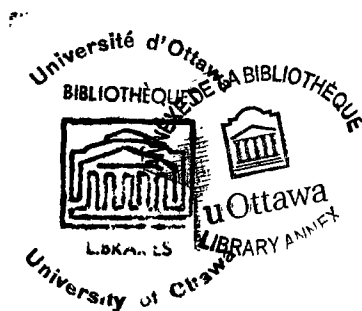


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AN EXAMINATION OF THE CONSTRUCT VALIDITY OF
THE PROFILE OF NONVERBAL SENSITIVITY:
THE PONS TEST

by Chantal M. E. Fisch

Thesis presented to the School of
Graduate Studies of the University
of Ottawa as partial fulfillment
of the requirements for the degree
of Doctor of Philosophy



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ABSTRACT

The growing interest in nonverbal communication has been observable throughout the scientific literature. This rapid expansion has presented some problems in the following areas: (1) methodological shortcomings; (2) absence of theoretical frameworks until recently; (3) ambiguous, controversial, and contradictory nature of some findings. This state of affairs suggested a need for studies oriented toward an integrative approach.

One of the research priorities appears to be in the area of measurement. The multiplicity of ways and means to measure nonverbal sensitivity was suggested as part of the source of the above-mentioned problems. In addition, individual differences reported in the literature may be explained, in part, by the use of a variety of methods to measure nonverbal sensitivity.

Recently a new instrument, the Profile of Nonverbal Sensitivity (PONS), was introduced. The creation of such an instrument was considered a major step toward a more integrative approach in methodology of research in nonverbal communication. Since the PONS is relatively new, it was deemed important at this point to investigate the validity of this instrument. Probable components of nonverbal sensitivity suggested by the literature were selected as possible predictors of the PONS test. This study limited its

investigation to four areas. Visual perception measured by the Group Embedded Figures Test was one. The second was an attitude based on expectancy of reinforcement as measured by the ANSIE adult locus of control questionnaire. The Comrey Personality Scales served as the third area. Age and sex were chosen as additional predictors.

The sample consisted of 288 introductory psychology students. The 12 predictors (age, sex, visual perception, locus of control, and eight personality scales) were related to the PONS test by means of two canonical correlation analyses. The first was carried out with the five pure channels of the PONS, and the second with seven factor scores derived from a factor analysis of the 25 PONS variables.

As a result of the two canonical correlation analyses, visual perception was demonstrated to be a primary component of nonverbal sensitivity followed by age, emotional stability and femininity as secondary components.

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CURRICULUM STUDIORUM

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

This research undertook to investigate the Profile of Nonverbal Sensitivity (PONS) test constructed by Rosenthal, Archer, Koivumaki, and Rogers (1972). The availability of such an instrument is seen as a major step that could facilitate research in the area of nonverbal communication. The fast-growing interest in nonverbal communication, both at the popular and scientific levels, has produced a profusion of studies, research and speculation which has largely been without the advantage of theoretical structures until recently. This state of affairs has left the field of nonverbal communication in apparent confusion because of individual attempts which reflected various approaches to research in nonverbal communication.

One of the outstanding problems in studying nonverbal communication has been the question of measurement. With the advance of communicational technology increasing sophistication of methodology has been observable. The measurement of nonverbal sensitivity evolved from the use of photography, acted role playing, masked content of speech, to audio-video tapes and motion pictures. Even with those technological advances, another recurring problem has been the question of individual differences.

The PONS test would seem to present several advantages for its use in research: (1) it is a measure of one aspect of nonverbal communication, mainly nonverbal sensitivity; (2) it has been standardized (norms established); (3) it uses motion picture as a medium; (4) it is easy to administer and score. However, some criticisms can also be made: (1) the acting or role playing of nonverbal messages of affect may have introduced possible artificial effects on the decoding task; (2) forced-choice answers allowing for guesses; and (3) the repetition of items making the test lengthy and sometimes monotonous.

The liability of using artificial means to measure any aspect of nonverbal communication has been stressed in the literature. Since research in the area has established the fact that nonverbal communication among other functions is the language of affect, an individual sensitive to its reading may be influenced by the artificiality of nonverbal expressions in a way which would be difficult to predict. The presence of subtle influential elements in nonverbal sensitivity such as the pygmalion effect, experimenter bias, and stereotypes has been underlined by various authors. The possibility that actors' portrayed feelings could represent caricatures of genuine feelings, which may influence the accuracy of a decoder, cannot be overlooked.

Therefore, the following question is appropriate: to what extent is the PONS test measuring nonverbal sensitivity? Based on speculations grounded in empirical results, instruments approximating these speculations have been selected. The works of Davitz (1964) and Duncan (1969) suggested that perception was a probable component of nonverbal sensitivity. For the purpose of this study, visual perception measured by the Group Embedded Figures Test (Witkin, Oltman, Raskin & Karp, 1971) was the perceptual variable chosen. The literature reviewed also underlined the influence of attitudinal variables on the decoder's judgment of nonverbal communication (Argyle, Alkema & Gilmour, 1970; Argyle, Salter, Nicholson, Williams & Burgess, 1970; Blau, 1964; Haase & Tepper, 1972; Mehrabian & Ferris, 1967). Thus, a measure of locus of control, the Adult Nowicki-Strickland Internal-External Scale (Nowicki & Duke, 1974) was a second instrument used. Finally, the inconclusive nature of the findings in the area of personality variables in relation to nonverbal sensitivity (Buck, Miller & Caul, 1974; Cartier, 1972; Davitz, 1964; Duckworth, 1975; Rosenthal, Archer, DiMatteo, Koivumaki & Rogers, Note 3; Starkweather, 1961) led to the selection of personality traits measured by the Comrey Personality Scales (Comrey, 1970). Theoretically, the variable measured by those instruments should display some associations with a measure of

nonverbal sensitivity. In other words, it was the aim of this study to test some of these speculations in relation to the PONS test to further its construct validation. To conclude this introduction, Anastasi (1976) stated:

Focussing on a broader, more enduring, and more abstract kind of behavioral description than the previously discussed types of validity, construct validation requires the gradual accumulation of information from a variety of sources. Any data throwing light on the nature of the trait under consideration and the conditions affecting its development and manifestation are grist for this validity mill (p. 151).

Nonverbal Sensitivity

Definitions

Nonverbal sensitivity is a part of the processes involved in nonverbal communication. Key questions have been raised concerning the meaning of nonverbal communication in itself and in relation to verbal communication. Ekman and Friesen (1969a) have made significant steps toward the clarification of this question. No formal definition of nonverbal communication has yet been agreed upon in the literature. Its meaning has fluctuated depending on how its nature, origin, and functions have been understood (Gladstein, 1974). However, a general agreement has been reached as to what areas are usually encompassed by nonverbal communication: (1) kinesics, or nonverbal behavior pertaining to body movement; (2) paralanguage, or the nonverbal components associated

with speech; (3) proxemics, which refers to distance and space between communicators (Duncan, 1969; Harrison & Knapp, 1972).

Harrison and Knapp (1972) have proposed a model of nonverbal communication: ABX - X'. A and B would represent the communicators: encoder-decoder. X would be the referent being communicated, such as feelings, attitudes, moods. X' would be the message about X. In this model, an encoder would be a communicator sending a message or expressing a referent nonverbally. On the other hand, a decoder would be a communicator receiving a message or reading nonverbal expressions being made about a referent.

Decoding is seen, therefore, as the process by which an individual would be using his or her nonverbal sensitivity. Nonverbal sensitivity was understood by Davitz (1964) as sensitivity to emotional meaning, or the ability to perceive, receive, recognize, and understand nonverbal communication of emotional messages. The focus of Davitz' definition has been on the process of communication and not on eliciting emotional reactions by some mode of interpersonal communication.

Historical and Theoretical Background

Melbin (1974) has noted the vigor of nonverbal research, but has made a point of caution against the imbalance between the large amount of empirical data resulting from

the pursuit of individual scholars' formulations of issues and the scant efforts at integrating those findings theoretically.

The few theoretical attempts at integration have been influenced by the old issue of nature-nurture. Authors who have leaned toward the nurture end of the continuum have seen the nature of nonverbal communication as a conscious interactional process aimed at the maintenance of social and interpersonal relationships (Gladstein, 1974; Weitz, 1974). Conversely, writers who have assumed an innate, unconscious nature of nonverbal communication are inclined to associate this form of communication with a primitive language man has been sharing with animals. Within this view, the development of nonverbal communication would precede verbal development (Argyle, Salter, Nicholson, Williams & Burgess, 1970; Beier, 1974, 1975; Mehrabian, 1971, 1972).

The neuro-cultural theory (Eckman, 1971) has been an attempt at reconciling both points of view, while describing the processes involved in the nonverbal communication of affect. Further, the neuro-cultural theory has been given considerable recognition and lends itself well to the theoretical explanation of many findings (Gladstein, 1974; Weitz, 1974). This theory proposed two sets of determinants interacting with each other. The universal element embodied

in a facial affect program would link each primary emotion to patterned sets of neural impulses. Those, in turn, would activate the facial muscles. The other determinant is made of cultural elements such as the elicitors of emotion, the display rules, and the consequences of emotion. In the case of a primary emotion being elicited, the facial affect program, if not interfered with, would set its discharge in motion and the consequences of emotion would be clear-cut and universal to decode. However, if blends (secondary or multiple emotions) and/or the display rules become part of the process, the decoding of affect then becomes a complex task. The display rules could either mask, neutralize, intensify, or reduce the expression of primary emotions.

Davitz (1964) utilized Schachter's theory of emotion to look at his correlational findings. Using this model, Davitz saw the vocal nonverbal aspects of emotional communication as a function of physiological arousal and the verbal components of emotional communication as a function of cognitive determinants. In his review of the literature, Davitz anticipated Ekman as he already noted the interaction between innate and acquired determinants of nonverbal communication.

Ekman and Friesen (1968), and similarly Duncan (1969), have proposed two complementary approaches to the methodology

of research in nonverbal communication. One would be the indicative approach seeking the meaning of nonverbal behaviors through the systematic variation of nonverbal behavior with variables such as context, role, and personality characteristics. The other, called the communicative approach, would analyze the meaning of nonverbal behaviors through the decoding process.

Up to this point, the definitions of nonverbal communication, nonverbal sensitivity, and decoding have been presented, together with some of the emerging theoretical foundations of nonverbal communication. The task of summarizing and organizing a presentation of nonverbal research findings has been difficult in the absence of a generally agreed upon systematic approach to this problem area.

In particular, this has been true in relation to the process of decoding which is the primary thrust in this research (Gladstein, 1974; Wertz, 1972). The following elements have particular importance: (1) nonverbal communication has been seen as the language of affect; (2) decoding of nonverbal communication has been reported as an important aspect in the regulation, influence and control of interpersonal situations; (3) the decoding of information about affect would seem crucial for survival in any social context; (4) the information thus obtained, would vary according to the type of emotions, context, role, personality characteristics,

and types of cues and channels used in the decoding of nonverbal communication.

For the sake of clarity, the research evidence related to the decoding process will be presented in the next three sections of this chapter: the first will be concerned mainly with the influence of cues and channels; the second will compare the value of decoding nonverbal behavior as compared to verbal behavior; finally, the third will present evidence of individual differences in the ability to decode nonverbal communication of affect.

Research Background of Decoding

Studies of Cues

Various attempts have been made to classify nonverbal cues. Ekman and Friesen (1969a) have categorized those cues according to their origin, coding, and usage. Mehrabian (1971, 1972) has grouped nonverbal cues along global dimensions of affect. Evaluation would include facial and vocal cues, potency would be represented by postural relaxation cues, and activity by nonverbal responsiveness.

Some studies have investigated nonverbal cues in relation to dimensions of affect. One study found that two dimensions (pleasant-unpleasant, and excitement) were highly related to vocal cues (Green & Cliff, 1975). Although

this study used an improved methodology compared to other studies, the stimuli were constructed by an encoder acting emotions and the size of the sample was small, suggesting caution in regard to the interpretation of the results. In another study, pleasantness-unpleasantness of affect was decoded from spontaneous facial expressions, while intensity of affect was not (Buck, Savin, Miller & Caul, 1972). In this case again the size of the sample was small. Ekman and Friesen (1968) covered similar grounds and suggested that the information provided by facial versus body cues would depend on the specificity of the affect being expressed.

Several studies have dealt with specific emotions. In one of them, Ekman and Friesen (1969b) proposed that leakage of deception cues could be observable from the body area rather than the face. In a later study, the same authors (1974) audiovideotaped spontaneous expressions of 21 female subjects who were asked to deceive an interviewer while highly motivated to do so. A group of judges ($n = 223$) were shown videotapes of either body or facial cues. To measure the effect of deception on hand movements and pitch of voice, the same audiovideo tapes were used again (Ekman, Friesen & Scherer, 1976). Hand movements illustrating speech decreased significantly, while pitch and hand movements symbolizing feelings increased significantly during

deceptive interviews. Another conclusion from the same study was that decoders of body cues showed greater accuracy in judging deceptive attitudes than decoders using only facial cues.

In two studies dealing with specific emotions, Waxer (1974) videotaped interviews of patients admitted to a psychiatric ward. Sixty-seven decoders at various levels of sophistication in psychology were shown the videotapes. The results indicated that various visual cues of depression were successfully isolated. In a further study, Waxer (1976) used two groups of decoders ($n = 30$ and $n = 28$) enrolled as undergraduate students. Even with no informational set (defined as a nonverbal cue form) to rate depression, decoders were able to discriminate depth of depression.

Another group of studies has been concerned with the cues related to the communication of therapeutic attitudes. Most were based on poor methodological grounds (small samples, poor definition of attitudes, and the use of photographs or pictures as the means to isolate relevant nonverbal cues). Their findings indicated that: (1) therapeutic attitudes were communicated nonverbally mainly by using facial cues (Shapiro, Foster & Powell, 1968); (2) some therapists' proxemic cues conveyed positive or negative valence (Kelly, 1972); (3) smiling was the best predictor for decoding interpersonal warmth (Bayes, 1972).

The following group of studies focused on the relationship between nonverbal cues and impression formation. Again, some shortcomings were noted such as the use of actor-encoders and photographs. Their findings suggested that: (1) gazing was influential for the formation of a positive impression (Kleinke, Meeker & la Fong, 1974; Kleinke, Staneski & Berger, 1975); (2) duration and reciprocity of eye contact were related to inferences about the length of a relationship (Thayer & Schiff, 1974); (3) intimacy was decoded from short distances, eye contact and corner seating arrangement (Scherer & Schiff, 1973); (4) repeated eye contact and short distances were related to the formation of a positive impression (Scherer, 1974); (5) persuasiveness and attractiveness were related to encoded affiliative behaviors of counselors (actors) (La Crosse, 1975).

From the preceding review, nonverbal cues were shown to be relevant to the decoding of broad dimensions of affect, specific emotions, attitudes, and impressions. Although methodological shortcomings were pointed out, the importance of visual cues was stressed by various studies. However, Davitz (1964) demonstrated that emotional meaning could also be communicated by vocal cues: "In each instance, the accuracy with which emotional meaning was communicated far exceeded expectations" (p. 177). In reviewing studies on vocal cues, Starkweather (1961) noted:

The tone of voice and the manner of speaking affect the listener's perception of the speaker's feeling-state. These vocal guideposts suggest some of the personality characteristics of individuals, often enable a person to recognize a friend without seeing him, and indicate the speaker's emotional condition of the moment (p. 63).

Davitz (1964) mentioned three major techniques employed to isolate vocal from verbal cues. The techniques used by Davitz and his associates were the recitation of numbers or the alphabet and neutral standard verbal content. The two techniques served as vehicles for the nonverbal expression of affect. The third technique, the masking of words by "electronically content-filtered voice" of certain frequencies and "randomized spliced voice" of an audiotape, was implemented by Rosenthal et al. (Note 3) in the construction of the PONS test. The PONS test included both vocal and visual cues conveying two affective dimensions: negative versus positive, and dominant versus submissive. It was demonstrated that both manners of masking words had no differential effects for specific emotions. Both types of vocal cues led to accurate decoding above chance expectation. However, electronic filtering decreased the perceived activity of an emotion, while randomized splicing increased the evaluation perceived in an emotion (Scherer, Koivumaki & Rosenthal, 1972).

Studies of Channels

How are cues related to nonverbal channels of communication? Melbin (1974) underlined the confusion surrounding this concept in its practical use. A channel is defined as an outlet through which messages are being expressed and which would unite encoders and decoders. A channel thus refers mainly to the modality employed by an encoder to express himself nonverbally to a decoder. The decoder, therefore, should be equipped with perceptual mechanisms in order to receive the message sent through the means of certain modalities.

There has been a great deal of attention given to the differential effect of channels on the decoding task. The superiority of the visual channel over the audio channel or over the audio-visual combination has been demonstrated in several studies (Burns & Beier, 1973; Gitter, Black & Goldman, 1975; Levitt, 1964; Mehrabian & Ferris, 1967; Shapiro, 1966; Washburn & Hakel, 1973). The foregoing studies suggested several possibilities: (1) that the audio channel when combined with the video introduced more noise than information; (2) that when channels provided conflicting messages, the visual channel carried about two-thirds of the weight received by the audio channel; (3) that when the technique was improved to isolate vocal cues, both channels and feeling categories were significant; that the visual channel

was found important to decode happiness accurately, while the audio channel was important to decode anxiety; (4) that the visual and audio channels were relatively independent of each other and thus may be providing different types of information to the decoder; (5) that nonverbal communication as a whole was more influential in the perception of the encoder than particular modes of presentation.

The superiority of the visual channel should be noted, as it tends to support the importance of visual cues stressed in the previous studies of cues. The research on channels of nonverbal communication has used basically the same methodology (multichannel approach). They varied only in sample size, recording devices (motion pictures, audiovideo-tapes), and types of affect to be decoded. Most of this research has used actor-encoders to construct their stimuli.

It was pointed out that the understanding of multichannel communication was the ultimate goal of research in human communication (Weitz, 1974). Present efforts in the field have been offering some hope for a unified approach. Melbin (1974) has already reviewed five functions of multichannel nonverbal communication: (1) a redundancy effect, that is, one channel's information intensifying the information provided by another; (2) the distribution of positive and negative feelings in different channels to avoid unpleasant confrontations as in conflicting communications;

(3) alternative ways of facilitating nonverbal communication as it may relate to adaptive abilities; (4) increased capacity to communicate a variety of information; and (5) monitoring of one channel by another.

As already noted, Davitz and his associates (1964) have mostly used the audio channel of nonverbal communication and have reported significant findings. Rosenthal, Archer, Koivumaki, DiMatteo, and Rogers (Note 4) have provided the PONS test with three types of channels: (1) five pure channels including face, body, figure (face and body), randomized splicing of speech, and electronic filtering of speech; (2) six mixed channels combining the five pure channels in different ways; and (3) seven pooled channels which were created by the pooling of all relevant cues in the other channels (pure and mixed) as they related to tone only, video only, face, body, figure, randomized splicing, and filtered content.

Studies of both cues and channels of nonverbal communication have been presented in relation to the decoding task in general and to Davitz' work and Rosenthal's test in particular. The next section will be concerned with the relative importance of decoding nonverbal as compared to verbal communication.

Studies of Verbal versus Nonverbal Communication

The best introduction to this section would be a statement made by Galloway (1974) for what he has considered a language of sensitivity:

The nonverbal is so complicated that it can convey an entire attitude, yet so simple that when a head nods or shakes everyone understands. All human relationships involve meanings that are more than words, and the nonverbal exposes the truth in these relationships (p. 380).

Ekman and Friesen (1968) concluded that it would be crucial to demonstrate that the verbal and nonverbal channels of communication were not merely redundant, but, that what would be gained by studying nonverbal communication, would not be provided by the analysis of verbal behavior alone. Davitz (1964) pointed out that in our verbal, problem-solving Western civilization, scientific enquiries associated with nonverbal sensitivity have been considered "unhealthy," "undesirable," "childish," if not "neurotic." Haase and Tepper (1972) have also underlined the verbal emphasis given to the definition of empathy, as they discovered that twice as much variance was carried by nonverbal as compared to verbal components of empathic communication. Duncan (1969), reviewing the nonverbal literature, stressed the "typical" neglect of studies of nonverbal communication although the prominent role of this mode of communication had long been demonstrated. Even if practitioners have recognized the

importance of nonverbal communication, systematic studies of the phenomenon have been "conspicuously" absent from research in psychotherapy (Ekman & Friesen, 1968).

Some studies, however, have demonstrated that when nonverbal communication accompanied speech, nonverbal cues could function as regulators and monitors of verbal interaction. Ellsworth and Carlsmith (1973) demonstrated experimentally that visual cues provided by a victim-encoder have the potency of reducing the number of shocks administered by a decoder if the encoder was angered. Quasi-courtship behaviors were seen as system maintaining devices aimed at sustaining verbal interaction while enhancing gender identification (Schefflen, 1965). Eye contact, that is, gaze, in the light of need affiliation and dependency would serve as an input sampling mechanism by which internal images of the environment are being updated (Kendon, 1967). Body movements during verbal interactions were seen as a synchrony which would help speakers and listeners to synchronize their speech (Kendon, 1970), and which would provide each participant with rules and signals for taking speaking turns (Duncan, 1972). Apart from the monitoring function of nonverbal communication, nonverbal cues could also act as: (1) feedback for assessing the quality of an ongoing relationship; (2) a language of affect; (3) an instrument to express unconscious attitudes; (4) a substitute for words when

matters would be difficult to verbalize; (5) a qualifier to provide a background for word interpretation (Ekman & Friesen, 1968). Ellsworth and Ludwig (1972) suggested similar functions related to visual behavior.

Some studies have researched how verbal and nonverbal components of a communication would interact when presented simultaneously to a decoder. When the interaction was concerned with the expression of affect, two kinds of decoders were found. Those who relied on linguistic cues, and those who used nonverbal cues. The presence of a reliable trait was suggested by Shapiro (1968) and Vande Creek and Watkins (1972). Inconsistent messages were explored by a series of investigators: Mehrabian and Wiener (1967); Argyle, Salter, Nicholson, Williams, and Burgess (1970); Argyle, Alkema, and Gilmour (1970); Watson (1972); Bugental (1974); Graves and Robinson (1975). These studies indicated that decoders would solve inconsistencies, offered by different channels simultaneously, by relying on nonverbal components of the communication. This occurred even when those inconsistencies produced uneasiness in the decoder (double bind). The discounting of the verbal channel would occur, depending on the credibility of the nonverbal cues provided by the encoder.

If the nonverbal part of a communication is considered background to the verbal part, the nonverbal

components would be less consciously perceived. Thus either high levels of sophistication would be required on the part of a decoder for accurate judgment and high nonverbal sensitivity, or none at all. The degree or absence of sophistication required to be nonverbally sensitive would depend on whether one would see this ability as acquired or innate (Shapiro, 1968). Starkweather (1961) agreed that:

Most of the time an adult listener does not consciously attend to vocal expression as a communicative stimulus separate and distinct from the speaker's words. Nonverbal signals, nevertheless are influential; and if at variance with the ideas presented through language; they are usually believed (p. 63).

This section has underlined the importance of non-verbal aspects of an overall communication (both consistent and inconsistent). The tendency to attend to either verbal or nonverbal components of a communication would suggest the influence of individual differences. The following section will review studies which have dealt with this topic. However, for the purpose of this study, individual differences will be considered in the following areas only: sex, age, personality, attitude, and perceptual-cognitive style.

Studies of Individual Differences

Sex Differences

Davitz (1964) noted that research evidence presented a consistent contradiction: there are sex differences versus there are no sex differences. Two possibilities could explain this contradiction: Most studies overlooked the influence of the encoder's sex on the decoder's judgment, for example, different types of affects could be decoded with differential facility by males or females. Davitz (1964) and his associates found no significant sex differences during the course of their research. Further evidence showed a tendency to support Davitz' speculations on the influence of the decoder's sex on the decoder's judgment. Sex differences in decoding certain types of affect were found (Argyle, Alkema & Gilmour, 1970; Argyle, Salter, Nicholson, Williams & Burgess, 1970; Cupchik, 1972; Hackney, 1974; Sweeney & Cottle, 1976). Sex characteristics of both encoders and decoders have been investigated in relation to nonverbal communication (Buck et al., 1972; Buck et al., 1974; Schiffenbauer & Babineau, 1976; Zuckerman, Lipets, Koivumaki & Rosenthal, 1975).

In summary: (1) decoding a nonverbal communication of affect was a function of the unusual quality of the affect being expressed, the interaction between encoder-decoder's sex, and sex-role stereotypes; (2) decoding audio channels was more accurate with pairs (encoder-decoder)

of the same sex; (3) decoding visual cues was more accurate with pairs of different sex; (4) males tended to be better decoders of vocal cues; (5) familiarity with the encoder increased the decoding accuracy of males but not of females; (6) in general, regardless of types of cues used, females were slightly better encoders and significantly better decoders than males; (7) in judging affect, pairs with female decoders were not significantly different from pairs with male decoders; (8) female pairs were more effective than male pairs in communicating affect nonverbally; (9) females and highly expressive males were more accurate decoders of specific feelings than low expressive males, the accuracy of high expressive males being only in terms of high expressive encoders. These findings would suggest that the relation between sex differences and the ability to decode and attend nonverbal communication could be either complex or an artifact of the different instruments used in those studies.

Cupchik (1972), on the basis of his experiment exploring sex differences in relation to decoding abilities, concluded that there would be a need for more detailed analysis in order to determine the processes underlying the decoding of nonverbal communication of affect. Rosenthal et al. (Note 4) and Rosenthal (1974) observed the high accuracy of female decoders of the PONS test as compared to male decoders. They checked this accuracy of females, by

comparing male and female decoders on identical audio portions of the PONS with a male encoder. Female decoders still performed significantly better than male decoders. Rosenthal and his associates concluded that the evidence argued against the influence of a woman encoder on women's higher accuracy on the PONS test.

Age Differences

Dimitrovsky (1964) found that between the childhood years of 5 and 12, considerable growth occurred in nonverbal sensitivity to vocal cues. Individual differences were also evident during this 7-year period. Davitz (1964) concluded, on the basis of his findings, that nonverbal sensitivity developed along with chronological and mental age from age five up through early adolescence. Rosenthal et al. (Note 4, 1974, Note 3) confirmed those findings in their various communications concerning the PONS test. More specifically, they found, based on cross-sectional studies, that accuracy at decoding the PONS increased with age levels. The linear relationship between total PONS score and mean age was strongest in the 8 to 25 age group; after that age, the performance on the PONS levelled off. Analysis of grade school children's samples indicated that the development of nonverbal sensitivity was stronger for video than audio accuracy. It was suggested, therefore, that children's

nonverbal sensitivity started with vocal cues. Attention to, and sensitivity for, facial cues developed at a later stage.

Personality Differences

What would be the effect of the decoder's personality characteristics on his judgment of nonverbal expressions of affect? Davitz (1964) commented on this issue:

Almost nothing appears in the experimental literature relevant to the relationship between sensitivity to facial expression and either the judge's personality or his emotional state at the time he makes his judgments (p. 22).

Using paper-and-pencil tests, Davitz (1964) attempted to relate personality measures to the ability to decode vocal expressions of affect. The following tests were administered to a large group of graduate students ($n = 80$): a self-concept scale based on Gough's Adjective Check List, the Guilford-Zimmerman Temperament Survey, the Edwards Personal Preference Schedule, the Psychasthenia and Hysteria scales of the Minnesota Multiphasic Personality Inventory. None of the results was conclusive. It was concluded that personality variables, as they were measured, were independent of sensitivity to emotional expressions. However, Levy (1964) felt that even if those results did not assist in isolating personality correlates of nonverbal sensitivity, this approach (personality variables) should not be abandoned since the

results obtained by Davitz might be due, in part, to the type of personality measures used.

Some studies have dealt with the decoding process when perceptual mechanisms were either not available to the decoder or were influenced by mental disorders. These studies have demonstrated that those aspects alter personality characteristics of a decoder, hence, the way nonverbal communication is decoded. Fifty-seven blind decoders were compared to 66 sighted decoders and were found, contrary to a popular belief, less accurate in judging affect from vocal communications. What seemed to interfere with their ability to decode was an "affect attention" acting as selective attention. Blind decoders tended to read affect in vocal communication even when none was being expressed (Blau, 1964). Seventeen adolescents with learning disabilities made errors at decoding videotaped acted emotional expressions, which were related to reduced visual-motor organization as measured by Block Design and Object Assembly of the Wechsler Intelligence Scales (Wiig & Harris, 1974). Mental disorders were also investigated in relation to the decoding of nonverbal expressions of affect. It was shown that 30 male schizophrenic persons were less sensitive to vocal communication of affect than nonschizophrenic persons (Turner, 1964). Dougherty, Bartlett, and Izard (1974) found that some particular facial expressions (on pictures) produced

a bias which was not overcome by 31 female schizophrenics. On the other hand, 23 subjects of the control group had the same tendency, but were able to overcome their bias and, therefore, responded more accurately. Rosenthal et al. (Note 3) compared the performance of 68 neuropsychiatric patients, 61 alcoholic patients, and high school students (control group, $n = 482$) on the PONS test. Both patient groups showed an overall lower profile on the PONS channels than the student group. Dysfunction of sensory-perceptual cognitive processes thus seemed to decrease the accuracy at decoding nonverbal communications of affect.

Eysenck's Extraversion-Neuroticism Scales have been related to nonverbal sensitivity without significant results (Argyle, Salter, Nicholson, Williams & Burgess, 1970; Cartier, 1972). However, Duckworth (1975) demonstrated with 36 married couples that, after disagreement, nonverbal sensitivity to vocal expressions of affect increased for stable introverts (Eysenck Personality Inventory) and decreased for neurotic introverts. In another study, extraverts were reported to exhibit more eye contacts than introverts while speaking and listening (Ellsworth & Ludwig, 1972). A small sample ($n = 24$) of introductory psychology students was divided into dependent subjects (defined on the Deference Scale of the Edwards Personal Preference Schedule), and autonomous subjects (defined on the Autonomy

Scale of the same test). The two groups were compared on their nonverbal sensitivity to shifts in nonverbal cues (positive to negative and vice versa) by an interviewer-encoder. No significant differences in nonverbal sensitivity were found between dependent and autonomous subjects (Gatton & Tyler, 1974).

For a small sample of female decoders, self-esteem was found to be related to the ability to decode facial expressions of encoders when they were in the process of looking at affect-loaded pictures (Buck et al., 1972). In an unpublished study by Fisch (Note 1), the revised Campbell, Stevens, Uhlenhuth and Johansson's A-B Therapist Variable Scale was related to nonverbal sensitivity as measured by the PONS test. Two out of 11 correlations were significant for group I (subjects: $n = 16$, who were administered the PONS test for the first time prior to systematic empathy training) and 1 out of 11 correlations was significant for group II (subjects: $n = 16$, who were administered the PONS test for the first time after systematic empathy training). In group I there was a significant correlation ($r = -.55$) between accuracy at decoding the video channel of the PONS and B-type subjects (low scores on the A-B scale), as well as between the accurate decoding of the positive-submissive quadrant of the PONS test and B-type subjects ($r = -.55$). In group II, accurate decoding of the

negative-submissive quadrant of the PONS test was significantly related to A-type subjects. The small proportion of significant correlations led to the conclusion that they could have been obtained by chance.

Rosenthal et al. (Note 3) investigated the California Psychological Inventory in relation to the PONS test. Moderate positive correlations with most subtests of this measure were mentioned (values and sample size were not reported). It was concluded that high scorers on the PONS would display high social and intellectual functioning. Contrary to a previous attempt (Davitz, 1964) to relate the Allport, Vernon and Lindzey Study of Values to nonverbal sensitivity, religious values correlated positively and significantly with the PONS total scores for 38 teachers, while theoretical values correlated negatively and significantly to the pure tone channel of the PONS.

Attitudes

The above section has underlined the inconclusive nature of the findings related to some personality characteristics. So far, research has not led to any definite conclusion about the effect of personality characteristics on, or their relationship with, a decoder's nonverbal sensitivity. On the other hand, attitudes might be influential as they could affect nonverbal sensitivity and the decoding process

through their impact on perception. The study of expectations led Rosenthal et al. (1974) to conclude that the attitudes of a person in a position of authority were communicated nonverbally and interpreted as an expectancy by the decoder about his or her success or failure in achieving a task. Duncan, Rosenberg, and Finkelstein (1969) pursued this line of inquiry and demonstrated that female undergraduate subjects ($n = 212$), induced with an evaluation apprehension, were influenced by different paralinguistic cues, as opposed to subjects who were not expecting a crucial evaluation.

The phenomenon of affect-attention found as a source of error in blind decoders of vocal expressions of affect was described by Blau (1964) as an acquired system of related attitudes which, given stimulating circumstances, would call forth a selective readiness to react and respond (decode) in a certain way. Severson (1975) studied the effect of decoding positive and negative nonverbal cues on selected nonverbal behavior responses of 355 male and female introductory psychology students. Rotter's Internal-External Locus of Control Scale was used to define subjects as internal or external. Internals and externals were not found to be significantly different on the type of nonverbal behavior they emitted as a result of their decoding positive or negative nonverbal cues. Davitz (1964) found no

significant relations between Rokeach's Opinionation and Dogmatism Scales and nonverbal sensitivity to vocal expressions of affect.

The PONS test was studied in relation to three attitudes (Rosenthal et al., Note 3). First, with leadership style as defined by the Fiedler Least Preferred Co-Worker's Test which showed that task-oriented leaders performed better on the PONS than relationship-oriented leaders. It was proposed that the task-oriented leaders developed the ability to read nonverbal cues of others in order to increase the efficiency of their communication with other workers (no correlational values or size of sample were reported). Second, the Minnesota Teacher Attitude Inventory (MTAI) showed moderate positive, but not significant, correlations with the PONS test. In samples of 53 student teachers and of 38 classroom teachers, the correlations between the PONS total score and MTAI were $\underline{r} = .25$ and $\underline{r} = .24$, respectively. It was concluded that more democratic oriented teachers were more sensitive to nonverbal communication than teachers with more autocratic values. Third, Christie and Geis' Machiavelli Scale was also investigated along with the PONS test. As predicted, people scoring high on the Machiavelli Scale (manipulators) tended to score low on the PONS. For 48 college students, correlations for total

PONS score was $r = -.274$ ($p < .07$) and with Body 60 of the PONS, $r = -.300$ ($p < .05$).

Perception and Cognition

The review of the nonverbal literature on the effect of attitudes on decoders' nonverbal sensitivity suggested that those attitudes would influence the way in which a nonverbal message of affect would be received and interpreted.

Duncan (1969) underlined this possibility:

Thus, the subjects' perceptions, influenced by expectations, and/or by situational characteristics, and/or by subject personality type, constitute an important source of variance in studies of nonverbal interaction (p. 133).

Duncan et al. (1969), in a study on evaluation apprehension, demonstrated evidence for this view, while leaving the question of the underlying processes involved unanswered. Kendon (1967) proposed that women who were known to be more field-dependent than men might spend more time looking at their interlocutor, as they would be more dependent on visual information. Field-dependence (Embedded Figures Test), however, was later negatively correlated to amount of looking behavior while speaking (Ellsworth & Ludwig, 1972). Several other studies confirmed that field-dependent people look at others' faces as part of their information-seeking strategy (Witkin & Goodenough, 1977). Wiig and Harris (1974) based their study on the assumption that decoding nonverbal communication of affect would involve sensory and labelling processes. Findings related to brain injuries showed that lesions to the right hemisphere caused

errors of recognition, while lesions to the left hemisphere caused errors of naming the messages conveyed by facial expressions. Accordingly, young adolescents with learning disabilities were found to exhibit errors of recognition related to visual-motor organization.

Cognitive and perceptual correlates were investigated in relation to the PONS test (Rosenthal et al., Note 3). Standard IQ tests showed low median correlations: $\bar{r} = .23$ for high school students, and $\bar{r} = .13$ for Irish nurses. Median intercorrelation between the Scholastic Aptitude Test (across all PONS measures and all samples) was $\bar{r} = .11$. Low Cognitive Complexity, defined by the Bieri Test, related, in one college student sample ($n = 14$) with high scores on the four quadrants, all tone, and video only items of the PONS. On the other hand, high cognitive complexity was found to be related to high scores on the visual and auditory channels of the PONS. In another college student sample (size of sample or correlation values were not reported), high complexity was associated with high PONS scores. Witkin's Embedded Figures Test was administered to two PONS samples with the following results: high PONS skills for women were related to field-independence, while high PONS skills for men were related to field-dependence. The PONS skills were defined by PONS total scores and scores on visual portions of the PONS test. Again, no correlational

values or sample characteristics were reported. The studies reported by Rosenthal et al. (Note 3) raised the question of whether the results provided a clear-cut significant relation between the PONS and measures such as intelligence, cognitive-perceptual style, and cognitive complexity. The ambiguity of the results implies a need for further investigation.

With the earlier attempt at isolating personality correlates of nonverbal sensitivity having resulted in inconclusive results, Davitz (1964) speculated on the possible underlying processes of nonverbal sensitivity. In order to understand the meaning of a nonverbal communication of affect, a decoder has to discriminate the nonverbal cues carrying that meaning. To respond with propriety to these perceived nonverbal stimuli, to understand and identify their meanings, a decoder requires a cognitive ability to deal with abstract symbols, and this in order to organize those nonverbal characteristics or symbols into emotional meanings. After perceiving and organizing the nonverbal stimuli, a decoder has to interpret such meanings using an implicit and more or less conscious knowledge of conventional cues of emotional meanings. The decoder has to name the feeling expressed which would necessarily require verbal ability.

The above points were tested with the following measures: (1) the Seashore Measures of Musical Talents (sensory discrimination); (2) the Raven Progressive Matrices (abstract symbolic abilities); (3) a 5-point rating scale

(knowledge of vocal characteristics); (4) Thorndike Vocabulary Test (verbal intelligence); the Content Standard Technique described and used by Beldoch in 1964 (nonverbal sensitivity). The results showed significant correlations (at .01 level) for the four predictor variables with nonverbal sensitivity. All the predictor variables were positively interrelated with low but significant correlations. Together, those four abilities (discrimination, verbal intelligence, abstract symbolic, and knowledge of vocal characteristics) accounted for 40% of the variance. Davitz suggested that his findings supported a conceptualization of nonverbal sensitivity as involving complex stimuli, intervening perceptual and symbolic processes, and subsequent verbal action.

The intercorrelations among the perceptual and cognitive variables were low and, therefore, indicated a relative independent contribution of each variable to nonverbal sensitivity, in this case, the ability to decode accurately vocal expression of affect. Davitz concluded that a minimal ability in each of several perceptual and cognitive dimensions would be required. Each would contribute a necessary but not sufficient element to nonverbal sensitivity. Davitz also noted that his findings had not exhausted the possibility that other variables (perceptual, cognitive, interest, motivation) could be relevant to the processes underlying

nonverbal sensitivity. From Davitz' point of view, all individual differences were not accounted for by the variables he had investigated. To sum up Davitz' thinking on the nature of nonverbal sensitivity, and his own contribution, this statement would seem relevant:

Granted that our investigations of possible personality correlates were not overly imaginative, relying, as we did, on various paper-and-pencil questionnaires, we finally realized that regardless of whether or not personality factors entered into the total response we called sensitivity, certainly perceptual and cognitive factors played an important role in this kind of behavior (Davitz, 1964, p. 197).

Based on these findings, Davitz (1964) made two propositions. The first was that both perceptual and cognitive skills were part of the underlying psychological processes of nonverbal sensitivity. The second was that nonverbal communication could well be represented by a general factor together with specific factors. Nonverbal abilities would then be understood as a form of intelligent behavior involving non-intellectual aspects as well, all contributing to the total response called nonverbal sensitivity.

If general and specific factors represent the underlying processes of nonverbal communication, then the following preoccupations should be noted: Davitz (1964) first mentioned the question: "The general problem of determining who expresses most effectively to whom remains virtually untouched" (p. 188). Since that statement, others have echoes: "We have also noted that individual differences

in the ability to encode and decode are to be taken seriously" (Burns & Beier, 1973, p. 128). These latter authors suggested that the study of idiosyncratic components of encoding and decoding would help clarify this question. After reviewing nonverbal research in psychotherapy, Gladstein (1974) concluded:

Based upon what we now know, it is imperative that researchers carry out both encoder and decoder studies. As noted earlier in this review, we can not assume that good encoders of NVC [nonverbal communication] are necessarily good decoders (p. 40).

Rosenthal et al. (1974) joined the chorus when he asked, "What kinds of senders, for example, influence particular receivers most effectively?" (p. 65). In general, the findings related to the decoding process have been more uncertain as compared to those related to the encoding process. Melbin (1974), having noted this weakness, underlined the need to investigate decoders' variables in what he stated to be "challenges in studying the receiving end of nonverbal communication" (p. 301). The present study undertook the challenge of exploring the decoding process, a manifestation of nonverbal sensitivity.

Conclusions

In order to further test the construct validity of the PONS test, measures were selected as suggested both by the review of the literature, and particularly Davitz'

speculations. If Davitz' speculations are valid regarding perceptual and cognitive correlates of nonverbal sensitivity, and if the PONS test measures nonverbal sensitivity, then there should be a relationship between the Group Embedded Figures Test (Witkin et al., 1971) and nonverbal sensitivity as measured by the PONS test. The Embedded Figures Test was used in relation to two PONS samples with field-dependence related to male nonverbal sensitivity and field-independence to female nonverbal sensitivity (Rosenthal et al., Note 3). However, no correlation values or sample sizes were reported. The Group Embedded Figures Test is used to measure visual perception. The ability to locate a simple figure in a complex one requires visual discrimination and abstract abilities. A cognitive style (analytical and structural abilities) is implied by the perceptual ability displayed on the Embedded Figures Test.

Davitz (1964) noted that all individual differences were not accounted for by the variables (perceptual and cognitive) he had investigated. He suggested that some psychological variables such as interest and motivation could be fruitfully investigated in relation to nonverbal sensitivity. Further, if cognitive and perceptual variables would form what Davitz (1964) called a "g" factor involving a form of intellectual behavior, then the specific factors could be attitudes and personality variables and would

relate to what Davitz called the nonintellectual aspects which, together with perceptual and cognitive aspects, would contribute to the total response called "nonverbal sensitivity."

Duncan et al. (1969) found that decoders' expectations influenced their nonverbal sensitivity to nonverbal cues. Blau (1964) found that affect attention influenced blind decoders in their interpretation of nonverbal communications of affect. The PONS was also related to three attitudes: task-oriented leadership style, democratic teaching orientation, and manipulators as measured by the Machiavelli Scale (Rosenthal et al., Note 3).

In order to measure the possible effect of an attitude, based on expectancies, on decoding nonverbal communication, the ANSIE Locus of Control Scale (Nowicki & Duke, 1974) was selected. A person who would expect reinforcement to be the result of outside circumstances (such as luck, powerful others, fate) would be defined as external. On the other hand, the expectancy that reinforcement would be the outcome of one's own actions would define a person as internal. An external decoder could be expected to have high nonverbal sensitivity as part of a survival attitude. Being dependent on others for reinforcement may relate to being attentive to nonverbal communication

of affect. But the alternate hypothesis may also be tenable. Individuals expecting reinforcement from their own actions could have developed active and alert means of communicating nonverbally, in order to overcome obstacles. The basic rationale for the selection of this measure were the findings of Duncan et al. (1969) and his speculation (1969) on the importance of decoders' expectations on nonverbal sensitivity.

Many scholars have mentioned personality characteristics as being part of the underlying processes of nonverbal communication, but research to date has yielded only scanty, scattered, or contradictory results. Davitz (1964) was unable to isolate personality correlates of nonverbal sensitivity with the set of measures he selected. Duckworth (1975) found that following induced emotional disagreement, stable introversion as compared to neurotic introversion was related significantly to nonverbal sensitivity. Self-esteem was also related to nonverbal sensitivity (Buck et al., 1972). Finally, moderate positive correlations were reported with most subtests of the California Psychological Inventory and the PONS test (Rosenthal et al., Note 3). Again, no details regarding the actual values of the correlations, their significance, or the sample characteristics were reported in relation to Rosenthal's findings.

Davitz (1964) noted that his findings, related to perceptual and cognitive correlates, did not explain all individual differences in nonverbal sensitivity. Thus he concluded that other psychological variables may also be influential in the measurement of nonverbal sensitivity. It seemed important that this research investigate further personality characteristics of decoders in relation to their nonverbal sensitivity as measured by the PONS test. This was done in order to try to clarify the contradictory results obtained from previous attempts to relate personality measures to nonverbal sensitivity. The choice was made to measure personality traits with the Comrey Personality Scales (Comrey, 1970). This measure would offer the advantage of eight scales representing eight dimensions of normal personality traits. The eight scales are: (1) Trust versus Defensiveness; (2) Masculinity versus Femininity; (3) Activity versus Lack of Energy; (4) Social Conformity versus Rebelliousness; (5) Orderliness versus Lack of Compulsion; (6) Emotional Stability versus Neuroticism; (7) Empathy versus Egocentrism; (8) Extraversion versus Introversion. The following personality dimensions would appear to be relevant to nonverbal sensitivity, as suggested by the previous review of the literature: (1) Masculinity-Femininity; (2) Stability-Neuroticism; (3) Extraversion-Introversion; (4) Empathy-Egocentrism.

Previous attempts at researching nonverbal sensitivity by measuring the decoding process have generally been confined to a unidimensional approach. This study sought a more integrated approach to the problem by attempting to explore the relative contribution of perceptual-cognitive style, attitude toward expectancy of reinforcement, and personality traits to the ability to decode nonverbal messages on the PONS. Such measures could lead to further evidence for the validation of the PONS as an accurate independent criterion measure of nonverbal sensitivity.

Statement of the Problem and Hypotheses

The purpose of this study was twofold: (1) to investigate the construct validity of the PONS test; (2) to clarify if some of the proposed components of nonverbal sensitivity, mentioned in the literature, do or do not relate to nonverbal sensitivity. This clarification was deemed crucial in view of the following reasons: (1) the methodological shortcomings of some research; (2) the ambiguous reporting of some findings; (3) the inconclusive nature of some results; (4) the contradictory and sometimes controversial nature of research findings.

The goals may be summarized more formally in terms of the following twelve "alternate" hypotheses (Guilford, 1954).

Hypothesis 1

There will be no significant relationship between age (demographic index) and nonverbal sensitivity (PONS).

Alternate. Increasing age should show a decreased accuracy in decoding the PONS test.

Hypothesis 2

There will be no significant relationship between sex (demographic index) and nonverbal sensitivity as measured by the performance on the PONS test.

Alternate. Women will show higher performance on the PONS test than men.

Hypothesis 3

There will be no significant relationship between visual perception (GEFT) and nonverbal sensitivity (PONS).

Alternate. Visual perception should relate significantly to nonverbal sensitivity.

Hypothesis 4

There will be no significant relationship between the expectancy of locus of reinforcement (ANSIE) and nonverbal sensitivity (PONS).

Alternate. A significant relationship should exist between expectancy (locus of control) and performance on the PONS test.

Hypothesis 5

There will be no significant relationship between trust or defensiveness (CPST, personality trait) and nonverbal sensitivity (PONS).

Alternate. Trusting individuals should show higher accuracy on the PONS test than defensive persons.

Hypothesis 6

There will be no significant relationship between masculinity versus femininity (CPSM) and nonverbal sensitivity (PONS).

Alternate. Femininity should relate to higher PONS performances than masculinity.

Hypothesis 7

There will be no significant relationship between activity or lack of energy (CPSA) and nonverbal sensitivity (PONS).

Alternate. Less active individuals will show greater nonverbal sensitivity than active persons.

Hypothesis 8

There will be no significant relationship between social conformity or rebelliousness (CPSC) and nonverbal sensitivity (PONS).

Alternate. Individuals conforming socially will show greater accuracy on the PONS test than rebellious persons.

Hypothesis 9

There will be no significant relationship between orderliness or lack of compulsion (CPSO) and nonverbal sensitivity (PONS).

Alternate. There might be a relationship between orderliness or lack of compulsion and performance on the PONS test.

Hypothesis 10

There will be no significant relationship between emotional stability or neuroticism (CPST) and nonverbal sensitivity (PONS).

Alternate. Emotionally stable individuals should demonstrate higher nonverbal sensitivity than neurotic persons.

Hypothesis 11

There will be no significant relationship between empathy or egocentrism (CPSM) and nonverbal sensitivity (PONS).

Alternate. Empathic individuals will show greater accuracy on the PONS test than egocentric persons.

Hypothesis 12

There will be no significant relationship between extraversion or introversion (CPSE) and nonverbal sensitivity (PONS).

Alternate. Introverted individuals should have higher nonverbal sensitivity than extraverted persons.

CHAPTER II

METHOD

The present experiment was concerned with the construct validation of the PONS, a filmed measure of nonverbal sensitivity. For this purpose, visual perception, locus of control, and normal personality traits were examined in relation to nonverbal sensitivity as measured by the PONS.

Subjects were volunteers who were given the incentive of five points toward their final grade in the introductory psychology course. In order to further induce honest cooperation, subjects were informed that they would be given a confidential report on the results of the tests they had completed for the experiment. All subjects were administered four tests in two testing sessions at a 1-week interval.

Assessments were made of: (1) visual perception with the Group Embedded Figures Test (Witkin et al., 1971); (2) locus of control with the Adult Nowicki-Strickland Internal-External Scale (Nowicki & Duke, 1974); (3) personality traits with the Comrey Personality Scales (Comrey, 1970); nonverbal sensitivity with the Profile of Nonverbal Sensitivity film (Rosenthal et al., 1972).

Subjects

Subjects were selected from sections of the introductory psychology course at the University of Ottawa. Each professor was contacted and agreed to have the research project presented to their students during 15 minutes either at the beginning or the end of one of their regularly scheduled lecture periods. Standardized introductions were presented to each class before the subjects' voluntary participation was requested. The introductions consisted of a written form (Appendix 1) distributed to all students in the classes describing the general topic of the research, the criteria for their participation, what the actual experiment would entail in terms of time and activities, and the kind of reinforcement they could expect upon completion of their participation.

All students who spoke English fluently were selected. If English was a second language, the prospective subject was to have resided at least five years on the North American Continent. This criterion was based on the nature of the tasks that the subjects would have to complete. Three tests required both reading and writing abilities in English. All tests were based on North American norms, and the major test under investigation used a North American female to encode nonverbal affective messages to be decoded by the subjects.

After the written introduction was presented and distributed by the researcher to each class during 15 minutes, further verbal clarification was made in relation to the written introduction regarding time and location of the experimental sessions. At that time, the assurance of complete confidentiality as to the use of test results was given. Subjects were informed that personal information such as names, addresses, and telephone numbers were to be used only in case of technical difficulties, for the forwarding of individual test results, and the recording of five points for their course grade.

The Faculty of Psychology had agreed to grant each subject who had completed the experimental requirements five points toward their final grade in introductory psychology. The subjects were informed to expect individual confidential reports on tests completed. These incentives were thought essential to ensure high, even levels of participation while sustaining interest during long testing sessions. Guilford (1954) stressed the importance of such motivation in a research project of this nature. Comrey and Backer (1970) used a similar method of reinforcement in a construct validation of the Comrey Personality Scales (CPS). To obtain these reinforcements, a subject had to (1) attend and complete two testing sessions; (2) attend a third session designed to provide information to subjects about

the purpose of the research project and their participation;
(3) complete a short assignment of writing a summary of a short article on nonverbal communication.

From 316 subjects who volunteered, 288 completed the experimental requirements. Twenty of the 316 subjects signed up as volunteers but did not attend the sessions, and eight completed only parts of the experiment and thus had to be eliminated. The final sample was composed of 167 females and 121 males. The age range of the 288 subjects was 17 to 54, with an average of 24. The age range of female subjects was 17 to 54 with an average of 25, while the age range of male subjects was 17 to 49 with an average of 22.

Procedure

First Testing Session

One week following the 15-minute introduction of the research project to the five introductory psychology classes, the first session was conducted. During the first session, all subjects were administered three tests in the following order of presentation: (1) the Adult Nowicki-Strickland Scale of Internal-External Locus of Control Scale or ANSIE (Nowicki & Duke, 1974); (2) the Group Embedded Figures Test or GEFT (Witkin et al., 1971); (3) the Comrey Personality Scales or CPS (Comrey, 1970).

The order of presentation was dictated by practical and psychological reasons. The simple administration and performance required by the ANSIE made it a non-threatening introduction to the testing session. The GEFT, having time limits to observe, was administered between the ANSIE and the CPS. A few minutes rest was provided between the completion of the GEFT and the CPS to allow subjects to relax before answering the CPS questionnaire. The CPS, which takes approximately 1 to 1-1/2 hours to complete was presented last in order to allow each subject to follow their own pace without time pressure, and to have the freedom to leave the session after the completion of this inventory. The first session lasted approximately 2-1/2 hours.

Second Testing Session

The following week the subjects attended the second testing session. All subjects, with a few exceptions, had a 1-week interval between the first and second testing sessions. During the second session, the test under investigation in this study was administered. The Profile of Non-verbal Sensitivity or the PONS film (Rosenthal et al., 1972) was shown and its answer sheets completed.

Third Session

The third session was not part of the experimental design. It was included for the benefit of the subjects to clarify the purpose of the present research in the light of their participation.

Instructions

The researcher and two assistants, one paid and one volunteer, attended all testing sessions. One of the assistants, a male graduate student in psychology with training in test administration, was hired to read all test instructions. Three reasons were at the basis of this selection: (1) to standardize procedures; (2) to eliminate possible errors due to the French accent of the author; and (3) to balance the fact that the other assistant and the researcher were females.

One assistant was in charge of the overall material organization, such as distributing testing material and providing subjects with good testing conditions such as lighting, ventilation, and physical space. The researcher and one assistant circulated quietly during the sessions to provide supervision and assistance. The PONS film was projected during the second session by a hired technician.

All test instructions were exact reproductions of the instructions provided by the authors of the tests.

The only exception was the ANSIE for which no formal instructions were provided. A short statement was read before the administration of the ANSIE in keeping with Nowicki and Duke's (Note 2) emphasis on honesty. Appendices 2, 3, 4, and 5 contain the instructions given to the subjects for the ANSIE, GEFT, CPS, and PONS, respectively.

Instruments Administered

Nowicki-Strickland Locus of Control Scale for Adults (ANSIE)

The Rotter (1966) locus of control scale was developed to measure generalized expectancies regarding the locus of control of reinforcement. Rotter (1966) defined this expectancy as:

When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this as a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control (p. 1).

Although considerable evidence of reliability and construct validity (Rotter, 1966) has made the Rotter scale a popular one, it has also received significant criticisms (Nowicki & Duke, 1974). These criticisms were:

(1) the relation of Rotter's scale with social desirability; (2) different types of locus of control were being confounded; and (3) the difficulty of its reading level. All these points were at the basis of the construction of a new scale for adults which would not present these shortcomings.

The ANSIE scale items were based on items from the Nowicki-Strickland Internal-External Control Scale for children (1973). The 40 items in the children's scale were selected from 102 items which were judged by adults for their external orientation as well as having been administered to samples of children. The items were constructed according to Rotter's definition of internal-external control of reinforcement. The ANSIE is a paper-and-pencil measure consisting of 40 questions that are answered either yes or no. The higher the obtained score, the more external is the locus of control orientation. The 40 items of the children's scale were modified so that the test would be appropriate for adults.

Psychometric data was obtained from a total of 766 subjects in 12 separate studies (Nowicki & Duke, 1974). From this population, three groups of college students (introductory psychology courses, $\underline{n}$ = 156) and a group of adults from a suburb of a large metropolitan area in the southeastern part of the United States ($\underline{n}$ = 33) were examined. The adults' ages ranged from 26 to 30 (Nowicki & Duke, Note 2).

Split-half reliability coefficients ranged from .74 to .86 for $n = 158$, while test-retest reliability over a 6-week period was $r = .83$ ($n = 48$). The discriminant validity of the ANSIE with social desirability and intelligence (Marlowe-Crowne scale and Scholastic Aptitude Test) was supported: (1) with social desirability ($r = .10$, $df = 47$; $r = .06$, $df = 67$); (2) with SAT ($r = .11$ for $n = 48$). These correlation coefficients were not significant. The following figures were reported for convergent validity with: (1) Rotter's scale ($r = .68$, $df = 47$, $p < .01$; $r = .48$, $df = 37$, $p < .01$).

Since the ANSIE would be measuring essentially the same construct as the Rotter scale, but in a different manner, and since it would not be confounded by either social desirability or intelligence, and since it was designed for adults and college populations, it was thought appropriate to use the ANSIE to measure the locus of control orientation or attitude in the present study. A copy of the ANSIE questionnaire can be found in Appendix 6.

Group Embedded Figures Test (GEFT)

The Embedded Figures Test (EFT) has been described as a measure of visual perception. The ability being measured requires a subject to isolate a simple figure from a complex field designed to obscure and embed the simple

figure. The perceptual ability displayed on the Embedded Figures Test signified for Witkin et al. (1971) a perceptual differentiation which in turn would extend to differentiation in other spheres of personality.

The GEFT was designed to provide an adaptation of the original EFT which would allow its administration to groups. The GEFT is essentially similar to the EFT. Seventeen of its items were selected from the EFT and the remaining from the Gottschaldt figures. The colors of the EFT items were replaced by shading in the GEFT items.

The GEFT was designed as a booklet containing three sections. The first section included seven simple items and served as practice. The second and third sections were each composed of nine more difficult items. These last two sections were each given 5-minute time limits. These time limits were established on a sample of college students from the eastern part of the United States.

The norms were based on male and female students from an eastern arts college (men: $\underline{n} = 155$, women: $\underline{n} = 242$). As a speed test, the reliability of the GEFT was derived by correlations between parallel forms. The Spearman-Brown formula produced a reliability estimate of .82 for both males ($\underline{n} = 80$) and females ($\underline{n} = 97$).

Witkin et al. (1971) assessed the validity of the GEFT by comparing the GEFT with: (1) its parent test, the

EFT; (2) the Portable Rod-and-Frame Test (PRFT) which was described as a criterion measure of field dependence-independence; (3) and with the ABC scale measuring the degree of articulation of the body concept. The correlation coefficients were: (1) for the GEFT and the EFT, $-.82$ for 73 males and $-.63$ for 68 females; (2) for the GEFT and PRFT, $-.39$ for 55 males and $-.34$ for 68 females; (3) for GEFT and ABC, $.71$ for 55 males and $.55$ for 68 females. The negative correlations resulted from tests scored in reverse fashion (Witkin et al., 1971).

Witkin et al., (1971) suggested that the GEFT may prove a useful substitute for the EFT when individual testing is impractical. Such was the case in the present research project. A sample of the GEFT can be found in Appendix 7.

Comrey Personality Scales (CPS)

Anastasi (1976) reported the CPS as a multitrait personality inventory constructed through factor analytic methods. Eight personality scales, one Validity Check Scale and one Response Bias Scale were included in this self-report inventory. The eight personality scales used were as follows: Trust-Defensiveness (T), Orderliness-Lack of Compulsion (O), Social Conformity-Rebelliousness (C), Activity-Lack of Energy (A), Emotional Stability-

Neuroticism (S), Extraversion-Introversion (E), Masculinity-Femininity (M), and Empathy-Egocentrism (P).

Two 7-point scales were provided to record item responses ranging from "always" to "never" or "definitely" to "definitely not." Comrey (1970) stated that the reliability of individual items has been increased by the use of multiple-response formats in using the two 7-point answer scales. The CPS was intended primarily for use with normal socially functioning individuals. The norms were based on 365 male and 362 female university students, their families, friends, and other university-connected individuals. Age, educational, socioeconomic, and geographical information was not provided.

Split-half reliabilities of scale scores are in the high .80's and .90's for $n = 746$ of which 362 were male and 384 female volunteer subjects. No test-retest reliabilities have been reported. The evidence presented by its reviewers indicates satisfactory factorial validity for five of the eight scales, namely: Emotional Stability, Extraversion, Empathy, Trust, and Orderliness (Quereshi, 1972). No adequate convergent and discriminant validities have yet been provided.

Comrey (1970) recommended his scales for use in research where an attempt is being made at relating personality variables to other phenomena. The conditions of subjects'

motivation were strictly respected in the present research in accordance with Comrey's recommendations. Each subject in the present study, as in Comrey and Backer's (1970) research, volunteered to take the inventory in order to receive a confidential, individual report on his or her test results including the CPS. A sample of the CPS questionnaire and its answer sheet can be found in Appendices 8 and 9, respectively.

Profile of Nonverbal Sensitivity (PONS)

The construction of this standardized test of nonverbal sensitivity is an outgrowth of Rosenthal's work with the communication of expectancies. He observed that communication of expectancies depended greatly on nonverbal communication. At the same time, marked individual differences were noted in the encoding and decoding processes of expectancies in nonverbal communication. The PONS test was designed to learn more about differential abilities in nonverbal communication and, more specifically, about the decoding process.

The PONS test is a 45-minute black-and-white film. It provides 220 separate audio and/or visual nonverbal stimuli, each of 2-second duration. Twenty scenes are presented by a female encoder in which affective meanings are expressed. For each of the 220 items, decoder subjects

have to select one of two situations (forced-choice model) which describes accurately the encoded situation. The PONS uses visual and auditory cues in 11 different ways. Five of the 11 channels are pure channels. Three pure channels are video (face, body, face and body). The remaining two are audio channels: "electronically content-filtered voice" and "randomized spliced voice." Content filtering (CF) is a technique used to remove certain frequencies so that verbal content acquires a muffled sound. Randomized splicing (RS), on the other hand, is another technique which removes verbal content by cutting an audio tape in small sections and re-arranging the tape by randomly splicing the sections back together. The first technique preserves sequence and rhythm, the second pitch and loudness.

Apart from the five pure channels, there are six mixed channels that combine the five pure channels in different ways. The complete film sequence presents the 20 situations played 11 times (11 different channels), making a total of 220 scenes. Four types of emotion are being expressed by a female encoder: dominant-positive, dominant-negative, submissive-positive, and submissive-negative. All the scenes are interpersonal communications. However, only the encoder of the nonverbal message can be seen on the film by the subject decoders (Rosenthal et al., Note 3). The PONS answer sheet can be found in Appendix 10.

The sample used for the standardization of the PONS included 480 male and female public high school students from the eastern, midwestern, and west coast areas of the United States. The average age was reported to be 16.8 years. Their percentage of accuracy scores ranged from 60 to 88 (Rosenthal et al., Note 3). The data from midwestern and west coast high schools was used to construct a standard scoring sheet or profile (Appendix 11).

Interitem consistency reliabilities were reported to be .86 (KR - 20 formula) and .92 (Armor's (1974) Theta formula). The median correlation of six samples for test-retest was in the order of .68. Interval time between test-retest was not reported (Rosenthal et al., Note 3).

On convergent and discriminant validity, Rosenthal et al. (Note 3) reported the following results in the area of cognition: (1) PONS and Standard IQ tests intercorrelations for two samples of high school students were not higher than .23, and therefore nonsignificant; (2) across all samples, median PONS-Scholastic Aptitude Test intercorrelation was .11, also not significant; (3) intercorrelations with cognitive complexity, as defined by Bieri (1955) were not conclusive due to the small sizes of the samples.

At this point in the history of research on non-verbal sensitivity, the PONS film was seen as a valuable

instrument available for research in the area. Preliminary studies have been completed by Rosenthal et al. (Note 3) in many areas. The results have indicated the need for further research with larger samples to strengthen its construct validity.

Statistical Analyses

The statistical techniques used in testing the hypotheses outlined in the first chapter proceeded in three steps. The procedure used for these techniques was part of the Statistical Package for the Social Sciences (SPSS).

The first step consisted of testing the hypotheses by means of a canonical correlation analysis in order to account for the maximum amount of a relationship that could exist between two sets of variables. In this instance, a PONS set was composed of the five pure channels, and another set was composed of the following variables: age and sex (demographic indexes), GEFT (visual perception), ANSIE (locus of control), and eight of the CPS scales (personality traits).

The second step was a preparatory step for the alternate method of testing the hypotheses. It involved the extraction of factors from the intercorrelations of the 25 PONS variables by means of a factor analysis (principal components). The orthogonal rotation to simple structure

was accomplished by the varimax method. This analysis was done in order to reduce the number of PONS variables and use the extracted factor scores in a subsequent analysis. The seven factors extracted and retained for the final rotated solution were those with eigenvalues greater than or equal to 1.00.

In the third step, the seven factor scores extracted from the previous factor analysis of the 25 PONS variables were used as a new set of PONS variables. This new set of PONS variables was related to the previous set of variables including: age and sex (demographic indexes), GEFT, ANSIE, and eight of the CSP scales. The analysis was again performed by means of a canonical correlation in order to account for the maximum amount of relationship that could exist between the two sets of variables.

CHAPTER III

RESULTS

This chapter will present the results of the statistical analyses outlined in the previous chapter. The first section will provide the preliminary analyses of the variables selected for the purpose of this study. The testing of the experimental hypotheses was done by two methods. The first method involved the use of a canonical correlational analysis, where the five PONS variables (PONF: facial cues, PONB: body cues, PONFI: figure cues, PONRS: randomized spliced voice cues, PONCF: electronically content-filtered voice cues) were correlated (canonical correlation) with 12 predictor variables (age and sex: demographic indexes, GEFT: visual perception, ANSIE: locus of control, CPS: eight personality traits).

The second statistical test of the experimental hypotheses, which in essence was an alternative method of analyzing the data, again involved a canonical correlation analysis. However, the five PONS variables were substituted with seven factor scores obtained by factor analyzing the 25 PONS variables.

Means and Standard Deviations

The mean age for the total sample of the present study was 23.9 years (SD = 7.8) with values ranging from a minimum of 17 to a maximum of 54 years. The number of subjects was 288, including 167 women and 121 men. The standardization sample of the PONS test came from 480 male and female high school students from eastern, midwestern, and west coast parts of the United States of America. Their average age was 16.8 years.

Means and standard deviation values for the PONS test of this sample are listed in Table 1 (Appendix 12). It should be noted that standard deviation values on each of the 11 channel scores ranged from 1.40 to 1.94. For comparison purposes, unfortunately, no values for means and standard deviations for the normative group were reported by Rosenthal et al. (Note 3). It was possible, however, to determine the mean for the total score of the normative group from the profile sheet of the PONS. The mean of the total score was said to be at the 50th percentile and was, therefore, 170, while the mean of this sample for the total score was 174.04. The standard deviation of the total score for this sample was 9.38.

In the case of the mean and standard deviation values of this sample for the other measures, they were shown to be similar to the normative values reported by their respective

authors. Nowicki and Strickland (Note 2) reported the following values obtained on the ANSIE from college student population norms: $n = 154$, mean = 9.06, standard deviation = 3.89. The present sample showed a tendency toward greater internal locus of control than the normative group: $n = 288$, mean = 8.85, standard deviation = 4.12.

Witkin et al. (1971) also used college students for their norms on the GEFT, and reported the following figures: $n = 155$, mean = 12.0, and standard deviation = 4.1 (male group). The mean and standard deviation values of the present sample (males and females) were closer to the above reported male normative values ($n = 288$, mean = 12.34, standard deviation = 4.87) than to the female normative values.

University students, their friends and families formed the normative group for the Comrey Personality Scales. Mean and standard deviation values for each of the eight scales for the normative group ($n = 727$) may be found in Comrey (1970, p. 17). In terms of this sample, means and standard deviations for the eight Comrey Personality Scales are reported in Table 1 (Appendix 12). Means and standard deviations on the variables used in the remainder of this chapter are also reported in Table 1 (Appendix 12).

First Statistical Test of the Hypotheses

The first analysis, a canonical correlation analysis, was performed between two sets of variables. The first set was composed of the following criterion variables: (1) PONF (facial cues, PONS channel 1); (2) PONB (body cues, PONS channel 2); (3) PONFI (figure cues, PONS channel 3); (4) PONRS (randomized spliced voice cues, PONS channel 4); (5) PONCF (electronically filtered content voice cues, PONS channel 5). The second set of variables included the following predictors: (1) age, and (2) sex (demographic indexes); (3) GEFT (visual perception); (4) ANSIE (locus of control); (5) CPST (trust versus defensiveness); (6) CPSO (orderliness versus lack of compulsion); (7) CPSC (social conformity versus rebelliousness); (8) CPSA (activity versus lack of energy); (9) CPSS (emotional stability versus neuroticism); (10) CPSE (extraversion versus introversion); (11) CPSM (masculinity versus femininity); (12) CPSP (empathy versus egocentrism). This method was selected to determine the optimal relationship between the predictors and nonverbal sensitivity.

Table 2 (Appendix 12) shows the intercorrelations among the predictors and criterion variables (the five pure channels of the PONS test). Correlation coefficients at or greater than .16 and .12 are the values significant at the .01 and .05 levels, respectively. The maximum canonical

correlation obtained was .39, and this was significant at the .019 level ($df = 60$). The amount of variance accounted for by the canonical variates was 15.5% (eigenvalue = .155). After the first pair of canonical variates was determined, no further significant combinations were found.

Therefore, there was at least one linear combination of predictors which was significantly related with a linear combination of the criterion variables. The relative contribution made by individual variables to the significantly related canonical variates is shown in Table 3 (Appendix 12). The loadings revealed that GEFT (visual perception); age (demographic index), and CPSS (emotional stability) were the primary contributors. On the other hand, the criterion was primarily composed of PONFI (figure cues), a channel of the PONS test composed exclusively of visual cues of face and body shown simultaneously.

It may be concluded that it has been demonstrated that some predictors are significantly related to non-verbal sensitivity, visual perception being the primary representative of the predictors (GEFT had a loading of .62). Age was the second most important contributor (loading of -.48), and emotional stability the third most important (CPSS loading .42). For the purpose of this study and in the interest of parsimony, it was decided that a variable loading below .40 would not indicate a substantial contribution to the canonical variates.

By not considering a canonical variable with a loading below .40, then hypotheses 3 (GEFT), 1 (age), and 10 (emotional stability) were rejected in favor of their alternate hypotheses, while the remaining nine hypotheses were accepted. In other words, not enough evidence was obtained to conclude that sex (hypothesis 2), locus of control (hypothesis 4), trust (hypothesis 5), masculinity (hypothesis 6), activity (hypothesis 7), social conformity (hypothesis 8), orderliness (hypothesis 9), empathy (hypothesis 11), and extraversion (hypothesis 12) were substantial contributors to the canonical variates.

Second Statistical Test of the Hypotheses

An alternative test of the hypotheses was conducted to provide a thorough exploration of the relationship between nonverbal sensitivity, as measured by the PONS test, and the 12 predictors. The first step in this analysis was a factor analysis of the 25 PONS variables. The method used to extract factors of the PONS test was principal components with varimax rotation. The intercorrelations among the 25 PONS variables are shown in Table 4 (Appendix 12). Only correlations significant at the .05 and .01 levels were reported. The intercorrelations among the PONS variables would seem to indicate a common element assumed to be nonverbal sensitivity.

The factor analysis yielded 25 factors of which the first seven accounted for substantial portions of the variance (eigenvalues ≥ 1.00). The varimax rotated matrix is presented in Table 5 (Appendix 12). For purpose of clarity, only variables with loadings $\geq .40$ were shown and will be referred to for the description of factor scores used in the second canonical correlation analysis.

The third step was a computation of a canonical correlation analysis between the seven factor scores obtained from the factor analysis of the PONS and the same 12 predictors used in the first canonical correlation analysis. Table 6 (Appendix 12) summarizes the results. As can be seen, the maximum canonical correlation was .42 which was significant beyond the .01 level ($df = 84$). The amount of variance accounted for by the canonical variates was 17.6% (eigenvalue = .176). Again, after the first pair of canonical variates was determined, no further significant combinations were found.

As in the first canonical correlation analysis, there was at least one significant linear combination of predictors and criterion variables (in this case, factor scores) which was found. The relative contribution made by individual variables to the significantly related canonical variates is presented in Table 6 (Appendix 12). The loadings revealed that, again, GEFT (visual perception)

appeared in this analysis as the primary contributor. In this analysis, CPSM (masculinity versus femininity) was the second contributor, followed by age (demographic index). On the other hand, the criterion this time was primarily composed of factor scores 1, 3, 6, and 2. Factor 1 was primarily a measure of the PONS channels involving figure cues (see Table 5, Appendix 12), such as PONFI pure channel and PONFI 60 pooled channel. Factor 3 consisted of channels involving facial cues (PONF 60, PONFRS, PONF, and PONF 120). Factor 6 consisted of a mixture of channels involving both body cues and visual cues only (PONV 60, PONB 60). Factor 2 was mainly concerned with body cues (PONBRS, PONB 60). As in the first canonical correlation analysis, channels composed of visual cues would appear to be important in the composition of the criterion.

On the basis of these results, it may be concluded that it has been demonstrated that some predictors are significantly related to nonverbal sensitivity. Visual perception was again the primary contributor of this relation (GEFT loading of .64). Masculinity versus femininity was the second contributor (CPSM) with a loading of -.48, and age again contributed to the significant relationship with a loading of -.40. As in the first canonical correlation analysis, it was decided that a variable loading

below .40 would not indicate a substantial contribution to the canonical variates.

By not considering a canonical variable with a loading below .40, then hypotheses 3 (GEFT), 6 (CPSM), and 1 (age) were rejected in favor of their alternate hypotheses. The remaining nine hypotheses were accepted. In other words, not enough evidence was found to claim that sex (hypothesis 2), locus of control (hypothesis 4), trust (hypothesis 5), activity (hypothesis 7), social conformity (hypothesis 8), orderliness (hypothesis 9), emotional stability (hypothesis 10), empathy (hypothesis 11), and extraversion (hypothesis 12), were substantial contributors to the canonical variates.

Summary

1. The hypotheses were tested by two separate canonical correlation analyses. The second canonical correlation analysis was used primarily to support the first canonical correlation analysis.

2. In the first canonical correlation analysis, it was found that visual perception, age, and emotional stability represented a linear combination of the predictors. This linear combination of predictors was significantly related to a linear combination of the nonverbal sensitivity variables which were represented by figure

cues. However, it should be noted that the amount of variance predicted was 15.5%.

3. It was anticipated that the five pure channels of the PONS which were used as the criterion variables in the above canonical correlation analysis were not factorially pure measures of nonverbal sensitivity (as measured by the PONS). Therefore, a second canonical correlation analysis was performed, using factor scores as the criterion variables. The factor scores were obtained from a factor analysis of the 25 PONS variables.

4. The results of the second canonical correlation analysis indicated that visual perception, femininity, and age represented a linear combination of the predictors. This linear combination of predictors was significantly related to a linear combination of the nonverbal sensitivity variables which were represented by factor 1 (figure channel), factor 3 (face channel), factor 6 (video channel), and factor 2 (body channel). However, it should be noted that the amount of variance was 17.6%.

5. On the basis of the first canonical correlation analysis, it can be concluded that visual perception, age, and emotional stability were related to nonverbal sensitivity as measured by the figure cues of the PONS test. That is, the alternate hypotheses 3, 1, and 10 were supported. In other words, subjects scoring high on the GEFT (visual

perception) also obtained high scores on the PONS (non-verbal sensitivity). Increased age showed a decreased ability to decode the PONS items (nonverbal sensitivity). Emotionally stable subjects displayed high nonverbal sensitivity (PONS).

6. On the basis of the second canonical correlation analysis, support for the alternate hypotheses 3 (visual perception) and 1 (age) was again obtained. In addition, it was found that femininity (alternate hypothesis 6) was also related to nonverbal sensitivity as represented by factors 1, 3, 6, and 2. In this analysis, abilities in visual perception (GEFT) were related to high nonverbal sensitivity (PONS). Increased age showed a decreased ability in decoding the PONS items (nonverbal sensitivity). Subjects described as feminine on the CPS obtained high scores on the PONS (nonverbal sensitivity).

CHAPTER IV

DISCUSSION

To recapitulate, the major findings of the experiment were as follows: (1) visual perception (GEFT) was shown to be a primary component of nonverbal sensitivity (PONS); (2) the analyses showed that age (demographic index) was another component of nonverbal sensitivity; (3) emotional stability versus neuroticism (CPSS) was found to be a component of nonverbal sensitivity, as a result of the first canonical correlation analysis (five pure channels of the PONS test); (4) the second canonical correlation analysis (seven factor scores of the PONS) showed that masculinity versus femininity (CPSM) was a component of nonverbal sensitivity. However, it should be noted that the first canonical correlation analysis (five pure channels) accounted for only 15.5% of the variance, while the second analysis accounted for only 17.6% of the variance (second analysis with seven factor scores). Therefore, within the context of the present study, which attempted to relate perceptual, attitudinal, and personality variables to nonverbal sensitivity, it was found that visual perception was undoubtedly the primary component of nonverbal sensitivity as measured by the PONS. However, approximately 80% of the nonverbal sensitivity variance remained unexplained, which suggests that

other factors of nonverbal sensitivity must still be explored. These other factors will be discussed below.

Not enough evidence was found to support the following hypotheses that: (1) women (demographic index) would display higher sensitivity than men on the PONS items; (2) an attitude based on expectancy of reinforcement (ANSIE) would be related to nonverbal sensitivity on the PONS; (3) trusting individuals (CPST) would show higher accuracy on the PONS than defensive persons; (4) less active persons (CPSA) would display higher nonverbal sensitivity than active people; (5) socially conforming subjects (CPSC) would be more sensitive to the PONS nonverbal communication than less conforming subjects; (6) orderliness versus lack of compulsion (CPSO) would be related to nonverbal sensitivity; (7) empathic persons rather than egocentric individuals (CPSP) would show greater sensitivity to the PONS nonverbal communication; (8) introversion as compared to extraversion would be a personality dimension (CPSP) relevant to nonverbal sensitivity.

Interpretation of the Results

Canonical correlation analyses have seldom been applied to problems in psychological research, for the simple reason that the interpretation of the canonical variates would be difficult (Cooley & Lohnes, 1971).

However, Cooley and Lohnes have provided some direction for the interpretation of canonical correlations. These guidelines were followed for the interpretation of the findings of the present research.

As a result of two different canonical correlation analyses, one significant canonical correlation was obtained in each case. This suggests that in each analysis, one independent dimension was found by which the predictors were significantly related to either the five pure channels of the PONS or seven factor scores of the PONS. In the first analysis, the canonical variate of the predictors was: (1) highly and positively related to visual perception; (2) moderately and negatively related to age; and (3) moderately and positively related to emotional stability. On the other hand, the canonical variate of the criterion variables (five pure channels of the PONS), was moderately and positively related to one visual channel of the PONS (figure cues).

In the second analysis, the canonical variate of the predictors was: (1) highly and positively related to visual perception; and (2) moderately and negatively related to masculinity and age. The canonical variate of the criterion (seven factor scores of the PONS) was moderately and positively related to the first, third, sixth, and second factor scores of the PONS, all involving visual cues to a large extent.

The results of the two canonical correlation analyses indicated that the main component of each analysis was primarily one of visual perception. Visual perception consistently displayed the highest canonical loading as compared to the other 11 predictors. In addition, age, emotional stability, and femininity showed variations in the magnitude of their canonical loadings from one canonical correlation analysis to the other. Consequently, it was inferred that visual perception in both analyses was the primary component of nonverbal sensitivity influenced by age, and/or emotional stability, and/or femininity.

Since visual perception would require the integrity of its related sensory-perceptual and cognitive mechanisms, it follows that: (1) older individuals having lower sensory acuity and/or cognitive abilities; (2) individuals affected by emotional difficulties, and (3) persons less inclined to be sensitive to feelings and/or aesthetic aspects of life in general, would tend to be less sensitive to nonverbal communication of affect. As Duncan (1969) proposed, these aspects might have an impact on perceptual abilities, and consequently would influence the way nonverbal communication is decoded. This view was also expressed by Davitz (1964), when he noted the paucity of research in this area.

The present study addressed itself to two basic questions. First, could the criterion measure called the

PONS be predicted by some of the variables studied in the present experiment? The answer to this question, within the limitations of this study, was that visual perception can be seen as a predictor of nonverbal sensitivity followed by age, emotional stability, and femininity as secondary predictors. The second basic question was, what would be the relative merit of those variables and to what extent would those variables coincide with what the literature states about probable components of nonverbal sensitivity?

The answer to the second question will be presented according to the relative contribution of each predictor to nonverbal sensitivity, starting with the most important and ending with the least important. The discussion will be limited to the variables which were found to relate substantially to their canonical variate.

Visual Perception

It was noted that dysfunctions of perceptual-cognitive processes (as in learning disabilities) decreased the accuracy with which nonverbal communication of affect was decoded (Wiig & Harris, 1974). The possibility that perception, influenced by other factors, would be a source of variance in studies of nonverbal communication was introduced by Duncan (1969). When Davitz (1964) related cognitive and perceptual measures to nonverbal sensitivity, as measured

by vocal cues of affect, he obtained significant results which accounted for 40% of the variance. In the light of those results, Davitz proposed that cognitive-perceptual factors played an important role in nonverbal sensitivity. Rosenthal et al. (Note 3) studied the Group Embedded Figures Test in relation to the PONS. The results indicated that field-independence for women and field-dependence for men was related to nonverbal sensitivity as measured by the total score and visual portions of the PONS. Unfortunately, no statistical values were reported in relation to those findings which might have led to comparisons with other studies. In this research, positive Pearson correlations were obtained, for male and female subjects, between the GEFT and the five pure channels of the PONS (Table 7, Appendix 12). Significant canonical correlations were obtained only for male subjects and not for female subjects (Tables 8, 9, 10, 11, Appendix 12). In the case of the five pure channels, the canonical correlation indicates that for male subjects: (1) emotional stability (CPSS) is positively related to the ability required to decode the figure (PONFI) channel of the PONS; (2) physical activity (CPSA), external locus of control (ANSIE), and masculinity (CPSM) are all negatively related to the ability underlying the decoding of the figure channel of the PONS. On the other hand, when the seven factor scores are used as criterion variables, the canonical correlation indicates that for male subjects: (1) masculinity (CPSM) and age are negatively related to factor

scores 6, 3, and 5; (2) emotional stability (CPSS) and field-independence (GEFT) are positively related to factor scores 6, 3, and 5. In other words, no linear combinations were found between predictors and criterion variables in the case of female subjects, while in the case of male subjects, emotional stability, femininity, physical activity, visual perception, age, and locus of control were characteristics related to the decoding of figure cues mainly and electronically filtered content cues to a lesser extent. This relation, however, accounts only for 26% of the variance.

However, the main analyses using the entire sample indicated that visual perception was demonstrated to be the primary component of nonverbal sensitivity, as compared to the other variables of this study. This could be seen as a confirmation and extension of the above-mentioned findings and speculations. (The secondary analyses will be integrated into the conclusions of this study.)

The perceptual style displayed on the Embedded Figures Test (EFT) was related to cognitive styles (analytic and structural) (Witkin et al., 1971). The competence in recognizing (perceptually) a figure in an embedded context implies that the subject has differentiated modes of analytical functioning. This analytical style is closely associated with a structuring ability. In order to succeed on the EFT, one would not only have to transcend a given structure, but also be able to impose a new one. Both of these intellectual

attributes, analytical and structural, suggest an articulate perceptual and intellectual functioning presupposing psychological differentiation. Psychological differentiation was defined as "the complexity of structure of a psychological system" (Witkin et al., 1971, p. 10). However, this concept does not necessarily mean integration, which is defined as "the functional relations among parts of a psychological system and between the system and its surroundings" (Witkin et al., 1971, p. 10). Psychological adjustment is viewed as a result of integration, although both psychological differentiation and integration were seen to evolve together (Witkin et al., 1971).

Applying this conceptualization to visual perception as a component of nonverbal sensitivity, it could be said that some portions of nonverbal sensitivity, as measured in this study, might require those abilities (analytical and structural) associated with psychological differentiation.

Age

Nonverbal sensitivity was found to increase for vocal cues from age 5 to 12 (Dimitrovsky, 1964). In the course of his research, Davitz (1964) observed that the growth of nonverbal sensitivity extended through early adolescence. Cross-sectional studies, involving several samples measured by the PONS, confirmed the occurrence of

growth of nonverbal sensitivity with age. This growth was reported to be at its peak between age 8 and 25, after which nonverbal sensitivity was said to level off (Rosenthal et al., Note 3).

Keeping in mind that the sample of the present experiment included ages ranging from 17 to 54, the results did not indicate a levelling off. On the contrary, the older the subjects, the lower were their obtained total scores on the PONS. Instead of a plateau, the findings of this research may indicate the possibility of an age level after 25, when nonverbal sensitivity would start to decrease. The correlation previously reported between the PONS total score and mean age for the cross-sectional studies of the PONS was $\underline{r} = .34$, $\underline{p} < .001$ (Rosenthal et al., Note 3). In contrast, this research showed a negative correlation between the PONS total score and mean age ($\underline{r} = -.18$, $\underline{p} < .01$), while the correlation between age and visual perception was $\underline{r} = -.26$, $\underline{p} < .01$. Interestingly enough, among the 25 PONS variables, older subjects had more difficulties when presented with visual combinations, or combined visual and auditory cues (electronically filtered content of voice). In the light of the fact that sensory acuity is known to decrease with age, the lower sensitivity of older subjects for electronically filtered content of voice was not surprising. Pitch and intensity would be the paralinguistic cues

destroyed by such a masking technique (Rosenthal et al., Note 3). Additional difficulties may have occurred for older subjects when confronted with the decoding of auditory combined with visual cues. Levitt (1964) concluded that these combinations may have presented more noise than information, therefore lowering the accuracy with which nonverbal communication would be decoded. It should be noted, however, that the PONS is timed for fast responses and what appears to be an age variable might simply be a function of the speed with which perceptual responses occurred.

Increased age was related in this study to decreased nonverbal sensitivity as measured by the PONS. Increased age was also found to be related to lower scores on the GEFT. Therefore, it is proposed that age, as a component of nonverbal sensitivity, influences the abilities required in visual perception, which in turn influences the way nonverbal communication of affect is decoded. This would be in agreement with the fact that "between twenty-four years and old age the process of increasing field-dependence begins (Witkin et al., 1971, p. 5).

Personality Traits

Obviously, Davitz (1964) believed that personality characteristics, or other non-intellectual factors, would influence the way a decoder would receive and interpret vocal communication of affect. Along the same lines, Duncan (1969) suggested that personality characteristics, among other factors, would influence perception. The PONS was

said to relate moderately to most of the California Personality Inventory scales, though no details about these relationships were presented (Rosenthal et al., Note 3).

Femininity as compared to masculinity (CPSM) was found to be a component of nonverbal sensitivity in the present experiment. Comrey (1970) defined this personality trait as: no fear of bugs, no crying, no romantic love, and tolerance for both blood and vulgarity. Individuals scoring low on this dimension would be described as feminine. The literature on nonverbal communication as a whole related some of the individual differences in nonverbal sensitivity to sex differences based on demographic data. The controversial and often contradictory nature of the findings concerned with this issue was noted by Davitz (1964), among other scholars. The results of the present study suggest that some individual differences in nonverbal sensitivity would be better explained by personality characteristics of the decoder (male or female). The type of personality characteristic appears to be more appropriately described as a kind of sensitivity for feelings and aesthetic aspects of life (CPSM), which may be present in males or females, rather than differences based solely on gender identification.

The second personality trait found to be a component of nonverbal sensitivity in this study was emotional stability versus neuroticism (CPSS). Comrey (1970) defined this scale

as: the absence of feelings of inferiority, depression, agitation and pessimism, as well as the presence of stability of moods. The relationship between nonverbal sensitivity and emotional stability is consistent with the findings of Blau (1964), Turner (1964), Rosenthal et al. (Note 3), Duckworth (1975), and Buck et al. (1972), which illustrated how needs and their compensation, affective states and the integrity of thought processes were related to nonverbal sensitivity.

Blind individuals, when compared with sighted individuals, were found to be less accurate in decoding vocal communication of affect. It was reported that blind persons were less accurate because they had a tendency to over-read affect. This "affect attention" tendency was seen as the result of a need for affective feedback which normally would be communicated nonverbally via facial and body cues. With this kind of feedback not being available to the blind, together with other aspects of socialization, a sort of compensation composed of a set of attitudes would manifest itself as a selective attention for affective cues (Blau, 1964).

Affect and thought processes may also influence non-verbal sensitivity. Schizophrenic persons were shown to be less sensitive to vocal communication of affect (Turner, 1964). The impact of a stimulus (facial expression) is not assimilated by schizophrenic persons, thus producing a bias

in decoding nonverbal communications of affect (Dougherty et al., 1974). Alcoholic and psychoneurotic patients obtained a lower profile on the PONS channels than a control group of high school students (Rosenthal et al., Note 3). Anger decreased the decoding abilities of neurotic introverts, while it increased these abilities for the stable introverts (Duckworth, 1975). Finally, self-esteem was found to relate to decoders' nonverbal sensitivity for spontaneous facial expressions of affect (Buck et al., 1972).

The above studies gave some evidence that emotional stability has been related to nonverbal sensitivity, which was the case in the present study. The present findings are also consistent with the speculations made by Davitz (1964) and Duncan (1969) on the importance of personality characteristics of decoders. These characteristics appear to influence the accuracy with which nonverbal communication is received and interpreted. It could be added that the components of emotional stability imply freedom from self-preoccupation, therefore more potential would be available for openness and objectivity when decoding nonverbal communication of affect.

Discussion of the Results

Many questions can be raised in relation to the findings of the present experiment. The following discussion

will focus on the selection of variables as predictors in this investigation, and on some aspects of the criterion measure, the PONS test. The large proportion of the variance which remained unanswered by this study, and the lack of relevance of some variables to nonverbal sensitivity, will be the issue of this discussion.

Before dealing with unanswered questions, it should be noted that this study undertook a task which was called a "challenge" (Melbin, 1974) in an area neglected by scientific inquiries (Davitz, 1964; Duncan, 1969; Ekman & Friesen, 1968; Haase & Tepper, 1972). Although difficulties were foreseen and visual perception was expected to relate to nonverbal sensitivity, findings related to age, emotional stability, and femininity could be seen as positive steps toward the understanding of the nature of nonverbal sensitivity and what the PONS might be measuring.

The present study has found that a perceptual measure, requiring intellectual abilities such as analytical and structural, was related to nonverbal sensitivity. Davitz (1964) had proposed that intellectual and nonintellectual factors could explain the nature of nonverbal sensitivity. It could be of interest to add to the measures used by Davitz (sensory discrimination, abstract symbolic abilities, knowledge of cues, and verbal intelligence), some measures related to the analytical structural abilities, which might explain the remaining variance left unanswered by this study.

The literature on nonverbal communication drew attention to the influence of attitudes on a decoder's judgment. Duncan et al. (1969) demonstrated that evaluation apprehension had a differential effect on the decoder's use of cues. A state of induced emotional disagreement increased stable introverts' nonverbal sensitivity, while the reverse occurred for neurotic introverts (Duckworth, 1975). The ANSIE scale was not found to be a component of nonverbal sensitivity, although this attitude was related to emotional stability ($r = -.40$, $p < .01$), and field-independence ($r = -.19$, $p < .01$). Therefore, it is suggested that the expectancy of reinforcement was not a relevant measure in relation to nonverbal sensitivity. Instead, the choice of an attitude more closely related to human communication in general may have been more relevant to the concept being studied.

The inconclusiveness of Davitz' (1964) findings about personality correlates of nonverbal sensitivity, and the lack of details about the relationship of the PONS with the California Personality Inventory, led to the use of the Comrey Personality Scales in the present experiment in order to further clarify the relevance of personality variables to nonverbal sensitivity. Although past research did not show that personality variables were strongly related to nonverbal sensitivity, it was interesting to find that two

out of eight personality dimensions were related to non-verbal sensitivity. As Levy (1964) suggested, it may be that the personality measures which have been investigated in relation to nonverbal sensitivity were instruments tapping traits. It could be that other personality measures would come closer to further explaining the nature of non-verbal sensitivity, rather than the type of personality traits used in this study.

In recent years, the literature on nonverbal communication stressed the importance of the spontaneity of non-verbal expressions for the decoding of nonverbal communications of affect as compared to artificial ones (role playing, use of actors, use of photographs). Already, some studies have successfully implemented this aspect in their methodology (Buck et al., 1972; Buck et al., 1974; Cupchik, 1972; Lanzetta & Kleck, 1970). Rosenthal et al. (Note 3) stated that the scenes of the PONS test were encoded as "naturally as possible" by a woman who was not an actress. The non-verbal messages carrying an affect on the PONS were, nevertheless, role played since the encoder based her nonverbal expressions on "knowing" the affect. The encoder of the PONS may have known what the emotions to express were, without necessarily experiencing the related feelings at the moment of expressing them. The crucial importance of the method used to measure nonverbal sensitivity was further underlined

by Ekman and Friesen (1968):

One can get no more of a judge of nonverbal behavior than what he is shown; if the judge is limited to seeing only one body area (most often the face) or arbitrary time slices (usually the still photograph or the 5-second or 2 minutes movie burst), his inferences are limited and in part determined by how badly such selective processes mutilate the natural flow of nonverbal activity. If measurement of nonverbal behavior is limited to arbitrarily defined units, dictated by the imposition of standardized time segments, it is not likely that valid results will be obtained (p. 192).

In addition, the repetition of items, the length of the test, and the forced-choice answer format, may have introduced elements of boredom, guessing, decreased interest and attention, as well as fatigue in what the PONS test aimed at measuring. Finally, the low relevance found for auditory cues, in the present experiment, should be further clarified in relation to other measures of perception.

CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

The conclusions of this research project are:

1. It was found that visual perception together with age, emotional stability and femininity were components of (mostly visual) nonverbal sensitivity, as measured by the PONS.
2. It was not possible to demonstrate the relevance of sex (demographic index) as a component of nonverbal sensitivity, as measured by the PONS.
3. An attitude based on expectancy of reinforcement was not found to be a component of nonverbal sensitivity, as measured by the PONS.
4. Personality traits such as extraversion, empathy, orderliness, trust, activity, social conformity, and their opposites were found not to be relevant components of nonverbal sensitivity, as measured by the PONS.
5. No significant canonical correlations were found for female subjects. Thus, the canonical correlations obtained for the entire sample may reflect mostly the significant canonical correlations found for male subjects.
6. The canonical correlations for male subjects do not change substantially the results obtained with the canonical correlation analyses for the whole sample. However, these canonical correlations for male subjects, helped delineate the linear combinations found in the main analyses by indicating the contribution of variables such as the locus of control and physical activity. In addition, the secondary analyses confirmed that indeed field-independence, femininity, emotional stability and age are involved in the prediction of the ability to decode visual and to a lesser extent electronically content-filtered cues of the PONS affective dimensions.

Since subjects' age ranged from 17 to 54, the effect of sensory acuity on nonverbal sensitivity cannot be overlooked. Therefore, it is suggested that further research

be devoted to the control of this variable before measuring nonverbal sensitivity. Another aspect which should be investigated is either the levelling off or the continuous decrease of nonverbal sensitivity with age, and the differential effects of content masking techniques on age.

Further studies should be carried out measuring other dimensions of personality than traits in relation to nonverbal sensitivity. Two studies mentioned previously, in which apprehension (Duncan et al., 1969) and induced emotional disagreement (Duckworth, 1975) influenced the way individuals under these conditions decoded nonverbal communication, suggest that it could be fruitful to further explore the interactions of anxiety or levels of arousal with nonverbal sensitivity. The same comment would be applicable for measures of attitudes. Attitudes more relevant to social perception (such as inferiority-superiority) or interpersonal communication would probably contribute more to the understanding of what is nonverbal sensitivity.

It is noteworthy to recognize the variance which has remained unexplained by this study. It is suggested that other variables should be explored in relation to nonverbal sensitivity, in addition to those found in Davitz' (1964) study on perceptual and cognitive correlates, as well as those found relevant to the canonical variates in the present experiment. This would entail extending the study of nonverbal sensitivity by using other variables in addition to the following ones:

(1) sensory discrimination; (2) knowledge of nonverbal cues; (3) abstract symbolic ability; (4) verbal intelligence; (5) visual perception; (6) age; (7) emotional stability versus neuroticism (anxiety, levels of arousal); and (8) masculinity versus femininity (sensitivities in other areas of life).

The other possibility would be to modify the PONS test in the following manner: a shorter version of the PONS with natural (spontaneous) expressions of affect to decode rather than role played ones may produce different and more realistic findings. If the PONS is not modified, then a study of its convergent validity is recommended; that is, different instruments which are used to measure nonverbal sensitivity should be related to the PONS test.

Finally, sex differences, a controversy in the area of nonverbal sensitivity often associated with sex stereotypes such as female intuition (Davitz, 1964), may simply be a matter of sensitivity (masculinity versus femininity) in other areas of life (feelings, arts) rather than an ability attributed mainly to women on the basis of gender identification. This interpretation is in agreement with Sechrest's (1976) critical comments on the use of demographic variables in psychological studies. Further studies could enlighten this issue by comparing groups, divided along sensitivities (similar to the ones measured by the CPS masculinity versus femininity scale), in relation to measures of nonverbal sensitivity.

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APPENDIX 1

INTRODUCTION OF THE EXPERIMENT TO ALL POTENTIAL SUBJECTS

APPENDIX 1

INTRODUCTION OF THE EXPERIMENT TO
ALL POTENTIAL SUBJECTSNONVERBAL COMMUNICATION

We use it every day! how? why? when? to whom? from whom? and for what? Some of these questions are the topic of a doctoral thesis in psychology. Your participation as a subject would be very much appreciated. At the same time, you will learn something about communication which might be of interest to you.

I. Who can participate?

- (1) All English-speaking students with a minimum of 5 years residence on the North American continent.
- (2) The number is limited to 300.

II. What will a subject have to do?

- (1) Paper-and-pencil tests--two sessions of 2 to 3 hours each--at a one (1) week interval.
- (2) To attend one (1) week after the second testing session, an open-session during which questions and answers will be exchanged on the experiment and its objectives, the tests completed and their general meaning for the experiment.
Duration: 1 to 2 hours.
- (3) To write a short report on one assigned article.

III. What will you earn?

- (1) More knowledge about nonverbal communication.
- (2) Individual confidential feedback on the tests completed.

- (3) The Faculty of Psychology will grant five (5) points to each student enrolled in this project who has fulfilled the three steps in Section II.

This agreement is certified by Professor Marie-Claude De Koninck.

You are interested!

Good! If you accept this invitation:

- (1) Complete the following form and return it to me right away.

(PLEASE PRINT)

Name: _____	
Address: _____	
Telephone: _____	
First language: _____	
Age: _____	Sex: _____

- (2) One sheet is being circulated in the class.
- Select either Tuesday or Wednesday or Thursday.
 - Print your full name in the column on that day.
 - Note the time and location of the sessions which appear at the top of the column in which you have entered your name.
 - If you have entered your name under Tuesday, it means that you have to attend the three sessions held on Tuesdays, the 12th, 19th, and 26th of October each time at the same time and location you have noted.
 - Your name should appear only once in one of the three columns.

Thank you for your cooperation.

Chantal Fisch

APPENDIX 2

DIRECTIONS GIVEN FOR THE ADULT NOWICKI-STRICKLAND
INTERNAL-EXTERNAL SCALE (ANSIE)

APPENDIX 2

DIRECTIONS GIVEN FOR THE ADULT NOWICKI-STRICKLAND
INTERNAL-EXTERNAL SCALE (ANSIE)

You will be given a questionnaire.

Place a check mark in the "yes" or "no"
columns.

Answer each of the 40 questions as
honestly as you can.

Any questions? (Pause.)

You can start now.

APPENDIX 3

DIRECTIONS GIVEN FOR THE GROUP EMBEDDED FIGURES TEST (GEFT)

APPENDIX 3

DIRECTIONS GIVEN FOR THE GROUP EMBEDDED
FIGURES TEST (GEFT)

Steps to follow in the administration of the GEFT.

1. Before distribution of material, ask subjects to write identifying information on the cover page.
2. Distribute one booklet with two pencils to each subject.
3. As soon as identifying information has been filled out, say:

"Now start reading the directions, which include two practice problems for you to do. When you get to the end of the directions on page 3, please stop. Do not go beyond page 3."

4. When all subjects have finished reading the directions on page 3, say:

"Before I give the signal to start, let me review the points to keep in mind." Read the following:

1. Look back at the simple forms as often as necessary.
2. Erase all mistakes.
3. Do the problems in order. Don't skip a problem unless you are absolutely "stuck" on it.
4. Trace only one simple form in each problem. You may see more than one, but just trace all the lines of one of them. Show example E.
5. The simple form is always present in the complex figure in the same size, the same proportions, and facing in the same direction as it appears on the back cover of this booklet.

5. Then ask:

"Are there any questions about the directions?"
Pause. Then - "Raise your hand if you need a new pencil during the test."

6. Then say: Practice Items 6 and 7:

"When I give the signal turn the page and start the first section. You will have two minutes for the seven problems in the first section. Stop when you reach the end of this section. Go ahead!"

7. Circulate and give additional explanations to those who seem to be having difficulty with this set of practice items.

8. After two (2) minutes, you say:

"STOP--whether you have finished or not. When I give the signal, turn the page and start the second section. You will have five minutes for the nine problems in the second section. You may not finish all of them, but work as quickly and accurately as you can. Raise your hand if you need a new pencil during the test. Ready? Go ahead!"

9. After five (5) minutes, you say:

"STOP--whether you have finished or not. When I give the signal, turn the page and start the third section. You will have five minutes for the nine problems in the third section. Raise your hand if you need a new pencil during the test. Ready? Go ahead!"

10. After five (5) minutes, you say:

"STOP--whether you have finished or not. Please close your test booklets."

APPENDIX 4

DIRECTIONS GIVEN FOR THE COMREY PERSONALITY SCALES (CPS)

APPENDIX 4

DIRECTIONS GIVEN FOR THE COMREY
PERSONALITY SCALES (CPS)

You all have the Comrey Personality Scales questionnaire with an answer sheet. Please read with me the directions on the cover page of the questionnaire:

"The statements in this booklet have been designed to show where you should be placed on several personality traits. There are no "right" or "wrong" answers to these statements. It is impossible, therefore, to get a "good" or a "bad" score on this personality inventory. It is possible only to get scores which will describe your personality either more or less accurately."

DIRECTIONS: For each numbered statement in the booklet, please follow these steps:

1. Read the statement.
2. Note if the statement number is followed by the letter X or Y. From the answer sheet, select the answer scale which is designated by the same letter, scale X or scale Y. All X statements use scale X and all Y statements use scale Y.
3. Select one answer which is best for you from the seven possible answers in the scale selected. Note the number to the left of the answer which you select (7, 6, 5, 4, 3, 2, or 1). This is the answer number.
4. Find the place on the SEPARATE ANSWER SHEET which has the same number as the statement you have just read in the booklet.
5. Indicate your answer on the SEPARATE ANSWER SHEET by marking the answer number you have chosen in the correct blank.

For example, since statement 1 on the next page is followed by an X, your answer number will be selected from the group of answers named scale X. If, after reading the statement and the possible answers in scale X, you decided that the best answer for you was "4. Occasionally," you would indicate this on the SEPARATE ANSWER SHEET as follows:

		1	2	3	4	5	6	7
Answer Sheet:	1.				█			

If some other answer had been selected rather than 4, you would have marked its answer number in the blank instead. If the other answer scale seems more appropriate for you than the one indicated for the given statement, you may use it instead. If you should find it impossible to select an answer that is even approximately correct for you, leave the answer space blank for the statement. Please turn to the next page and begin."

APPENDIX 5

INSTRUCTIONS GIVEN FOR THE PROFILE OF NONVERBAL
SENSITIVITY (PONS) TEST

APPENDIX 5

INSTRUCTIONS GIVEN FOR THE PROFILE OF NONVERBAL
SENSITIVITY (PONS) TEST

The film and sound track you are about to witness was designed so that we may learn how well people can match facial expressions, body movements, and tone of voice to the actual situation in which the expressions, movements, and tones originally occurred.

You will see and hear a series of audio and video segments, and for each one you are to judge which of two real life situations is represented by the segment you have just seen or heard. After each segment you will have a short period of time in which to record your judgment.

Some of the visual segments will have no sound track. Some of the visual segments will have a sound track, but you will not be able to understand the words. Instead, you will hear speech that has been changed in various ways, so that you will be able to judge only the tone of voice in which something was said. Some of the segments will be made up of only these speech-altered portions of the sound track, and for these there will be no film to watch at all. In fact, the very first segment is like this.

Each segment you will see and/or hear has been numbered on the screen, and this number corresponds to a number on your answer sheet. Your answer sheet lists two brief descriptions of everyday life situations for each segment. One of these descriptions correctly describes the actual situation you will see and/or hear, while the other description does not describe the situation accurately. For each numbered segment, please circle the letter A or B next to the situation you believe to correspond to the segment you have just seen and/or heard.

When you see a number appear on the screen, please find the corresponding number on your answer sheet and place your finger just in front of the number, to keep your place. Watch and/or listen to the segment that follows the number, and as soon as the segment ends, circle the letter A or B corresponding to the situation you believe the segment to have been based upon. Then look to the screen again promptly to find the next number flashed on the screen.

Many of the choices will be difficult, but you should choose one of the descriptions even though you may feel quite uncertain about the correct answer. Choose the more likely description for each segment even if you feel you might be guessing. Your guesses may be much more accurate than you would imagine. In fact, we request that you do not change any answers once you have made a choice. For every segment, then, do the best you can to judge accurately the situation upon which each segment is based. Your answer sheet contains a sample answer, which you should look at now.

All ready to start? Now we will begin.

APPENDIX 6

ADULT NOWICKI-STRICKLAND INTERNAL-EXTERNAL SCALE (ANSIE) - FORM C

APPENDIX 6

ADULT NOWICKI-STRICKLAND INTERNAL-EXTERNAL
SCALE (ANSIE) - FORM C

Name: _____

Age: _____

Sex: _____

YES NO

- ___ ___ 1. Do you believe that most problems will solve themselves if you don't fool with them?
- ___ ___ 2. Do you believe that you can stop yourself from catching a cold?
- ___ ___ 3. Are some people just born lucky?
- ___ ___ 4. Most of the time do you feel that getting good grades means a great deal to you?
- ___ ___ 5. Are you often blamed for things that just aren't your fault?
- ___ ___ 6. Do you believe that if somebody studies hard enough, he or she can pass any subject?
- ___ ___ 7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?
- ___ ___ 8. Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do?
- ___ ___ 9. Do you feel that most of the time parents listen to what their children have to say?
- ___ ___ 10. Do you believe that wishing can make good things happen?
- ___ ___ 11. When you get criticized, does it usually seem it's for no good reason at all?

YES NO

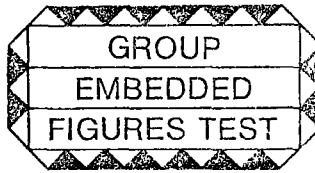
- ___ 12. Most of the time do you find it hard to change a friend's (mind) opinion?
- ___ 13. Do you think that cheering more than luck helps a team to win?
- ___ 14. Did you feel that it was nearly impossible to change your parent's mind about anything?
- ___ 15. Do you believe that parents should allow children to make most of their own decisions?
- ___ 16. Do you feel that when you do something wrong there's very little you can do to make it right?
- ___ 17. Do you believe that most people are just born good at sports?
- ___ 18. Are most of the other people your age and sex stronger than you are?
- ___ 19. Do you feel that one of the best ways to handle most problems is just not to think about them?
- ___ 20. Do you feel that you have a lot of choice in deciding whom your friends are?
- ___ 21. If you find a four-leaf clover, do you believe it might bring you good luck?
- ___ 22. Did you often feel that whether or not you do your homework has much to do with what kind of grades you get?
- ___ 23. Do you feel that when a person your age is angry at you, there's little you can do to stop him or her?
- ___ 24. Have you ever had a good luck charm?
- ___ 25. Do you believe that whether or not people like you depends on how you act?
- ___ 26. Did your parents usually help you if you asked them to?
- ___ 27. Have you felt that when people were angry with you, it was usually for no reason at all?

YES NO

- ___ ___ 28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?
- ___ ___ 29. Do you believe that when bad things are going to happen, they just are going to happen no matter what you try to do to stop them?
- ___ ___ 30. Do you think that people can get their own way if they just keep trying?
- ___ ___ 31. Most of the time do you find it useless to try to get your own way at home?
- ___ ___ 32. Do you feel that when good things happen, they happen because of hard work?
- ___ ___ 33. Do you feel that when somebody your age wants to be your enemy, there's little you can do to change matters?
- ___ ___ 34. Do you feel that it's easy to get friends to do what you want them to do?
- ___ ___ 35. Do you usually feel that you have little to say about what you get to eat at home?
- ___ ___ 36. Do you feel that when someone doesn't like you, there's little you can do about it?
- ___ ___ 37. Do you usually feel that it was almost useless to try in school because most other students are just plain smarter than you are?
- ___ ___ 38. Are you the kind of person who believes that planning ahead makes things turn out better?
- ___ ___ 39. Most of the time, do you feel that you have little to say about what your family decides to do?
- ___ ___ 40. Do you think it's better to be smart than to be lucky?

APPENDIX 7

GROUP EMBEDDED FIGURES TEST (GEFT)



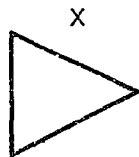
By Philip K. Oltman, Evelyn Raskin, & Herman A. Witkin

Name _____ Sex _____

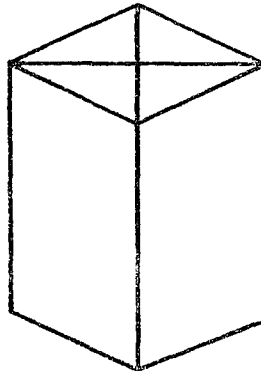
Today's date _____ Birth date _____

INSTRUCTIONS: This is a test of your ability to find a simple form when it is hidden within a complex pattern.

Here is a simple form which we have labeled "X":



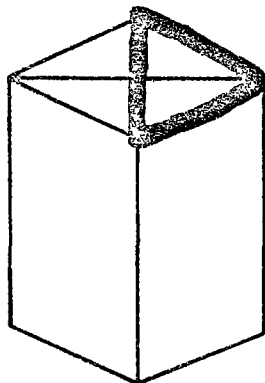
This simple form, named "X", is hidden within the more complex figure below:



Try to find the simple form in the complex figure and trace it *in pencil* directly over the lines of the complex figure. It is the SAME SIZE, in the SAME PROPORTIONS, and FACES IN THE SAME DIRECTION within the complex figure as when it appeared alone.

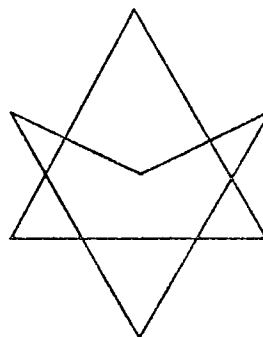
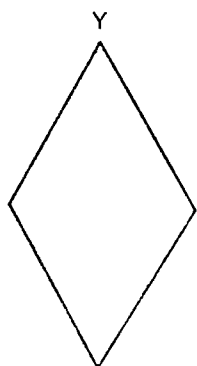
When you finish, turn the page to check your solution.

This is the correct solution, with the simple form traced over the lines of the complex figure:



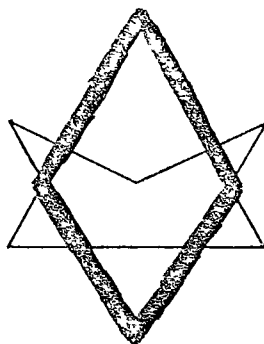
Note that the top right-hand triangle is the correct one; the top left-hand triangle is similar, but faces in the opposite direction and is therefore *not* correct.

Now try another practice problem. Find and trace the simple form named "Y" in the complex figure below it:



Look at the next page to check your solution.

Solution:



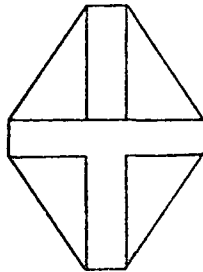
In the following pages, problems like the ones above will appear. On each page you will see a complex figure, and under it will be a letter corresponding to the simple form which is hidden in it. For each problem, look at the BACK COVER of this booklet to see which simple form to find. Then try to trace it in pencil over the lines of the complex figure. Note these points:

1. Look back at the simple forms as often as necessary.
2. ERASE ALL MISTAKES.
3. Do the problems in order. Don't skip a problem unless you are absolutely "stuck" on it.
4. Trace ONLY ONE SIMPLE FORM IN EACH PROBLEM. You may see more than one, but just trace *one* of them.
5. The simple form is always present in the complex figure in the SAME SIZE, the SAME PROPORTIONS, and FACING IN THE SAME DIRECTION as it appears on the back cover of this booklet.

Do not turn the page until the signal is given

FIRST SECTION

1 .



Find Simple Form "B"

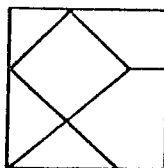
2



Find Simple Form "G"

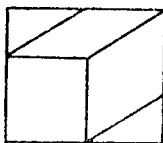
Go on to the next page

3



Find Simple Form "D"

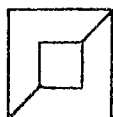
4



Find Simple Form "E"

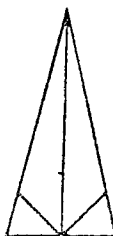
Go on to the next page

5



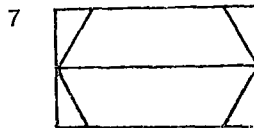
Find Simple Form "C"

6



Find Simple Form "F"

Go on to the next page

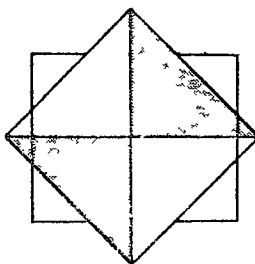


Find Simple Form "A"

PLEASE STOP *Wait for
further instructions.*

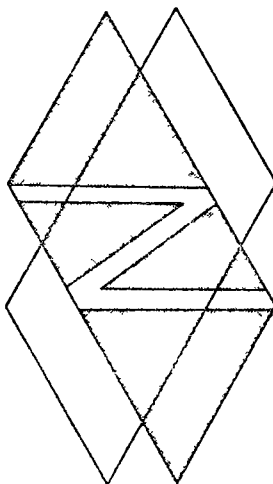
SECOND SECTION

1



Find Simple Form "G"

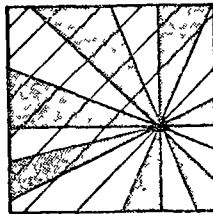
2



Find Simple Form "A"

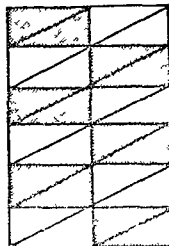
Go on to the next page

3



Find Simple Form "G"

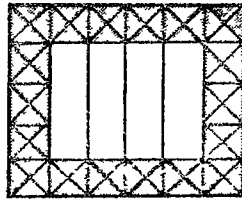
4



Find Simple Form "E"

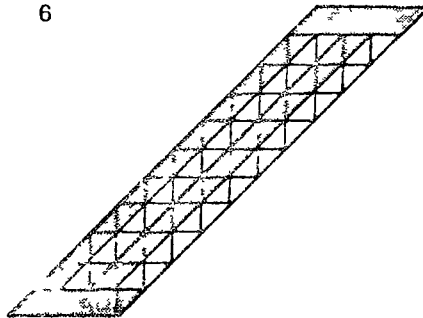
Go on to the next page

5



Find Simple Form "B"

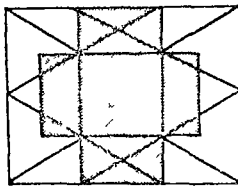
6



Find Simple Form "C"

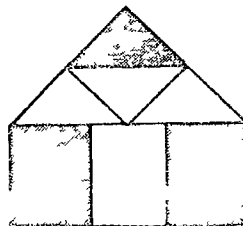
Go on to the next page

7



Find Simple Form "E"

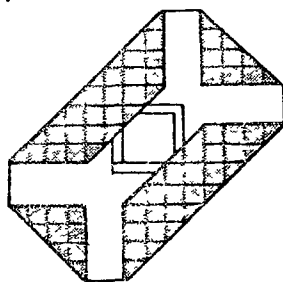
8



Find Simple Form "D"

Go on to the next page

9

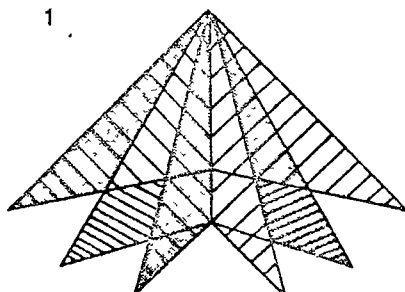


Find Simple Form "H"

PLEASE STOP. Wait for
further instructions.

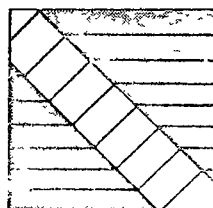
THIRD SECTION

1



Find Simple Form "F"

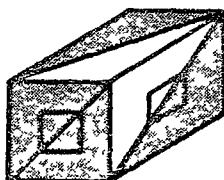
2



Find Simple Form "G"

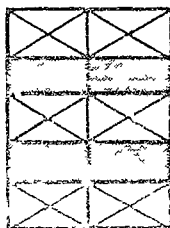
Go on to the next page

3



Find Simple Form "C"

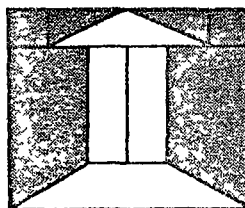
4



Find Simple Form "E"

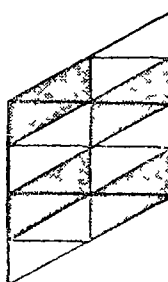
Go on to the next page

5



Find Simple Form "B"

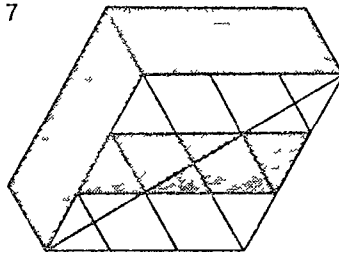
6



Find Simple Form "E"

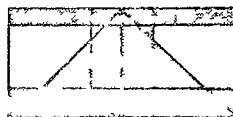
Go on to the next page

7



Find Simple Form "A"

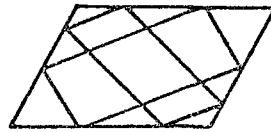
8



Find Simple Form "C"

Go on to the next page

9



Find Simple Form "A"

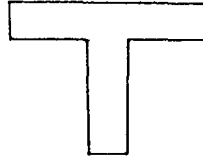
PLEASE STOP. Wait for
further instructions.

SIMPLE FORMS

A



B



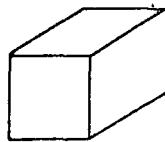
C



D



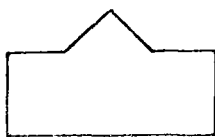
E



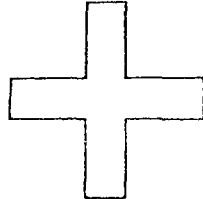
F



G



H



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APPENDIX 8

COMREY PERSONALITY SCALES (CPS) QUESTIONNAIRE

COMREY PERSONALITY SCALES

FORM A

Andrew L. Comrey

The statements in this booklet have been designed to show where you should be placed on several personality traits. There are no "right" or "wrong" answers to these statements. It is impossible, therefore, to get a "good" or a "bad" score on this personality inventory. It is possible only to get scores which will describe your personality either more or less accurately.

DIRECTIONS: For each numbered statement in the booklet, please follow these steps:

1. Read the statement.
2. Note if the statement number is followed by the letter X or Y. From the answer sheet, select the answer scale which is designated by the same letter, Scale X or Scale Y. All X statements use Scale X and all Y statements use Scale Y.
3. Select one answer which is best for you from the seven possible answers in the Scale selected. Note the number to the left of the answer which you select (7, 6, 5, 4, 3, 2, or 1). This is the answer number.
4. Find the place on the SEPARATE ANSWER SHEET which has the same number as the statement you have just read in the booklet.
5. Indicate your answer on the SEPARATE ANSWER SHEET by marking the answer number you have chosen in the correct blank.

For example, since statement 1 on the next page is followed by an X, your answer number will be selected from the group of answers named Scale X. If after reading the statement and the possible answers in Scale X, you decided that the best answer for you was "4. Occasionally," you would indicate this on the SEPARATE ANSWER SHEET as follows:

For Hand Scoring

Answer Sheets. 1. 4

For Machine Scoring

Answer Sheets. 1.

1	2	3	4	5	6	7

If some other answer had been selected rather than 4, you would have marked its answer number in the blank instead. If the other answer scale seems more appropriate for you than the one indicated for the given statement, you may use it instead. If you should find it impossible to select an answer that is even approximately correct for you, leave the answer space blank for the statement. Please turn to the next page and begin.

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- 1X The average person is honest.
- 2Y I could live in a pig pen without letting it bother me.
- 3Y This society provides too much protection for criminals.
- 4X If I think about exercising, I lie down until the idea goes away.
- 5Y If I were asked to lift a ten-ton weight, I could do it.
- 6X I feel inferior to the people I know.
- 7X I am a very talkative person.
- 8X Big bugs and other crawling creatures upset me.
- 9X I am very kindhearted.
- 10X Other people are selfishly concerned about themselves in what they do.
- 11X I am a cautious person.
- 12X If the laws of society are unjust, they should be disobeyed.
- 13X I love to work long hours.
- 14X When I wake up in the morning, my heart is beating.
- 15X I expect things to turn out for the best.
- 16X I find it difficult to talk with a person I have just met.
- 17Y I could assist in a surgical operation without fainting if I had to.
- 18Y I would hate to make a loan to a poor family I didn't know very well.
- 19X You can get what is coming to you without having to be aggressive or competitive.
- 20Y Living according to a schedule is something I like to avoid.
- 21Y The laws governing the people of this country are sound and need only minor changes, if any.
- 22X I seem to lack the drive necessary to get things done.
- 23Y If the world were to be totally destroyed tomorrow, I could still go on the way I have been.
- 24X I feel so down-in-the-dumps that nothing can cheer me up.
- 25X At a party I like to meet as many people as I can.
- 26X A sad movie makes me feel like crying.
- 27Y I enjoy helping people even if I don't know them very well.
- 28X Some people will deliberately say or do things to hurt you.
- 29X I will go to great lengths to correct mistakes in my work which other people wouldn't even notice.
- 30X I ignore what my neighbors might think of me.
- 31X I can work a long time without feeling tired.
- 32Y At one time or another in my life, I have been afraid.
- 33X My mood remains rather constant, neither going up nor down.
- 34Y It would be hard for me to do anything in front of an audience.
- 35X I can tolerate vulgarity.
- 36X I take care of myself before I think about other people's needs.

COMREY PERSONALITY SCALES

- 37Y Most people are valuable human beings.
- 38X My room is a mess.
- 39Y Young people should be more willing than they are to do what their elders tell them to do.
- 40Y Being a big success in life requires more effort than I am willing to make.
- 41X My morals are above reproach.
- 42X My nerves seem to be on edge.
- 43X It is easy for me to talk with people.
- 44X I like movies which tell the story of two people in love.
- 45Y I would like to devote my life to the service of others.
- 46Y Most public officials would accept bribes if they were large enough.
- 47X If I come into a house where everything is in disorder, I get a very negative reaction.
- 48X People who break the law while protesting bad social conditions should get off without punishment.
- 49X I enjoy doing things that involve quite a bit of physical exercise.
- 50X I have done things of a sexual nature that society does not approve of.
- 51X I am free of inferiority feelings.
- 52X In a group of people I keep quiet.
- 53Y I could pick up a non-poisonous snake with my bare hands without being afraid.
- 54X I am inclined to be unsympathetic.
- 55Y Most people try hard to be unselfish.
- 56X I enjoy taking chances.
- 57X If a law is bad you should obey it and try to get it changed rather than to disobey it.
- 58X Hard work is an activity which I like to avoid, if possible.
- 59X My table manners at home are just as good as they are when I am invited out for dinner.
- 60Y I am inclined to be a pessimist.
- 61X I find it easy to start a conversation with a stranger.
- 62Y Seeing a lot of blood would make me feel faint.
- 63X I am generous with the poor.
- 64Y You don't get far unless you are ready to fight off the competition.
- 65X I like to maintain a regular schedule of activities.
- 66X I am critical of the way our present society is organized.
- 67X I seem to have lots of vim and vigor.
- 68X I eat too much.
- 69X Things have worked out well for me.
- 70Y I try to avoid contacts with new people.
- 71X It would be hard to make me cry.
- 72X If someone is looking for help, I try to make myself scarce.
- 73X If somebody does something which hurts me, my tendency is to believe it was unintentional.
- 74X If I get the most important part of a job done right, I forget about the little details.

- 75Y It is important for me to be accepted in my community.
- 76X I need to allow a lot of time to stop and rest.
- 77X I give every penny I can to charity.
- 78Y I shift a great deal between high spirits and low spirits.
- 79Y It would be easy for me to make a speech.
- 80Y Some jokes are so crude and disgusting that they almost make me ill.
- 81X I think it is more important for those I love to be happy than it is for me to be happy.
- 82Y Most people aren't worth the room they take up.
- 83X I keep everything in its proper place so I know just where to find it.
- 84Y High school boys should be allowed to wear their hair long and shaggy if they want to.
- 85X I am willing to work very hard to get ahead of the next fellow.
- 86Y I have been guilty of stealing at one time or another during my life.
- 87X I relax without difficulty.
- 88X After being introduced to someone, I have difficulty thinking of something to say.
- 89X A book about love and romance would bore me.
- 90Y I would try to avoid a job in which I had to help people with their problems.
- 91Y Most public servants are trustworthy.
- 92X I feel more relaxed and comfortable around people who aren't always worried about things being clean and tidy.
- 93Y Law enforcement agencies should have greater powers than they do now to put law breakers behind bars and keep them there.
- 94X I hate vigorous physical activities that get me all sweaty and overheated.
- 95X If a pay telephone refunded too much money, I would put it back in the phone.
- 96X I have the feeling that the people I know are better than I am.
- 97X I love to talk.
- 98Y Having a slimy creature crawl over my leg would really bother me.
- 99X I am a very sympathetic person.
- 100Y Most people are out to get more than they give.
- 101X I like to play it safe.
- 102X If I can get away with it, I will break any law which I think is bad.
- 103X I like to work hard.
- 104X If it is convenient for me to do so, I will lie.
- 105X I am optimistic.
- 106X At a party, I find it hard to mix with people I don't know.
- 107Y I could and would drink blood if I were thirsty and had nothing else available.
- 108X My inclination is to give as little to charity as my conscience will allow.

- 109X Other people will give you what you are entitled to without your having to fight for it.
- 110Y Living in an orderly way bores me.
- 111X I believe the society we live in is pretty good the way it is.
- 112Y I seem to be less energetic than most other people.
- 113X In choosing my friends, I ignore things like race, religion, and political beliefs.
- 114X The future looks so gloomy that I wonder if I should go on.
- 115X I enjoy meeting new people.
- 116X I am easily moved to tears.
- 117X I like to help people even if they don't know who did it.
- 118X I seem to run into people who have a mean streak in them.
- 119X I am a perfectionist in my work.
- 120X I am inclined to disregard what the public may think about me.
- 121X I have a great deal of endurance.
- 122Y In school, I cheated at one time or another.
- 123X I stay on an even keel emotionally.
- 124Y I get stage fright easily.
- 125Y I enjoy crude bathroom humor.
- 126X I am a rather selfish person.
- 127Y Most people have a lot more good than bad in them.
- 128X I am disorderly.
- 129X People should be careful to dress properly when they are away from home.
- 130X I lack ambition.
- 131X In anything I do, I really try to do the very best I can.
- 132X I have difficulty trying to calm down.
- 133X When I am with someone else it is easy for me to find something to talk about.
- 134X I like to think about falling in love.
- 135X I have a strong desire to do something for the good of humanity.
- 136Y Most people would cheat if they could get away with it.
- 137X When people don't keep things spic and span, it bothers me.
- 138X The police in this society abuse their powers.
- 139X I like to work up a good sweat.
- 140Y There have been times in my life when I acted like a coward.
- 141X I think I am just as good as the people I know.
- 142X I do less than my share of the talking in a conversation.
- 143X I enjoy having spiders close by so I can watch them.
- 144X I am rather insensitive to the difficulties that other people are having.
- 145X The average person will put the welfare of those close to him ahead of his own personal needs.
- 146X I like to live dangerously.
- 147X I obey the law even when I am convinced it is in need of change.

- | | |
|--|---|
| 148X I believe it is better not to work too hard. | 165X I want the people in my neighborhood to have a good opinion of me. |
| 149Y I believe that my body will live forever. | 166X I tire quickly. |
| 150X I expect the worst to happen. | 167Y I believe that I am the one and only person of this earth to whom God has spoken personally. |
| 151X I feel comfortable with people I have never even seen before. | 168Y My moods change quickly and easily. |
| 152X The sight of blood tends to make me ill. | 169Y It would be easy for me to act a part in a play. |
| 153X I am willing to share what I can with others less fortunate. | 170Y There are certain words which are so vulgar that I would never use them. |
| 154X If you aren't willing to fight, people will walk all over you. | 171X I like to look after the welfare of the ones I love before I worry about myself. |
| 155X I like my life to be orderly and well-planned in advance. | 172Y Most people make me sick. |
| 156Y I would make a lot of changes in the laws of this country if I could. | 173X I am very fussy about where I put my belongings. |
| 157X Other people think I am an energetic person. | 174Y University students should be allowed to demonstrate publicly as a form of social protest. |
| 158Y There are some things that I do not understand. | 175Y I have a very strong desire to get to the top. |
| 159X When I look back, I think that life has been good to me. | 176Y There are certain people on this earth that I do not know personally. |
| 160X I keep to the people I already know instead of seeking new friends. | 177X I am free of tension. |
| 161Y I am too well controlled to ever break down and cry. | 178X In a group of people, I find myself at a loss for words. |
| 162X I try to get out of helping other people if I can. | 179X I have more important things to do than spending time thinking about love and romance. |
| 163X Most people would go out of their way to avoid hurting somebody else. | 180Y It would be hard for me to spend my life serving other people. |
| 164X If the mistakes in my work are only minor ones, I forget about them. | |

APPENDIX 9

COMREY PERSONALITY SCALES (CPS)
ANSWER SHEET

		SCALE X	NAME _____	
		1 NEVER		
		2 VERY RARELY		
		3 RARELY		
		4 OCCASIONALLY	ADDRESS _____	
		5 FREQUENTLY		
		6 VERY	CITY _____ ZIP _____	
		7 ALWAYS		
		SCALE Y	AGE _____ OCCUPATION _____	
		1 DEFINITELY NOT		
		2 VERY PROBABLY		
		3 NOT		
		4 PROBABLY NOT	YEARS OF SCHOOLING _____	
		5 POSSIBLY		
		6 VERY PROBABLY	SEX ☐ M ☐ F	
		7 DEFINITELY		

COMPLEX PERSONALITY SCALES

PUBLISHED BY
EDUCATIONAL AND INDUSTRIAL
TESTING SERVICE
SAN DIEGO CALIFORNIA 92107

1	2	3	4	5	6	7	24	1	2	3	4	5	6	7	47	1	2	3	4	5	6	7	70	1	2	3	4	5	6	7
2	3	4	5	6	7		25	1	2	3	4	5	6	7	48	1	2	3	4	5	6	7	71	1	2	3	4	5	6	7
3	4	5	6	7			26	1	2	3	4	5	6	7	49	1	2	3	4	5	6	7	72	1	2	3	4	5	6	7
4	5	6	7				27	1	2	3	4	5	6	7	50	1	2	3	4	5	6	7	73	1	2	3	4	5	6	7
5	6	7					28	1	2	3	4	5	6	7	51	1	2	3	4	5	6	7	74	1	2	3	4	5	6	7
6	7						29	1	2	3	4	5	6	7	52	1	2	3	4	5	6	7	75	1	2	3	4	5	6	7
7							30	1	2	3	4	5	6	7	53	1	2	3	4	5	6	7	76	1	2	3	4	5	6	7
8							31	1	2	3	4	5	6	7	54	1	2	3	4	5	6	7	77	1	2	3	4	5	6	7
9							32	1	2	3	4	5	6	7	55	1	2	3	4	5	6	7	78	1	2	3	4	5	6	7
10							33	1	2	3	4	5	6	7	56	1	2	3	4	5	6	7	79	1	2	3	4	5	6	7
11							34	1	2	3	4	5	6	7	57	1	2	3	4	5	6	7	80	1	2	3	4	5	6	7
12							35	1	2	3	4	5	6	7	58	1	2	3	4	5	6	7	81	1	2	3	4	5	6	7
13							36	1	2	3	4	5	6	7	59	1	2	3	4	5	6	7	82	1	2	3	4	5	6	7
14							37	1	2	3	4	5	6	7	60	1	2	3	4	5	6	7	83	1	2	3	4	5	6	7
15							38	1	2	3	4	5	6	7	61	1	2	3	4	5	6	7	84	1	2	3	4	5	6	7
16							39	1	2	3	4	5	6	7	62	1	2	3	4	5	6	7	85	1	2	3	4	5	6	7
17							40	1	2	3	4	5	6	7	63	1	2	3	4	5	6	7	86	1	2	3	4	5	6	7
18							41	1	2	3	4	5	6	7	64	1	2	3	4	5	6	7	87	1	2	3	4	5	6	7
19							42	1	2	3	4	5	6	7	65	1	2	3	4	5	6	7	88	1	2	3	4	5	6	7
20							43	1	2	3	4	5	6	7	66	1	2	3	4	5	6	7	89	1	2	3	4	5	6	7
21							44	1	2	3	4	5	6	7	67	1	2	3	4	5	6	7	90	1	2	3	4	5	6	7
22							45	1	2	3	4	5	6	7	68	1	2	3	4	5	6	7	91	1	2	3	4	5	6	7
23							46	1	2	3	4	5	6	7	69	1	2	3	4	5	6	7	92	1	2	3	4	5	6	7



CENTER					SESSION	EXAMINER	DATE			YEAR		 PUBLISHED BY EDUCATIONAL AND INDUSTRIAL TESTING SERVICE SAN DIEGO, CALIFORNIA 92107
DAY	MONTH	YEAR	DAY	MONTH	YEAR	DAY	MONTH	YEAR	DAY	MONTH	YEAR	
01	01	01	01	01	01	01	01	01	01	01	01	
02	02	02	02	02	02	02	02	02	02	02	02	

DO NOT WRITE ABOVE THIS LINE

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|-----|---------------|-----|---------------|-----|---------------|-----|---------------|
| 93 | 1 2 3 4 5 6 7 | 115 | 1 2 3 4 5 6 7 | 137 | 1 2 3 4 5 6 7 | 159 | 1 2 3 4 5 6 7 |
| 94 | 1 2 3 4 5 6 7 | 116 | 1 2 3 4 5 6 7 | 138 | 1 2 3 4 5 6 7 | 160 | 1 2 3 4 5 6 7 |
| 95 | 1 2 3 4 5 6 7 | 117 | 1 2 3 4 5 6 7 | 139 | 1 2 3 4 5 6 7 | 161 | 1 2 3 4 5 6 7 |
| 96 | 1 2 3 4 5 6 7 | 118 | 1 2 3 4 5 6 7 | 140 | 1 2 3 4 5 6 7 | 162 | 1 2 3 4 5 6 7 |
| 97 | 1 2 3 4 5 6 7 | 119 | 1 2 3 4 5 6 7 | 141 | 1 2 3 4 5 6 7 | 163 | 1 2 3 4 5 6 7 |
| 98 | 1 2 3 4 5 6 7 | 120 | 1 2 3 4 5 6 7 | 142 | 1 2 3 4 5 6 7 | 164 | 1 2 3 4 5 6 7 |
| 99 | 1 2 3 4 5 6 7 | 121 | 1 2 3 4 5 6 7 | 143 | 1 2 3 4 5 6 7 | 165 | 1 2 3 4 5 6 7 |
| 100 | 1 2 3 4 5 6 7 | 122 | 1 2 3 4 5 6 7 | 144 | 1 2 3 4 5 6 7 | 166 | 1 2 3 4 5 6 7 |
| 101 | 1 2 3 4 5 6 7 | 123 | 1 2 3 4 5 6 7 | 145 | 1 2 3 4 5 6 7 | 167 | 1 2 3 4 5 6 7 |
| 102 | 1 2 3 4 5 6 7 | 124 | 1 2 3 4 5 6 7 | 146 | 1 2 3 4 5 6 7 | 168 | 1 2 3 4 5 6 7 |
| 103 | 1 2 3 4 5 6 7 | 125 | 1 2 3 4 5 6 7 | 147 | 1 2 3 4 5 6 7 | 169 | 1 2 3 4 5 6 7 |
| 104 | 1 2 3 4 5 6 7 | 126 | 1 2 3 4 5 6 7 | 148 | 1 2 3 4 5 6 7 | 170 | 1 2 3 4 5 6 7 |
| 105 | 1 2 3 4 5 6 7 | 127 | 1 2 3 4 5 6 7 | 149 | 1 2 3 4 5 6 7 | 171 | 1 2 3 4 5 6 7 |
| 106 | 1 2 3 4 5 6 7 | 128 | 1 2 3 4 5 6 7 | 150 | 1 2 3 4 5 6 7 | 172 | 1 2 3 4 5 6 7 |
| 107 | 1 2 3 4 5 6 7 | 129 | 1 2 3 4 5 6 7 | 151 | 1 2 3 4 5 6 7 | 173 | 1 2 3 4 5 6 7 |
| 108 | 1 2 3 4 5 6 7 | 130 | 1 2 3 4 5 6 7 | 152 | 1 2 3 4 5 6 7 | 174 | 1 2 3 4 5 6 7 |
| 109 | 1 2 3 4 5 6 7 | 131 | 1 2 3 4 5 6 7 | 153 | 1 2 3 4 5 6 7 | 175 | 1 2 3 4 5 6 7 |
| 110 | 1 2 3 4 5 6 7 | 132 | 1 2 3 4 5 6 7 | 154 | 1 2 3 4 5 6 7 | 176 | 1 2 3 4 5 6 7 |
| 111 | 1 2 3 4 5 6 7 | 133 | 1 2 3 4 5 6 7 | 155 | 1 2 3 4 5 6 7 | 177 | 1 2 3 4 5 6 7 |
| 112 | 1 2 3 4 5 6 7 | 134 | 1 2 3 4 5 6 7 | 156 | 1 2 3 4 5 6 7 | 178 | 1 2 3 4 5 6 7 |
| 113 | 1 2 3 4 5 6 7 | 135 | 1 2 3 4 5 6 7 | 157 | 1 2 3 4 5 6 7 | 179 | 1 2 3 4 5 6 7 |
| 114 | 1 2 3 4 5 6 7 | 136 | 1 2 3 4 5 6 7 | 158 | 1 2 3 4 5 6 7 | 180 | 1 2 3 4 5 6 7 |
| | | | | | | 181 | 1 2 3 4 5 6 7 |

APPENDIX 10

PROFILE OF NONVERBAL SENSITIVITY
(PONS) TEST
ANSWER SHEET

NONVERBAL COMMUNICATION

Name _____ Present address _____

Town and country of birth _____ Age _____ Sex _____

Primary language spoken _____ Secondary language spoken _____

Father's occupation _____ Mother's occupation _____

Field of study _____ Average grade in last year of school _____

INSTRUCTIONS: Please circle the letter (A or B) next to the label which best describes the scene you have just seen and/or heard.

SAMPLE ANSWER: Scene 1. ☐ A. admiring a baby
☒ B. applying for a job

- | | |
|---|---|
| Scene 1. A. expressing jealous anger
B. talking to a lost child | Scene 18. A. nagging a child
B. criticizing someone for being late |
| Scene 2. A. talking to a lost child
B. admiring nature | Scene 19. A. asking forgiveness
B. leaving on a trip |
| Scene 3. A. talking about the death of a friend
B. talking to a lost child | Scene 20. A. expressing gratitude
B. leaving on a trip |
| Scene 4. A. leaving on a trip
B. saying a prayer | Scene 21. A. leaving on a trip
B. returning faulty item to a store |
| Scene 5. A. criticizing someone for being late
B. expressing gratitude | Scene 22. A. returning faulty item to a store
B. talking about one's divorce |
| Scene 6. A. helping a customer
B. expressing gratitude | Scene 23. A. expressing jealous anger
B. talking about one's divorce |
| Scene 7. A. criticizing someone for being late
B. leaving on a trip | Scene 24. A. talking about the death of a friend
B. threatening someone |
| Scene 8. A. talking about one's wedding
B. expressing gratitude | Scene 25. A. expressing deep affection
B. saying a prayer |
| Scene 9. A. helping a customer
B. talking about one's divorce | Scene 26. A. expressing deep affection
B. trying to seduce someone |
| Scene 10. A. talking about the death of a friend
B. trying to seduce someone | Scene 27. A. nagging a child
B. expressing motherly love |
| Scene 11. A. talking to a lost child
B. helping a customer | Scene 28. A. leaving on a trip
B. ordering food in a restaurant |
| Scene 12. A. admiring nature
B. expressing motherly love | Scene 29. A. helping a customer
B. expressing jealous anger |
| Scene 13. A. expressing deep affection
B. nagging a child | Scene 30. A. criticizing someone for being late
B. expressing gratitude |
| Scene 14. A. expressing motherly love
B. asking forgiveness | Scene 31. A. threatening someone
B. talking about one's wedding |
| Scene 15. A. admiring nature
B. helping a customer | Scene 32. A. admiring nature
B. expressing strong dislike |
| Scene 16. A. admiring nature
B. saying a prayer | Scene 33. A. ordering food in a restaurant
B. criticizing someone for being late |
| Scene 17. A. nagging a child
B. admiring nature | Scene 34. A. leaving on a trip
B. talking about one's wedding |

- Scene 35. A. talking to a lost child
B. expressing strong dislike
- Scene 36. A. trying to seduce someone
B. expressing jealous anger
- Scene 37. A. expressing strong dislike
B. expressing deep affection
- Scene 38. A. leaving on a trip
B. threatening someone
- Scene 39. A. expressing deep affection
B. talking about the death of a friend
- Scene 40. A. talking to a lost child
B. criticizing someone for being late
- Scene 41. A. ordering food in a restaurant
B. expressing gratitude
- Scene 42. A. expressing motherly love
B. threatening someone
- Scene 43. A. expressing strong dislike
B. ordering food in a restaurant
- Scene 44. A. expressing motherly love
B. talking to a lost child
- Scene 45. A. expressing deep affection
B. nagging a child
- Scene 46. A. asking forgiveness
B. saying a prayer
- Scene 47. A. expressing motherly love
B. helping a customer
- Scene 48. A. admiring nature
B. expressing strong dislike
- Scene 49. A. expressing motherly love
B. leaving on a trip
- Scene 50. A. talking about one's divorce
B. ordering food in a restaurant
- Scene 51. A. asking forgiveness
B. nagging a child
- Scene 52. A. admiring nature
B. expressing motherly love
- Scene 53. A. returning faulty item to a store
B. criticizing someone for being late
- Scene 54. A. talking about one's wedding
B. expressing deep affection
- Scene 55. A. expressing strong dislike
B. ordering food in a restaurant
- Scene 56. A. admiring nature
B. ordering food in a restaurant
- Scene 57. A. returning faulty item to a store
B. helping a customer
- Scene 58. A. expressing strong dislike
B. expressing gratitude
- Scene 59. A. expressing deep affection
B. expressing gratitude
- Scene 60. A. saying a prayer
B. threatening someone
- Scene 61. A. saying a prayer
B. ordering food in a restaurant
- Scene 62. A. admiring nature
B. asking forgiveness
- Scene 63. A. talking to a lost child
B. expressing gratitude
- Scene 64. A. talking about one's wedding
B. saying a prayer
- Scene 65. A. talking to a lost child
B. threatening someone

- Scene 66. A. expressing motherly love
B. nagging a child
- Scene 67. A. expressing motherly love
B. returning faulty item to a store
- Scene 68. A. expressing gratitude
B. expressing strong dislike
- Scene 69. A. expressing strong dislike
B. talking about one's wedding
- Scene 70. A. helping a customer
B. asking forgiveness
- Scene 71. A. threatening someone
B. expressing motherly love
- Scene 72. A. nagging a child
B. talking to a lost child
- Scene 73. A. talking to a lost child
B. criticizing someone for being late
- Scene 74. A. talking about one's divorce
B. trying to seduce someone
- Scene 75. A. expressing jealous anger
B. helping a customer
- Scene 76. A. talking about one's divorce
B. expressing deep affection
- Scene 77. A. expressing gratitude
B. talking to a lost child
- Scene 78. A. expressing deep affection
B. asking forgiveness
- Scene 79. A. threatening someone
B. nagging a child
- Scene 80. A. talking about the death of a friend
B. trying to seduce someone
- Scene 81. A. talking about one's wedding
B. talking about one's divorce
- Scene 82. A. trying to seduce someone
B. criticizing someone for being late
- Scene 83. A. helping a customer
B. admiring nature
- Scene 84. A. returning faulty item to a store
B. nagging a child
- Scene 85. A. nagging a child
B. leaving on a trip
- Scene 86. A. talking about one's wedding
B. admiring nature
- Scene 87. A. criticizing someone for being late
B. expressing deep affection
- Scene 88. A. admiring nature
B. returning faulty item to a store
- Scene 89. A. asking forgiveness
B. expressing strong dislike
- Scene 90. A. expressing motherly love
B. helping a customer
- Scene 91. A. asking forgiveness
B. leaving on a trip
- Scene 92. A. criticizing someone for being late
B. helping a customer
- Scene 93. A. talking about one's wedding
B. threatening someone
- Scene 94. A. expressing motherly love
B. nagging a child
- Scene 95. A. expressing motherly love
B. expressing gratitude
- Scene 96. A. talking about one's divorce
B. trying to seduce someone

- Scene 97. A. expressing jealous anger
B. asking forgiveness
- Scene 98. A. expressing motherly love
B. criticizing someone for being late
- Scene 99. A. talking about one's wedding
B. talking about the death of a friend
- Scene 100. A. expressing strong dislike
B. asking forgiveness
- Scene 101. A. saying a prayer
B. helping a customer
- Scene 102. A. nagging a child
B. leaving on a trip
- Scene 103. A. talking about one's divorce
B. asking forgiveness
- Scene 104. A. ordering food in a restaurant
B. expressing jealous anger
- Scene 105. A. criticizing someone for being late
B. talking about the death of a friend
- Scene 106. A. talking about the death of a friend
B. ordering food in a restaurant
- Scene 107. A. leaving on a trip
B. nagging a child
- Scene 108. A. saying a prayer
B. talking about one's divorce
- Scene 109. A. expressing strong dislike
B. trying to seduce someone
- Scene 110. A. ordering food in a restaurant
B. asking forgiveness
- Scene 111. A. talking about one's wedding
B. leaving on a trip
- Scene 112. A. expressing deep affection
B. admiring nature
- Scene 113. A. expressing jealous anger
B. criticizing someone for being late
- Scene 114. A. talking about one's divorce
B. threatening someone
- Scene 115. A. expressing strong dislike
B. returning faulty item to a store
- Scene 116. A. ordering food in a restaurant
B. threatening someone
- Scene 117. A. talking to a lost child
B. criticizing someone for being late
- Scene 118. A. admiring nature
B. nagging a child
- Scene 119. A. expressing strong dislike
B. helping a customer
- Scene 120. A. talking about one's wedding
B. ordering food in a restaurant
- Scene 121. A. expressing gratitude
B. expressing motherly love
- Scene 122. A. leaving on a trip
B. expressing deep affection
- Scene 123. A. nagging a child
B. talking to a lost child
- Scene 124. A. returning faulty item to a store
B. expressing motherly love
- Scene 125. A. talking about one's divorce
B. admiring nature
- Scene 126. A. expressing deep affection
B. talking about the death of a friend
- Scene 127. A. talking about one's divorce
B. admiring nature
- Scene 128. A. expressing deep affection
B. admiring nature
- Scene 129. A. talking to a lost child
B. admiring nature
- Scene 130. A. returning faulty item to a store
B. talking about the death of a friend
- Scene 131. A. talking about one's wedding
B. returning faulty item to a store
- Scene 132. A. admiring nature
B. leaving on a trip
- Scene 133. A. asking forgiveness
B. helping a customer
- Scene 134. A. expressing strong dislike
B. ordering food in a restaurant
- Scene 135. A. returning faulty item to a store
B. talking about the death of a friend
- Scene 136. A. expressing deep affection
B. saying a prayer
- Scene 137. A. saying a prayer
B. criticizing someone for being late
- Scene 138. A. talking about one's wedding
B. talking about one's divorce
- Scene 139. A. expressing gratitude
B. expressing motherly love
- Scene 140. A. expressing jealous anger
B. threatening someone
- Scene 141. A. asking forgiveness
B. expressing motherly love
- Scene 142. A. admiring nature
B. ordering food in a restaurant
- Scene 143. A. expressing motherly love
B. expressing jealous anger
- Scene 144. A. expressing jealous anger
B. helping a customer
- Scene 145. A. ordering food in a restaurant
B. returning faulty item to a store
- Scene 146. A. talking about one's divorce
B. leaving on a trip
- Scene 147. A. nagging a child
B. saying a prayer
- Scene 148. A. trying to seduce someone
B. criticizing someone for being late
- Scene 149. A. expressing deep affection
B. admiring nature
- Scene 150. A. talking about the death of a friend
B. expressing motherly love
- Scene 151. A. expressing gratitude
B. expressing strong dislike
- Scene 152. A. expressing deep affection
B. returning faulty item to a store
- Scene 153. A. expressing gratitude
B. threatening someone
- Scene 154. A. leaving on a trip
B. talking to a lost child
- Scene 155. A. talking about the death of a friend
B. expressing jealous anger
- Scene 156. A. helping a customer
B. expressing gratitude
- Scene 157. A. asking forgiveness
B. saying a prayer
- Scene 158. A. trying to seduce someone
B. expressing gratitude

Scene 159. A. expressing jealous anger
B. saying a prayer

Scene 160. A. criticizing someone for being late
B. helping a customer

Scene 161. A. expressing strong dislike
B. expressing deep affection

Scene 162. A. expressing deep affection
B. talking about the death of a friend

Scene 163. A. returning faulty item to a store
B. leaving on a trip

Scene 164. A. expressing gratitude
B. expressing jealous anger

Scene 165. A. talking about one's wedding
B. trying to seduce someone

Scene 166. A. talking to a lost child
B. expressing jealous anger

Scene 167. A. talking to a lost child
B. talking about the death of a friend

Scene 168. A. talking about one's divorce
B. asking forgiveness

Scene 169. A. trying to seduce someone
B. threatening someone

Scene 170. A. expressing gratitude
B. expressing jealous anger

Scene 171. A. talking about one's wedding
B. criticizing someone for being late

Scene 172. A. returning faulty item to store
B. expressing strong dislike

Scene 173. A. expressing gratitude
B. talking to a lost child

Scene 174. A. expressing gratitude
B. returning faulty item to store

Scene 175. A. expressing motherly love
B. criticizing someone for being late

Scene 176. A. ordering food in a restaurant
B. expressing jealous anger

Scene 177. A. expressing gratitude
B. returning faulty item to a store

Scene 178. A. expressing strong dislike
B. talking about one's divorce

Scene 179. A. talking about one's divorce
B. talking about the death of a friend

Scene 180. A. ordering food in a restaurant
B. returning faulty item to a store

Scene 181. A. expressing motherly love
B. talking to a lost child

Scene 182. A. trying to seduce someone
B. talking about one's wedding

Scene 183. A. leaving on a trip
B. trying to seduce someone

Scene 184. A. talking about the death of a friend
B. asking forgiveness

Scene 185. A. trying to seduce someone
B. talking to a lost child

Scene 186. A. expressing motherly love
B. ordering food in a restaurant

Scene 187. A. saying a prayer
B. expressing jealous anger

Scene 188. A. trying to seduce someone
B. talking about the death of a friend

Scene 189. A. ordering food in a restaurant
B. talking about the death of a friend

Scene 190. A. helping a customer
B. trying to seduce someone

Scene 191. A. expressing motherly love
B. criticizing someone for being late

Scene 192. A. saying a prayer
B. nagging a child

Scene 193. A. talking to a lost child
B. expressing deep affection

Scene 194. A. talking about one's divorce
B. returning faulty item to a store

Scene 195. A. threatening someone
B. helping a customer

Scene 196. A. criticizing someone for being late
B. talking about one's divorce

Scene 197. A. expressing jealous anger
B. nagging a child

Scene 198. A. talking about one's wedding
B. expressing jealous anger

Scene 199. A. trying to seduce someone
B. expressing deep affection

Scene 200. A. threatening someone
B. expressing strong dislike

Scene 201. A. talking about one's wedding
B. talking about the death of a friend

Scene 202. A. talking about one's divorce
B. talking about one's wedding

Scene 203. A. threatening someone
B. expressing strong dislike

Scene 204. A. admiring nature
B. criticizing someone for being late

Scene 205. A. ordering food in a restaurant
B. nagging a child

Scene 206. A. expressing gratitude
B. threatening someone

Scene 207. A. talking about one's wedding
B. saying a prayer

Scene 208. A. admiring nature
B. talking about the death of a friend

Scene 209. A. trying to seduce someone
B. saying a prayer

Scene 210. A. talking about one's divorce
B. threatening someone

Scene 211. A. expressing deep affection
B. trying to seduce someone

Scene 212. A. saying a prayer
B. talking about one's wedding

Scene 213. A. leaving on a trip
B. trying to seduce someone

Scene 214. A. saying a prayer
B. talking to a lost child

Scene 215. A. admiring nature
B. talking about one's wedding

Scene 216. A. expressing jealous anger
B. criticizing someone for being late

Scene 217. A. leaving on a trip
B. ordering food in a restaurant

Scene 218. A. expressing strong dislike
B. talking to a lost child

Scene 219. A. expressing jealous anger
B. saying a prayer

Scene 220. A. asking forgiveness
B. expressing gratitude

APPENDIX 11

PROFILE OF NONVERBAL SENSITIVITY
(PONS) TEST: STANDARD
SCORING SHEET⁶

NAME _____ UNIT # _____ AGE _____ SEX _____ DATE TESTED _____

GROUP _____ GROUP # _____ N= _____ LOCATION _____

OTHER INFORMATION _____

Channel Scores and Total

PERCENTILES	Face (1)	Body (2)	Face & Body (Figure) (3)	RS* (4)	CF** (5)	Face & RS (6)	Face & CF (7)	Body & RS (8)	Body & CF (9)	Figure & RS (10)	Figure & CF (11)	TOTAL (12)
99.9-				18-	18-			20-	20-			
99.4-	20-	20-	20-	17-	17-		20-	19-	19-			200-
97.7-		19-	19-	16-	16-			18-	18-	20-		195-
93.3-	19-	18-	18-	15-	15-	20-	19-	17-	17-	19-	20-	190-
84.1-	18-		18-	14-	14-			17-	16-	19-		185-
69.2-	17-	16-	17-	13-	13-	18-	17-	15-	15-	18-	18-	180-
50.0-	16-	15-	16-	12-	12-	17-	16-	14-	14-	17-	17-	170-
30.8-	15-	14-	15-	11-	11-	16-	15-	13-	13-	16-	16-	165-
15.9-	14-	13-	14-	10-	10-	15-	14-	12-	12-	15-	15-	160-
6.7-	13-	12-	13-	9-	9-	14-	13-	11-	11-	14-	14-	155-
2.3-		11-	11-	8-	8-	13-	12-	10-	10-	13-	13-	150-
0.6-	12-	10-	12-	7-	7-	13-	12-	9-	9-	13-	12-	145-
0.1-	11-					12-	12-	10-	10-			140-
												135-

CHANNELS: Face (1) Body (2) Face & Body (Figure) (3) RS* (4) CF** (5) Face & RS (6) Face & CF (7) Body & RS (8) Body & CF (9) Figure & RS (10) Figure & CF (11) TOTAL (12)

*RS=Randomized Spliced Voice

**CF=Electronically Content-Filtered Voice

PROFILE OF NONVERBAL SENSITIVITY: STANDARD SCORING SHEET

Pooled Channels and Type of Scene

PERCENTILES	Pooled Channels							Type of Scene			
	Tone Only	RS	CF	FA	BO	FIG	Video Only	Pos & Sub	Pos & Dom	Neg & Sub	Neg & Dom
99.9	33	77			58		60	51	51	55	
99.4	32	75	74		56		50	49	49	53	
97.7	31	73	72	60	54	60	56			51	55
93.3	30	71	70	58	52	58	54	47	47	49	54
84.1	29	69	68	56	50	56	52	45	45	47	52
69.2	28	67	66	54	48	54	50	43	43	45	50
50.0	27	65	64	52	46	52	48	41	41	43	48
30.8	26	63	62	50	44	50	46	39	39	39	46
15.9	25	61	60	48	42	48	44	37	37	37	44
6.7	24	59	58	46	40	44	42	35	35	35	42
2.3	23	57	56	44	38	42	40	33	33	33	40
0.6	22	55	54	42	36	40	38	31	31	31	38
0.1	21	53	52	40	34	38	36	29	29	29	36
	20	51	48	38	32	36	34				
	19	49	46	36	30	34	32				
	18	47	44	34	28	32	30				
	17	45	42	32	26	30	28				
	16	43	40	30	24	28	26				
	15	41	38	28	22	26	24				
	14	39	36	26	20	24	22				
	13	37	34	24	18	22	20				
	12	35	32	22	16	20	18				
	11	33	30	20	14	18	16				
	10	31	28	18	12	16	14				
	9	29	26	16	10	14	12				
	8	27	24	14	8	12	10				
	7	25	22	12	6	10	8				
	6	23	20	10	4	8	6				
	5	21	18	8	2	6	4				
	4	19	16	6	0	4	2				
	3	17	14	4	0	2	0				
	2	15	12	2	0	0	0				
	1	13	10	0	0	0	0				
	0	11	8	0	0	0	0				
	0	9	6	0	0	0	0				
	0	7	4	0	0	0	0				
	0	5	2	0	0	0	0				
	0	3	0	0	0	0	0				
	0	1	0	0	0	0	0				
	0	0	0	0	0	0	0				

NAME _____ UNIT # _____ AGE _____ SEX _____

GROUP # _____ GROUP # _____ N = _____

DATE: _____ LOCATION: _____

OTHER INFORMATION: _____

KEY (numbers refer to number of scenes included):

40 Tone only = 20 RS only + 20 CF only

80 RS = 20 RS only, 20 FA + RS, 20 BO + RS, and 20 FIG + RS

80 CF = 20 CF only, 20 FA + CF, 20 BO + CF, and 20 FIG + CF

60 FACE = 20 FA only, 20 FA + RS, and 20 FA + CF

60 BODY = 20 BO only, 20 BO + RS, and 20 BO + CF

60 FIGURE = 20 FIG only, 20 FIG + RS, and 20 FIG + CF

60 Video only = 20 FA only, 20 BO only, and 20 FIG only

APPENDIX 12

TABLES FOR ANALYSES OF DATA REPORTED

Table 1

Means and Standard Deviations of the 37 Variables for the
Total Sample, Males and Females ($n = 288$)

Variable	Mean	Standard deviation	Cases
AGE	23.92	7.85	288
ANSIE	8.85	4.12	288
SEX	0.42	0.49	288
GEFT	12.34	4.87	288
CPST	90.68	11.51	288
CPSO	91.22	14.32	288
CPSC	87.48	13.22	288
CPSA	97.19	14.70	288
CPSS	100.23	15.32	288
CPSE	89.81	17.35	288
CPSM	76.32	16.70	288
CPSP	100.34	14.10	288
PONF	16.53	1.54	288
PONB	16.08	1.91	288
PONFI	16.45	1.65	288
PONRS	12.82	1.90	288
PONCF	12.62	1.94	288
PONFRS	17.93	1.54	288
PONFCF	16.57	1.43	288
PONBRS	15.37	1.69	288
PONBCF	15.22	1.66	288
PONFIRS	17.16	1.40	288
PONFICF	17.29	1.71	288
PONTS	174.04	9.38	288
PONTO40	25.38	2.76	288
PONRS80	63.24	4.12	288
PONCF80	61.65	4.02	288
PONF60	51.01	3.18	288
PONB60	46.60	3.76	288
PONFI60	50.87	3.35	288
PONV60	48.92	3.62	288
PONF120	101.57	7.81	288
PONB120	97.47	6.04	288
PONPS	40.56	3.37	288
PONPD	41.50	3.93	288
PONNS	43.50	3.46	288
PONND	48.54	2.77	288

Table 2

Intercorrelations among Selected Variables for the Canonical Correlation
Analysis Using the Five Pure Channels of the PONS Test and Twelve
Predictors

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	-																
2	-.04	-															
3	-.22	-.02	-														
4	-.26	-.19	.23	-													
5	.27	-.36	-.19	.10	-												
6	.20	.02	-.16	-.19	.08	-											
7	.19	-.05	-.18	-.14	.15	.45	-										
8	-.13	-.37	.11	.11	.04	.22	.13	-									
9	.06	-.40	.13	.06	.27	.01	.03	.39	-								
10	-.05	-.26	.07	.04	.09	.03	-.01	.45	.29	-							
11	-.15	-.18	.62	.30	-.11	-.18	-.19	.27	.22	.13	-						
12	.05	-.12	-.14	-.11	.25	.18	.08	.30	.20	.30	-.24	-					
13	-.08	.01	-.02	.16	.09	-.07	-.06	-.02	.11	.03	-.03	.04	-				
14	.05	.02	-.12	.15	.06	.00	.06	-.01	.01	.04	-.15	.08	.26	-			
15	-.12	-.10	-.12	.17	.12	-.02	.01	-.07	.10	-.00	-.04	-.03	.22	.18			
16	-.07	-.05	-.00	.11	.00	-.06	-.07	.01	.04	.02	-.03	.02	.23	.08	.15	-	
17	-.18	-.03	.07	.09	.06	-.12	-.10	-.00	.03	.01	-.02	.01	.18	.11	.09	.07	-

1 - Age
2 - ANSIE
3 - Sex
4 - GEFT
5 - CPST
6 - CPSO
7 - CPSC
8 - CPSCA
9 - CPSS

10 - CPSE
11 - CPSM
12 - CPSP
13 - PONF
14 - PONB
15 - PONFI
16 - PONRS
17 - PONCF

$\underline{r} = .16$ at $\underline{p} < .01$

$\underline{r} = .12$ at $\underline{p} < .05$

$\underline{df} = 286$, two-tailed test

Table 3

Canonical Variable Loadings of the First Canonical Correlation Analysis

Predictors		Criterion variables	
GEFT	.62	PONFI	.57
AGE	-.48	PONB	.38
CPSS	.42	PONF	.30
CPSM	-.35	PONCF	.26
CPSA	-.30	PONRS	.14
SEX	-.29		
CPST	.26		
CPSC	-.16		
CPSE	.09		
CPSO	.06		
CPSP	-.04		
ANSIE	.04		

Canonical correlation .39, eigenvalue .155,
Wilks' lambda .737, chi-square 85.0, df=60, p = .019

Table 4
Intercorrelations among the 25 PONS Variables

Vari- ables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	-																								
2	.26	-																							
3	.22	.18	-																						
4	.23	*	.15	-																					
5	.18	*	*	*	-																				
6	.29	.16	.26	.19	*	-																			
7	.21	.22	.13	*	*	.17	-																		
8	.22	.26	.17	*	.15	.15	.23	-																	
9	.24	.25	.21	.15	.16	.20	.20	.27	-																
10	.28	.24	.27	.21	.13	.23	.16	.24	.26	-															
11	.32	.28	.27	.18	*	.20	.27	.18	.21	.25	-														
12	.60	.56	.52	.44	.41	.50	.46	.52	.55	.55	.54	-													
13	.29	.13	.18	.72	.73	.24	*	.15	.22	.25	.17	.59	-												
14	.41	.30	.35	.63	.21	.59	.24	.58	.35	.64	.33	.82	.58	-											
15	.39	.35	.28	.17	.60	.29	.59	.35	.63	.33	.57	.81	.55	.46	-										
16	.73	.32	.31	.23	.21	.69	.64	.29	.30	.33	.38	.76	.31	.62	.60	-									
17	.34	.74	.26	.14	.20	.24	.31	.70	.69	.35	.32	.77	.24	.58	.62	.43	-								
18	.39	.34	.74	.25	.14	.33	.27	.29	.30	.68	.68	.76	.29	.61	.57	.49	.44	-							
19	.67	.71	.65	.23	.18	.34	.27	.32	.32	.37	.41	.79	.29	.51	.48	.63	.65	.69	-						
20	.50	.30	.43	.18	.14	.44	.42	.32	.26	.40	.43	.66	.23	.54	.50	.67	.41	.60	.57	-					
21	.43	.65	.57	.23	.20	.33	.34	.60	.60	.59	.58	.90	.31	.70	.70	.54	.87	.83	.79	.59	-				
22	.29	.43	.29	.38	.22	.33	.32	.33	.43	.34	.43	.67	.42	.57	.57	.47	.57	.50	.50	.40	.63	-			
23	.45	.48	.41	.32	.31	.41	.36	.36	.44	.44	.42	.77	.45	.62	.62	.59	.61	.59	.65	.48	.71	.41	-		
24	.49	.29	.33	.27	.34	.36	.33	.36	.34	.43	.32	.68	.42	.56	.55	.57	.45	.51	.50	.46	.56	.23	.32	-	
25	.39	.35	.43	.24	.26	.29	.21	.40	.31	.31	.32	.62	.35	.51	.46	.44	.49	.51	.54	.45	.59	.20	.35	.32	-

1 - PONF	9 - PONBCF	17 - PONB60
2 - PONB	10 - PONFIRS	18 - PONFI60
3 - PONFI	11 - PONFICF	19 - PONV60
4 - PONRS	12 - PONT5	20 - PONFI20
5 - PONCF	13 - PONT040	21 - PONB120
6 - PONFRS	14 - PONRS80	22 - PONPS
7 - PONFCF	15 - PONCF80	23 - PONPD
8 - PONBRS	16 - PONF60	24 - PONNS
		25 - PONND

$\bar{r} = .16$ at $p < .01$
 $\bar{r} = .12$ at $p < .05$
 * not significant at .05
 $df = 286$, two-tailed test

Table 5
Varimax Rotated Factor Loadings^a of the PONS Variables

Maximum scores	Variables	Factors						
		1	2	3	4	5	6	7
20	Face (PONF)			.67				
20	Body (PONB)							.84
20	Figure (PONFI)	.79						
20	Random Splicing (PONRS)				.90			
20	Content filtered (PONCF)					.64		.93
20	Face/RS (PONFRS)			.69				
20	Face/CF (PONFCF)			.49				
20	Body/RS (PONBRS)		.83					
20	Body/CF (PONBCF)		.49			.44		
20	Figure/RS (PONFIRS)	.57	.40					
20	Figure/CF (PONFICF)	.52				.58		
220	Total score (PONTST)	.44		.45				
40	Tone only (PONT040)				.65			.72
80	RS (PONRS80)		.53	.45	.61			
80	CF (PONCF80)					.68		.54
60	Face (PONF60)			.88				
60	Body (PONB60)		.70				.60	
60	Figure (PONFI60)	.88						
60	Vido only (PONV60)	.50		.41			.71	
120	Face (PONFI120)	.44		.60				
120	Body (PONBI120)	.57	.52				.46	
55	Positive-submissive (PONPS)				.48	.55		
55	Positive-dominant (PONPD)							
55	Negative-submissive (PONNS)			.49				
55	Negative-dominant (PONND)	.44						

^aOnly variables with loadings $\geq .40$ are shown.

Table 6

Canonical Variable Loadings of the Second Canonical Correlation Analysis

Predictors		Criterion variables	
GEFT	.64	Factor score (1)	.47
CPSM	-.48	" (3)	.46
AGE	-.40	" (6)	.46
CPST	.33	" (2)	.44
SEX	-.29	" (7)	.30
CPSS	.28	" (5)	.20
CPSP	-.22	" (4)	.16
CPSC	-.19		
CPSE	.14		
CPSA	-.11		
ANSIE	.03		
CPSO	.02		

Canonical correlation .42, eigenvalue .176,
Wilks' lambda .611, chi-square 136.6, df=84, p = .000

Table 7

Pearson Correlation Coefficients between the GEFT and the
Five Pure Channels of the PONS for Male and
Female Subjects

	PONF	PONB	PONFI	PONRS	PONCF	SEX	N
GEFT	.11	.11	.25**	.11	.06	M	121
GEFT	.21**	.24**	.16*	.13	.08	F	167

*significant at .05

**significant at .01

Table 8

Canonical Variable Loadings of the Canonical Correlation
Analysis for Male Subjects Using
the Five Pure Channels

Predictors		Criterion variables	
CPSS	.63	PONFI	.85
CPSA	-.59	PONB	.25
ANSIE	-.43	PONCF	.17
CPSM	-.41	PONRS	.13
GEFT	.37	PONF	.05
AGE	-.37		
CPSE	-.11		
CPSP	-.11		
CPSC	-.09		
CPST	-.06		
CPSO	.02		

Canonical correlation .52, eigenvalue .265, Wilks lambda .484, chi-square 80.8, $df = 55$, $p = .013$.

Table 9

Canonical Variable Loadings of the Canonical Correlation
Analysis for Male Subjects Using
the Seven Factor Scores

Predictors		Criterion variables		
CPSM	.65	Factor score (6)		-.53
CPSS	-.57	" (3)		-.51
GEFT	-.50	" (5)		-.42
AGE	.42	" (1)		-.36
CPSC	.24	" (7)		-.35
CPSA	.19	" (4)		-.25
CPST	-.15	" (2)		-.20
CPSE	.14			
CPSP	.11			
ANSIE	-.06			
CPSO	.02			

Canonical correlation .51, eigenvalue .264, Wilks lambda
.372, chi-square 109.2, df = 77, p = .008.

Table 10

Canonical Variable Loadings of the Canonical Correlation
Analysis for Female Subjects Using
the Five Pure Channels

Predictors		Criterion variables	
GEFT	-.76	PONFI	-.55
AGE	.55	PONF	-.47
CPSS	-.31	PONB	-.36
CPST	-.30	PONCF	-.16
ANSIE	-.24	PONRS	-.11
CPSO	-.23		
CPSA	.15		
CPSE	-.13		
CPSP	-.11		
CPSM	-.08		
CPSC	.03		

No Canonical Correlation was significant at the .05 level.

Table 11
 Canonical Variable Loadings of the Canonical Correlation
 Analysis for Female Subjects Using
 the Seven Factor Scores

Predictors		Criterion variable		
GEFT	.77	Factor score (6)		.68
AGE	-.51	" (1)		.47
CPST	.31	" (3)		.40
CPSS	.27	" (7)		.29
ANSIE	.22	" (2)		.19
CPSO	.22	" (5)		.13
CPSE	.17	" (4)		.10
CPSA	-.08			
PBSC	-.07			
CPSM	.03			
CPSP	-.00			

No Canonical Correlation was significant at the .05 level.