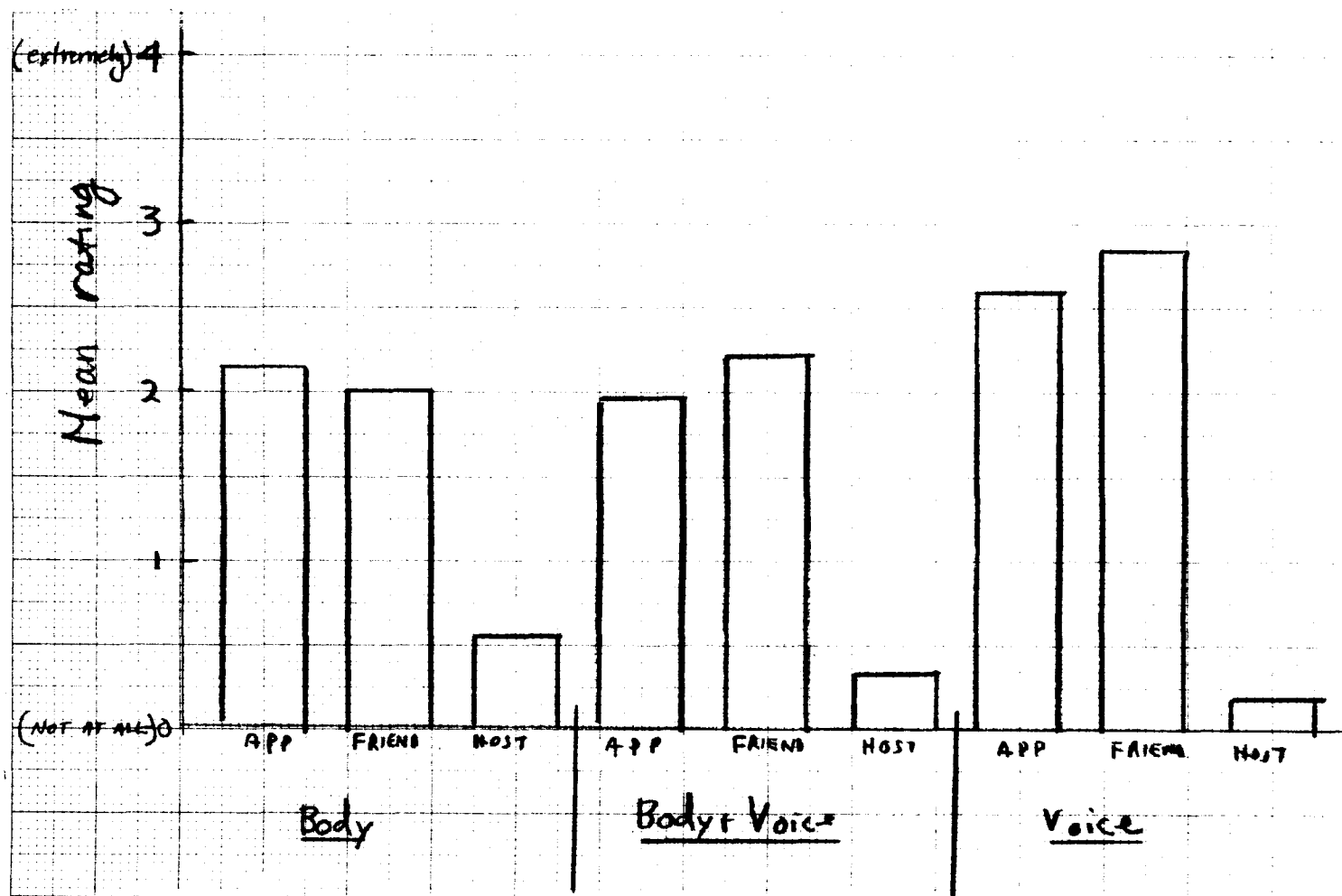


Figure II. Mean ratings on the approachability (APP), friendliness (FRIEND), and hostility (HOST) scales for the three experimental groups (Body, Body & Voice, Voice).

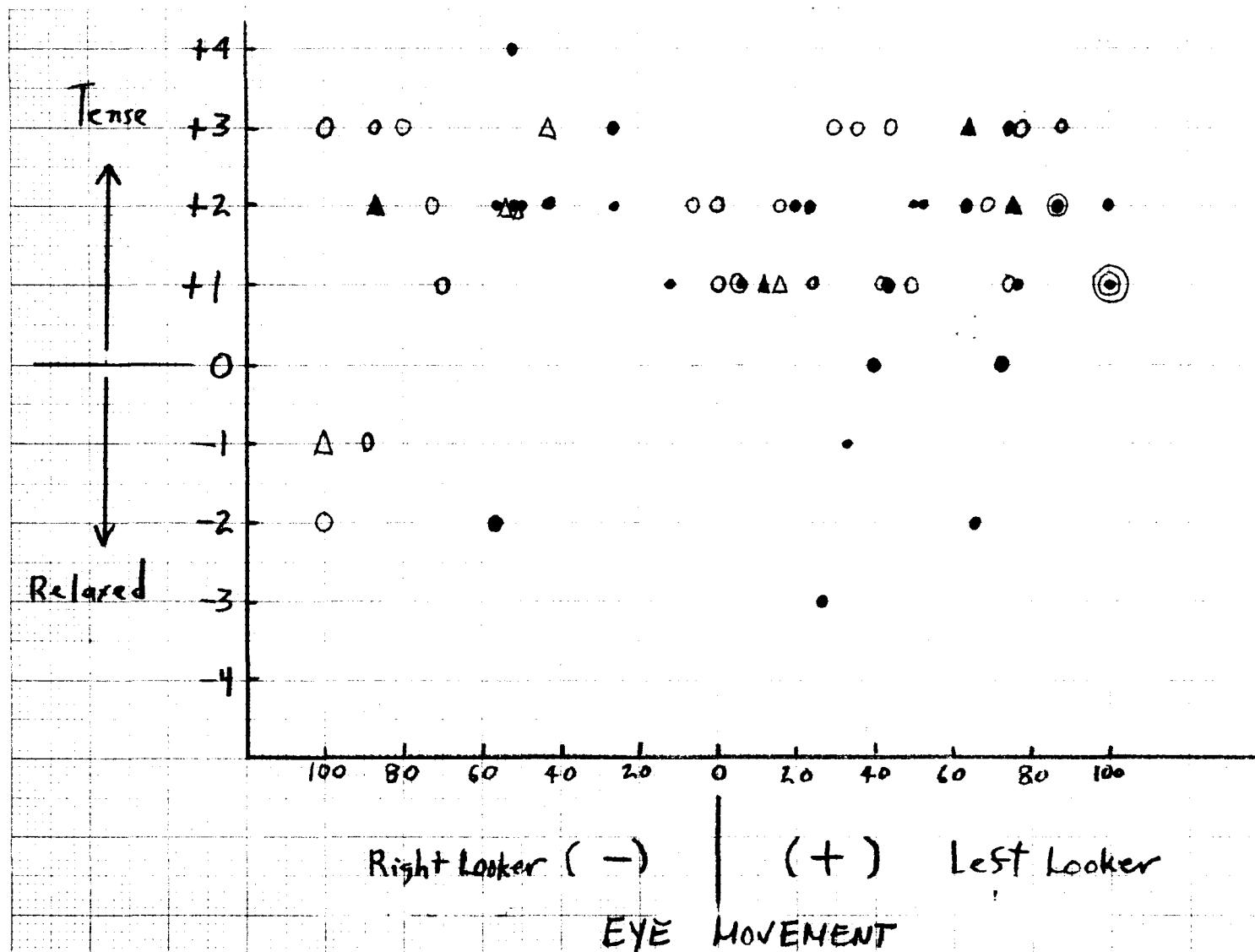


Figure III. Scatterplot of eye movement and rating on relaxed-tense scale for subjects in the Body & Voice condition (N=59).

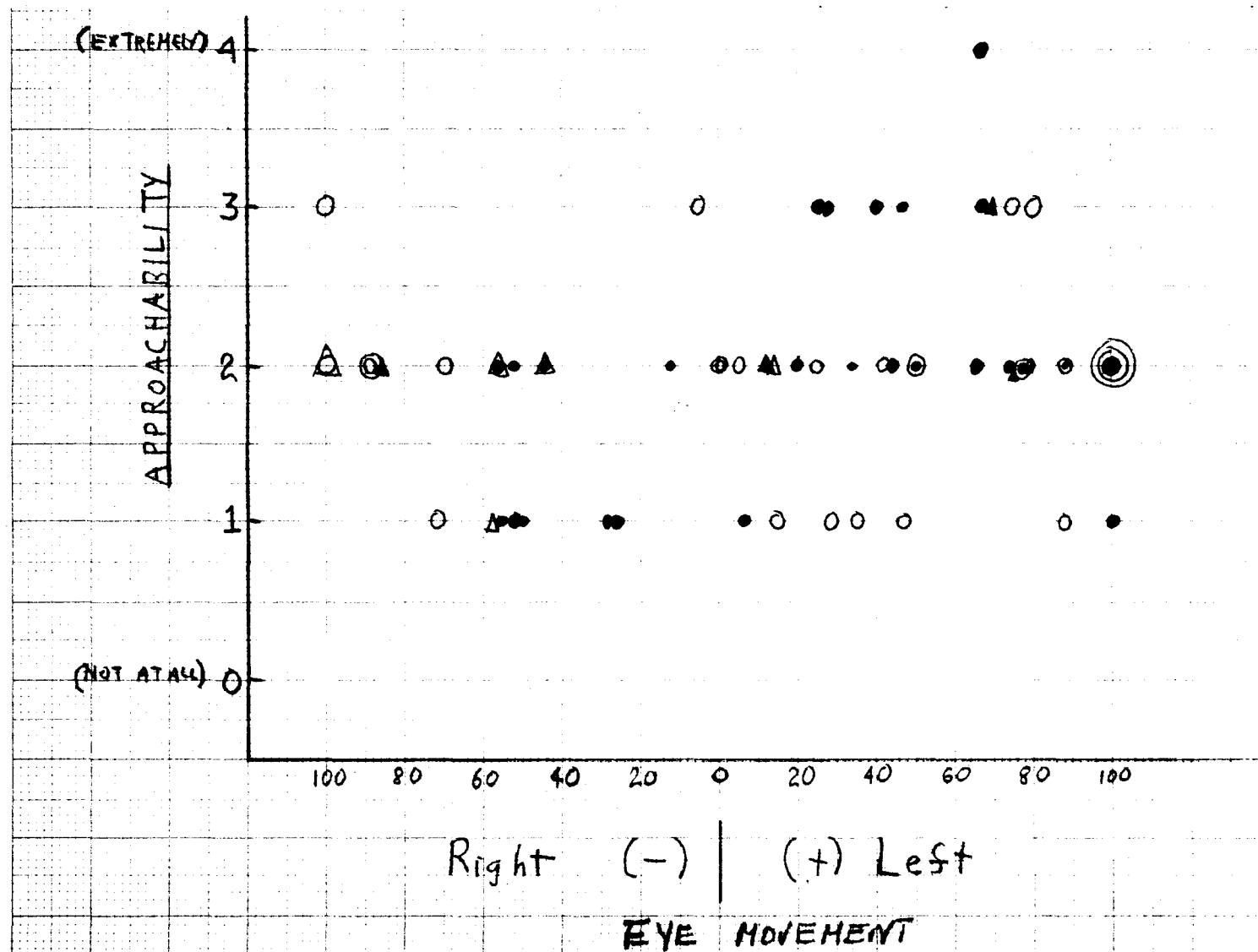


Figure IV. Scatterplot of eye movement and rating on approachability scale for subjects in the Body & Voice condition (N=59).

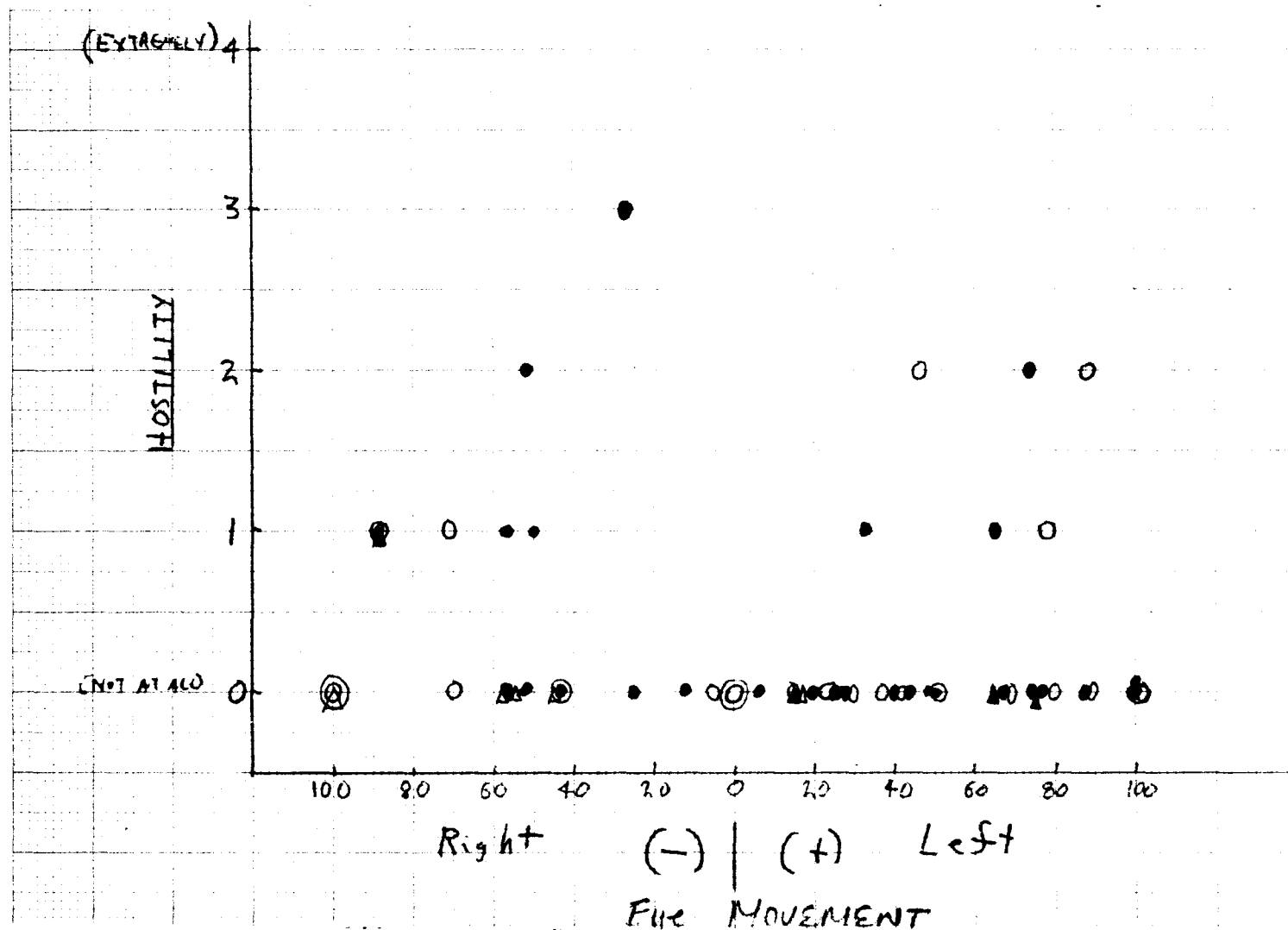


Figure VI. Scatterplot of eye movement and rating on hostility scale for subjects in the Body & Voice condition (N=59).

APPENDIX IV

Experiment II Questionnaire

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extremely relaxed	very relaxed	moderately relaxed	slightly relaxed	neither relaxed nor tense	slightly tense	moderately tense	very tense	extreme. tense
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extremely approachable	very approachable	moderately approachable	slightly approachable	not at all approachable
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extremely friendly	very friendly	moderately friendly	slightly friendly	not at all friendly
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extremely hostile	very hostile	moderately hostile	slightly hostile	not at all hostile
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2. In your own words, please indicate what you based your impressions of the person presented to you on. Once you have completed this question do not add to your answer just go on to question number 3.

3. Place the number corresponding to each of the following factors on the appropriate segment of the line on the scale shown below. Please place the numbers only on the lined segments. You may place more than one number on the individual segments.

- (1) verbalizations
- (2) tone of voice
- (3) eye contact
- (4) facial expression
- (5) movement of the upper extremities of the body (arms, hands, and shoulders)
- (6) movement of the lower extremities of the body

extremely influential	very influential	moderately influential	slightly influential	not at all influential
--------------------------	---------------------	---------------------------	-------------------------	---------------------------

Part III

4. On each of the scales shown below, place a check above the most appropriate description of how you feel AT THIS MOMENT. Please confine your rating only to the lined segments. Do not check a space between lines.

extremely relaxed	very relaxed	moderately relaxed	slightly relaxed	neither relaxed nor tense	slightly tense	moderately tense	very tense	extremely tense
----------------------	-----------------	-----------------------	---------------------	---------------------------------	-------------------	---------------------	---------------	--------------------

extremely approachable	very approachable	moderately approachable	slightly approachable	not at all approachable
---------------------------	----------------------	----------------------------	--------------------------	----------------------------

extremely friendly	very friendly	moderately friendly	slightly friendly	not at all friendly
-----------------------	------------------	------------------------	----------------------	------------------------

extremely hostile	very hostile	moderately hostile	slightly hostile	not at all hostile
----------------------	-----------------	-----------------------	---------------------	-----------------------

5. On each of the scales shown below, indicate how you felt DURING THE TIME YOU SPENT SITTING WITH THE OTHER PERSONS, JUST PRIOR to filling out this questionnaire, when the person to ^{be} judged was presented to you.

extremely	very	moderately	slightly	neither	slightly	moderately	very	extreme
relaxed	relaxed	relaxed	relaxed	relaxed	tense	tense	tense	tense
				nor tense				

extremely		very		moderately		slightly		not at all
approachable		approachable		approachable		approachable		approachable

extremely		very		moderately		slightly		not at all
friendly		friendly		friendly		friendly		friendly

extremely		very		moderately		slightly		not at all
hostile		hostile		hostile		hostile		hostile

6. On each of the scales shown below, indicate how you felt AT THE ONSET OF THE EXPERIMENT WHEN YOU FIRST CAME INTO THE ROOM.

extremely relaxed	very relaxed	moderately relaxed	slightly relaxed	neither relaxed nor tense	slightly tense	moderately tense	very tense	extremely tense
----------------------	-----------------	-----------------------	---------------------	---------------------------------	-------------------	---------------------	---------------	--------------------

extremely unapproachable	very unapproachable	moderately unapproachable	slightly unapproachable	not at all unapproachable
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extremely unfriendly	very unfriendly	moderately unfriendly	slightly unfriendly	not at all unfriendly
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extremely hostile	very hostile	moderately hostile	slightly hostile	not at all hostile
----------------------	-----------------	-----------------------	---------------------	-----------------------

Part IV

7. Place the number corresponding to each of the following factors above the appropriate segment on the scale shown below. Please place the numbers only on the lined segments. You may place more than one number on any given segment.

- (1) participating in an experiment
- (2) being confined to a room
- (3) presence of others

extremely influential in personal feelings	very influential in personal feelings	moderately influential in personal feelings	slightly influential in personal feelings	not at all influential in personal feelings
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8. To what extent have you taken seriously being in this experiment and answering the questions?

extremely	very	moderately	slightly	not at all
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9. It would be appreciated if you would volunteer the following information:

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Sex _____

Age _____

Religion _____

Race _____

APPENDIX V

LEM Questionnaire

Name _____ Date _____ Condition _____ Time _____
Phone _____ Hand _____ Experimenter _____

1) How many letters are there in the word ANTHROPOLOGY?

2) If you were elected president what would be your first act to help solve the racial problems of this country?

3) How many letters are there in the word WASHINGTON?

4) With your eyes open try to have an image of a man crying (for females a woman crying). Rate the clarity of the image on a scale from 1 (no image) to 5 (very clear just like real).

5) What is the capitol of the country?

6) What is your favorite season?

7) Describe your room at home to me?

8) What is the sixth letter of the alphabet?

9) What is your birthdate?

10) What are the characteristics you would desire in a perfect mate?

11) How much is 9x12?

12) Without looking am I wearing shoes with laces?

13) What is the opening line of the Gettysburg address?

14) Do you live with your parents?

15) Which is greater $3/4$ or $35/45$?

16) As best as you can remember, what were you doing one year ago today?

17) How many brothers and sisters do you have?

18) What time is it now to the nearest minute?

19) Which direction does George Washington face on the dollar bill?

20) Which is greater $15 \times 13 \times 12$ or $21 \times 20 \times 5$?

21) Generally do you go to most of your classes?

22) What color is the American flag?

23) Describe any particular beach in detail?

24) Repeat these digits 5 4 3 6 8 1 2 4?

25) What is your fathers first name?

26) What astrological sign are you?

APPENDIX VI

Experiment III Questionnaire

Identification Number _____

1. On each of the scales shown below, indicate your impression of the person presented to you by placing a check mark on the line above the most appropriate description. Please only put your check on a line (not between them).

_____	_____	_____	_____	_____	_____	_____	_____	_____
extremely	very	moderately	slightly	neither	slightly	moderately	very	extremely
relaxed	relaxed	relaxed	relaxed	relaxed	tense	tense	tense	tense
				nor tense				

_____	_____	_____	_____	_____
extremely	very	moderately	slightly	not at all
approachable	approachable	approachable	approachable	approachable

_____	_____	_____	_____	_____
extremely	very	moderately	slightly	not at all
friendly	friendly	friendly	friendly	friendly

_____	_____	_____	_____	_____
extremely	very	moderately	slightly	not at all
hostile	hostile	hostile	hostile	hostile

2. In your own words, please indicate what you based your impressions of the person presented to you on. Once you have completed this question do not add to your answer just go on to question number 3.

3. On what did you base your impressions of the ~~other~~ person presented to you?

Place a check mark on a line above the most appropriate description for each of the following. Please only put your check on a line (not between them).

(a) verbalizations

_____	_____	_____	_____	_____
extremely important	very important	moderately important	slightly important	not at all important

(b) tone of voice

_____	_____	_____	_____	_____
extremely important	very important	moderately important	slightly important	not at all important

(c) eye contact

_____	_____	_____	_____	_____
extremely important	very important	moderately important	slightly important	not at all important

(d) facial expression

_____	_____	_____	_____	_____
extremely important	very important	moderately important	slightly important	not at all important

(e) movement of the upper extremities of the body (head, arms, hands, and shoulders)

_____	_____	_____	_____	_____
extremely important	very important	moderately important	slightly important	not at all important

(f) movement of the lower extremities of the body

_____	_____	_____	_____	_____
extremely important	very important	moderately important	slightly important	not at all important

4. To what extent have you taken seriously being in this experiment and answering the questions?

_____	_____	_____	_____	_____
extremely	very	moderately	slightly	not at all

5. It would be appreciated if you would give the following information:

Sex _____

Age _____

Year in School _____

Race _____

Religion _____

Marital Status _____

Place of Birth _____

Native language _____

How many years have you lived in N.Y.C. _____

Did you grow up primarily in: the city _____

the suburbs _____

the country _____

Do you consider yourself to come from a family which is:

lower class _____

lower middle class _____

middle class _____

upper middle class _____

upper class _____

What do you expect yourself to be, 10 years from now:

lower class _____

lower middle class _____

middle class _____

upper middle class _____

upper class _____

Parents annual income _____

APPENDIX VII

Verbal Transcript of Videotape

VERBAL TRANSCRIPT OF VIDEOTAPE RECORDING

"Well, I like California very much, but I think the people aren't as relaxed as in Hawaii. One thing that I really like in Hawaii is that every Friday afternoon they have something called happy hour and all the Hawaiians wear mu mu's to work and the men wear aloha shirts with pineapples, and things like that on them--but um--and then also in the afternoon everyone would sit around, like say at 2:00 in the afternoon--something like that. Everyone would just quit working--we would sit around and drink beer, someone would bring a raw fish or something like that--we could all use chopsticks and just sort of hang out and drink--it was very nice in the afternoon."

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