NONVERBAL DECODING SKILLS OF SPEECH, LANGUAGE CLINICIANS-IN-TRAINING

A Thesis

by

Regina Marie Walsh

Submitted to the Graduate School

Appalachian State University

in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

May, 1985

Major Department: Speech Pathology

NONVERBAL DECODING SKILLS OF SPEECH, LANGUAGE CLINICIANS-IN-TRAINING

A Thesis

by

Regina Marie Walsh

May 1985

APPROVED BY:

C. C. Hutchinson
Chairperson, Thesis Committee

Howard Dozier
Member, Thesis Committee

M. Jane Tiedeman
Member, Thesis Committee

C. C. Hutchinson
Chairperson, Department of Speech Pathology

Joyce V. Lawrence
Dean of the Graduate School

ABSTRACT

NONVERBAL DECODING SKILLS OF SPEECH, LANGUAGE CLINICIANS-IN-TRAINING. (May 1985)

Regina Marie Walsh, A. B., Miami University

M. A., Appalachian State University

Thesis Chairperson: Dr. Edward C. Hutchinson

It has been suggested that nonverbal communication is a vital part of communication. The Profile of Nonverbal Sensitivity (PONS) (1975) is a monochrome audio plus video recording test comprised of 11 different bands of nonverbal information. Utilizing the PONS, it is possible to profile an individual's strengths and weaknesses at decoding nonverbal cues. This study examined the nonverbal decoding skills of 37 speech, language clinicians-in-training at Appalachian State University using the PONS. A decoding profile emerged for this particular group of students, which was compared to profiles of clinicians in other fields and educators.

The data were analyzed using the Kruskal-Wallis one-way analysis of variance. Post hoc analyses involving multiple comparisons were also made. The analyses revealed that the speech, language clinicians-in-training had a tendency to perform better overall than the other two groups. There were significant differences on the following five variables: Randomized Spliced Speech (RS), Body plus RS, Body plus Content Filtered Speech (CF), Negative-Submissive quadrant and Negative-Dominant quadrant.

ACKNOWLEDGEMENTS

To those who contributed their time and effort to the writing and editing of this thesis, I am deeply indebted. I would particularly wish to extend my gratitude to Dr. Edward C. Hutchinson for serving as my chairperson, mentor, and father confessor throughout the course of this project. I would also like to thank Dr. R. Jane Lieberman for her guidance and advice on this project, as well as with my graduate education as a whole. Special thanks must also be extended to Dr. Howard Dorgan for taking time out of his own busy schedule to serve on this committee and to Dr. Leonard Bliss for his invaluable assistance in the analysis of the data.

Appreciation is also due to Dr. Deanna Bowman for her guidance and advice in the early conception of the statistical procedures. I also wish to thank all those in the computer lab without whose help this project would have floundered hopelessly in endless retyping.

I wish to extend my gratitude to my husband for his support and patience throughout this project. Finally, to my mother and father, my love and appreciation for all of the support, advice, encouragement and understanding throughout this project and my life.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED) Page

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Ongoing research efforts have attempted to describe students of communication disorders (speech, language pathology) based upon their personalities (Flocken, 1980), clinical competence, academic performance, and interpersonal relationships (Shriberg et al., 1977). According to Flocken (1980), "one of the most striking aspects of [their] personality profile . . . is that there are no high or low scores" (p. 13) on any of Cattell's 16 Personality Factors. Communication disorders students tended to be experimenting, assertive, reserved, bright, emotionally stable, imaginative, and forthright (1980). Flocken (1980) further stated that the profile did not substantially deviate from that of the general population although the profile, as a whole, did "distinguish this particular preprofessional group" (1980, p. 13). Shirberg et al. (1977) reported that communicative disorders students generally resemble other college students on scales measuring introversion, extroversion, neuroticism, need for approval, and internal vs. external locus of control. Clinicians with an internal locus of control were rated by their supervisors as better clinicians. Higher grade point averages were correlated with better clinical performance. The authors submitted

that there is an "intellectual ability factor" inherent in clinical excellence and success (1977, p. 320).

Egolf and Chester (1973) have emphasized that nonverbal behavior should be of particular concern to those associated with both normal and pathological human interactions. It is imperative that clinicians be able to interpret both the verbal and nonverbal messages of their clients in order to facilitate communication and learning in the therapy process.

It is generally accepted that communication consists of verbal and nonverbal exchanges of thoughts, ideas, or feelings between two or more people, and may take place through a glance, a nod, a wave of the hand, or a conversation (Bryngelson, 1964). Included implicitly in this definition is a sender or encoder of the message and a receiver or decoder of the message. The encoder transmits feelings, attitudes, or information into verbal and nonverbal signals and the decoder interprets those messages.

According to Knapp (1978), individuals who are skilled at sending nonverbal messages are probably also skilled at receiving, although receiving skills have a tendency to be more advanced. Receptive language skills, also, tend to precede the ability to produce a message (Whitehurst & Zimmerman, 1979).

Nonverbal behavior may be an index of success or failure in the therapy setting. According to Mehrabian (1972), total feeling (perceived attitude) may be expressed in equation form: total feeling = 7% verbal + 38% vocal + 55% facial. Hegstrom (1979) disagreed with this additive model but stated that it is only the

combination of the verbal and nonverbal that provides meaning. In Schubert's (1978) study of clinicians in clinical practicum courses, he noted that nonverbal communication is a valuable part of sending messages and relates directly to the effectiveness of the clinical encounter.

Egolf and Chester (1973) stated that

> [t]he clinician who leans away from a client, fidgets, or looks at his watch, implies disinterest. The client who slumps in his chair, walks with an unsteady gait, or clenches his fists conveys possible unconcern, depression, anxiety, neurologic dysfunction or hostility, perhaps in contradiction to his verbal communication (p. 517).

The Profile of Nonverbal Sensitivity (PONS) (Rosenthal, Archer, DiMatteo, Koivumaki, & Rogers, 1975), a test which evaluates the ability to decode nonverbal messages is currently available for research. The PONS test is a 45 minute monochrome audio plus video recording composed of a variety of affect scenes presented in 11 different nonverbal modes. It is, therefore, possible to profile an individual's nonverbal decoding strengths and weaknesses using this instrument.

Purpose of the Study

Training in the field of speech, language pathology typically concentrates heavily upon the verbal aspect of communication with minimal attention given to the nonverbal. This study examined the nonverbal decoding abilities of speech language, clinicians-in-training at Appalachian State University, Boone, North Carolina. Specifically,

the following research questions were posed:

Using the PONS, what decoding profile emerges for speech, language clinicians-in-training?

How do the profiles of other professional (e.g., clinicians and educators) compare to that of the clinicians-in-training?

For the purpose of this study the term clinicians included members of the following professions: medical students, physicians and nursing faculty, clinical and counseling psychologists, occupational therapy trainees, dance therapy graduate students, and alcoholism counselors. The term educators denoted undergraduate and graduate students in teacher education, classroom teachers, and school administrators.

Limitations and Assumptions

Limitations

1. The subjects were not representative of speech, language clinicians at large and the results were not generalizable beyond the sample investigated.

2. All participants were female, contrary to sample criteria in the PONS.

Assumptions

The following assumptions were made:

1. The group of subjects was naive to the study of nonverbal behavior, except for an introductory course in communication and communication development.

2. The graduate researcher was qualified to administer, score, and interpret the testing procedures used in this study.

Hypotheses

All hypotheses were tested at the .05 level of significance.

Ho.1 There is no difference among the groups on the PONS Face channel.

1.1 There is no significant difference on the PONS Face channel between speech, language clinicians-in-training and clinicians.

1.2 There is no significant difference on the PONS Face channel between speech, language clinicians-in-training and educators.

Ho.2 There is no difference among the groups on the PONS Body channel.

2.1 There is no significant difference on the PONS Body channel between speech, language clinicians-in-training and clinicians.

2.2 There is no significant difference on the PONS Body channel between speech, language clinicians-in-training and educators.

Ho.3 There is no difference among the groups on the PONS Figure channel (face + body).

3.1 There is no significant difference on the PONS Figure channel between speech, language clinicians-in-training and clinicians.

3.2 There is no significant difference on the PONS Figure channel between speech, language clinicians-in-training and educators.

Ho.4 There is no difference among the groups on the PONS Randomized Spliced Speech channel (RS).

4.1 There is no significant difference on the RS channel between speech, language clinicians-in-training and clinicians.

4.2 There is no significant difference on the RS channel between speech, language clinicians-in-training and educators.

Ho.5 There is no difference among the groups on the PONS Content Filtered Speech channel (CF).

5.1 There is no significant difference on the CF channel between speech, language clinicians-in-training and clinicians.

5.2 There is no significant difference on the CF channel between speech, language clinicians-in-training and educators.

Ho.6 There is no difference among the groups on the PONS Face + RS channel.

6.1 There is no significant difference on the PONS Face + RS channel between speech, language clinicians-in-training and clinicians.

6.2 There is no significant difference on the PONS Face + RS channel between speech, language clinicians-in-training and educators.

Ho.7 There is no significant difference among the groups on the PONS Face + CF channel.

7.1 There is no significant difference on the PONS Face + CF channel between speech, language clinicians-in-training and clinicians.

7.2 There is no significant difference on the PONS Face + CF channel between speech, language clinicians-in-training and educators.

Ho.8 There is no difference among the groups on the PONS Body + RS channel.

8.1 There is no significant difference on the PONS Body + RS channel between speech, language clinicians-in-training and clinicians.

8.2 There is no significant difference on the PONS Body + RS channel between speech, language clinicians-in-training and educators.

Ho.9 There is no significant difference among the groups on the PONS Body + CF channel.

9.1 There is no significant difference on the PONS Body + CF channel between speech, language clinicians-in-training and clinicians.

9.2 There is no significant difference on the PONS Body + CF channel between speech, language clinicians-in-training and educators.

Ho.10 There is no significant difference among the groups on the PONS Figure + RS channel.

10.1 There is no significant difference on Figure + RS channel between speech, language clinicians-in-training and clinicians.

10.2 There is no significant difference on Figure + RS channel between speech, language clinicians-in-training and educators.

HO.11 There is no significant difference among the groups on the PONS Figure + CF channel.

11.1 There is no significant difference on Figure + CF channel between speech, language clinicians-in-training and clinicians.

11.2 There is no significant difference on Figure + CF channel between speech, language clinicians-in-training and educators.

Ho.12 There is no significant difference among the groups on the PONS total score.

12.1 There is no significant difference on the PONS total score between speech, language clinicians-in-training and clinicians.

12.2 There is no significant difference on the PONS total score between speech, language clinicians-in-training and educators.

Ho.13 There is no difference among the groups on the PONS positive-submissive quadrant (PS).

13.1 There is no significant difference on the PS quadrant between speech, language clinicians-in-training and clinicians.

13.2 There is no significant difference on the PS quadrant between speech, language clinicians-in-training and educators.

Ho.14 There is no difference among the groups on the PONS positive dominant quadrant (PD).

14.1 There is no significant difference on the PD quadrant between speech, language clinicians-in-training and clinicians.

14.2 There is no significant difference on the PD quadrant between speech, language clinicians-in-training and educators.

Ho.15 There is no difference among the groups on the PONS negative-submissive quadrant (NS).

15.1 There is no significant difference on the NS quadrant between speech, language clinicians-in-training and clinicians.

15.2 There is no significant difference on the NS quadrant between speech, language clinicians-in-training and educators.

Ho.16 There is no significant difference among the groups on the PONS negative-dominant score (ND).

16.1 There is no significant difference on the ND quadrant between speech, language clinicians-in-training and clinicians.

16.2 There is no significant difference on the ND quadrant between speech, language clinicians-in-training and educators.

CHAPTER 2

REVIEW OF RELATED LITERATURE

"We respond to gestures with an extreme alertness, and, one might say, in accordance with an elaborate and secret code, that is written nowhere, known by none; and understood by all" (Sapir, 1949, p. 556).

From 1960 to 1985, there has been much scientific study on nonverbal communication. Researchers, such as Eibl-Eibesfeldt (1970, 1972), Mehrabian (1968, 1972, 1981), Hall (1959, 1966), Birdwhistell (1970), and Rosenthal (1975), have examined many behaviors which were previously unobservable. Because of the abundance of information now available, the survey of related literature was limited to the communication process, nonverbal behaviors, and the decoding process from nonverbal cues.

The Communication Process

Weaver (1964) defined communication as including "all of the procedures by which one mind may affect another" (p. 17), a definition which includes all human behavior.

Borden (1969) wrote that communication takes place whenever a person responds to a stimulus. As Goffman (1963) pointed out, although an "individual can stop talking, he cannot stop communicating through body idioms . . . He cannot say nothing" (Borden, 1969, p. 8). Merleau-Ponty (1969) stated that a person is expressive, even when

silent. Borden (1969) believed that persons may react to stimuli even though they do not realize they are receiving messages.

Borden (1969) believed that "[T]he study of communication is the study of man" (p. 16) rather than the study of a particular signal. He further stated that "man . . . [is] the center of the communication process" (p. 16).

While communication can be an internal process (self-talk), it is probably most efficacious in use with others. We can reveal, relate, persuade, and inform. Communication defines our life and enables us to relate to the world and its inhabitants.

Nonverbal Communication

While it is possible to not consciously intend to communicate with another, communication may take place through our appearance or facial expression. In contrast to the verbal aspects of communication, which have identifiable and distinct junctures, nonverbal transmission may continue as long as any of the senses is functioning (Egolf & Chester, 1973). Eisenberg and Smith (1971) observed that none but the very skilled can avoid putting emotions into actions. Wood (1981) stated that all speakers engage in body motion to aid the verbal aspect of the message and also noted that young children are dependent upon their bodies to transmit their message.

Moerk (1977) observed that nonverbal communication such as gestures, mutual gazing, or facial expressions, does not cease after language acquisition but continues to fulfill important functions in communication throughout life. Critchley (1975) noted that gesture may be "italicized speech" that serves to drive home the point.

In Schubert's (1978) study of clinicians in clinical practicum courses, he stated that the following nonverbal cues were more important for the clinician (and supervisor) to note: eye contact, smile, positive head nod, gesture, positive touch, postural change, forward lean, facial expressions, dress, and tone of voice.

Schubert and Mercer (1975) found clinicians-in-training that were highly rated by their supervisors used more nonverbal cues than did low rated clinicians-in-training. In general, their research indicated that more advanced clinicians-in-training used more nonverbal cues than beginning students and that students can be taught to increase their use of nonverbal messages.

Decoding Research

Decoding research is not a new area of study (e.g., Darwin, 1872). Since Darwin's informal decoding study, many researchers have been interested in the expression of emotion. Decoding studies that have employed the PONS and those that have studied the main channels utilized in the PONS (e.g., face, body, voice) will be briefly reviewed.

Face

Ekman (1973) attempted to study the degree to which posed photographs could be decoded by judges from different cultures. He discovered that emotions can be recognized cross-culturally. Ekman and Freisen (1969) also attempted to study the specific facial muscles accompanying different emotions and stated that the "facial muscles which move a particular affect . . . are the same across cultures" (p. 96).

Ekman and Freisen (1975) have also identified what they term as facial emblems, or facial expressions which are used to manage an interaction. The face may display different nonverbal expressions which have a verbal translation: total surprise, doubt, disgust. Other researchers have discovered nine distinct smiles used in different situations (Brannigan & Humphries, 1973).

Almost all decoding research has employed still photographs of the face. The disadvantages of this technique include the inability to see how long an expression lasts; confusion between permanent facial features and temporary emotional expressions; and the absence of blends of different emotions as they occur in real life (Rosenthal et al., 1979).

Studies using films or videotapes have produced significantly higher decoding accuracy than studies of still photographs (Knapp, 1978). It has been demonstrated also that judges decoded posed facial emotions more accurately than spontaneous emotions. These findings suggested that judges performing well in the posed decoding situation performed well in the spontaneous decoding mode (1978).

Knapp (1978) noted that since 1940, the emotions that every decoding researcher has uncovered are: surprise, fear, anger, happiness, disgust/contempt, and sadness.

Body

Most of the research on the body's emotional expressions has been done on emblems (Johnson, Ekman & Friesen, 1975), body positions and postures (Condon & Ogston, 1967), and body movements (Birdwhistell,

1967). Knapp (1978) termed this research "the heart of human nonverbal study" (p. 232).

At least 67 American emblems, nonverbal acts which have a specific verbal translation, have been identified by Johnson, Ekman and Friesen (1975). Emblems may take the form of commands, insults, replies, greetings (and departures), messages about personal affect or physical state, and about another's physical appearance. Emblems appear in children's play as early as three years of age (Kumin & Lazar, 1974).

Birdwhistell (1967) discovered that body language has parallels to spoken language. He attempted to identify the components of body language analogous to linguistics and coined the term kinesics. Dittman and Llewellyn (1967) also researched kinesics and found that movement often occurred at the end of a phonemic clause or a juncture in speech. Condon and Ogston (1967) believed that the body moved in time with the spoken word.

Researchers have agreed that the body is a poorer guide to an encoder's emotion than is the face. Ekman and Freisen (1974) have demonstrated, however, that body movements were better clues to deception than were facial expressions. In other words, the feet/legs were the best source of clues to nonverbal cues of deception, the hands/arms next, and the face last.

Voice

In the study of voice, researchers have experienced difficulty in unraveling the verbal and nonverbal elements of speech. At least two techniques related to the PONS have been developed to mask the words present in speech while preserving paralanguage.

One of these techniques used a filter to remove the high frequencies of speech so that individual words could not be recognized. This content-filtered (CF) approach has been used in a number of decoding studies (Starkweather, 1956; Scherer, Koivumaki & Rosenthal, 1972). The accuracy with which CF speech can be judged suggested that the nonverbal information that is filtered out is not indispensable to the kinds of judgments required in a decoding study.

In the second method, called randomized splicing, all of the frequencies of speech are preserved but the speech segments are scrambled. Aspects of paralanguage are preserved, but words become unrecognizable. Any nonverbal information that relies upon the natural sequence of speech is lost (Scherer, 1971).

The PONS

Ongoing decoding research with the PONS has uncovered the following:

Females were almost always more accurate on the PONS for all age levels and for 133 samples. Females were better than males at judging stimuli in which either body cues were present, or negative affect cues were present and they had an advantage on the PONS test by "at least two percentage points on every channel" (Rosenthal et al., 1979, p. 153). Hall and Halberstadt (1981) reviewed the literature on this female advantage, in which all but two of the 11 studies used the PONS. They stated that there "was no evidence that more 'feminine' and less 'masculine' persons would have more developed nonverbal communication skills, nor that the masculinity and femininity scores might account for women's superiority in decoding . . . nonverbal cues

of affect" (p. 284). They found, contrary to expectations, that more "masculine types of people" excel in nonverbal decoding ability (p. 284). The authors concluded that the determinants of females' superiority may be due to "interpersonal watchfulness" (p. 285).

A linear trend was obtained in an analysis of variance of four age levels: grade school, junior high school, high school, and adults. Performance appeared to "level off" between the ages of 20 and 30 years of age. Younger samples showed an advantage at judging tone as opposed to video cues (Rosenthal et al., 1979).

Many studies have been done in which PONS performance has been correlated with standard test of personality, ratings by self, and ratings by others. These results indicated that PONS performance is better predicted by standard tests of personality and by judges' ratings than by self-report. Subjects scoring higher on the PONS tended to be better adjusted, more interpersonally democratic and encouraging, less dogmatic, more extroverted, more popular, and more interpersonally sensitive as judged by acquaintances, clients and supervisors (DePaulo & Rosenthal, 1979).

The three occupational groups rated highest by their total PONS scores were actors, students of nonverbal communication, and students of visual arts. These groups scored significantly higher than the fourth ranked group of clinicians, who scored significantly better than the fifth and sixth ranked groups: teachers and business executives. Clinicians' scores corresponded to groups of college students tested, while the teachers and business executives scored

similarly to the normative group of U.S. high school students (Rosenthal et al., 1979).

When clinicians were rated by their supervisors and their PONS scores correlated, it was observed that clinical ability appeared to be "better predicted by clinicians' sensitivity to visual cues than by sensitivity to audio cues . . . [and] the more effective clinicians were more attune to negative affect subtly communicated [by their clients]" (1978, p. 301). The more effective the clinicians the better they performed on the PONS. Teachers who were evaluated by their supervisors as better teachers (more encouraging toward pupils) also scored higher on the PONS. It was noted that the group of teachers was much more variable on their performance than were the clinicians but "only the two best groups of teachers . . . were as accurate as even the worst . . . samples of clinicians" (p 296).

Greater professional advancement in either field was associated with lower PONS scores. As clinicians' "academic status increased [from candidates in a master's program to teaching faculty-post Ph.D.], mean PONS performance decreased" (p. 298). Rosenthal et al. (1979) stated that it appeared that as clinicians advance academically/professionally, either they "lose" their sensitivity to nonverbal cues or that those who are greater achievers were less sensitive to begin with. The sample of teachers studied performed similarly, i.e., the student samples performed better than the experienced teachers. Since no longitudinal data were available, the authors felt they could offer no explanations for these findings.

Parents, particularly mothers, of preverbal children scored significantly higher than did nonparents. Mothers' mean performance was similar to the higher rated occupational groups (regardless of the mothers' occupation) and was significantly higher than the group of clinicians.

Those who received training in decoding skills did significantly better on the task than those who did not have training. Rosenthal et al. (1979) noted that experienced clinicians showed the greatest benefit from the training. Schubert and Gudmundson (1976) demonstrated that clinicians-in-training who received training in nonverbal behavior, including videotape feedback of their therapy sessions, were rated significantly higher as clinicians-in-training by their supervisors and used significantly more nonverbal behaviors.

From this review of related literature, it is obvious that there are many aspects of nonverbal abilities yet to be examined and understood. Perhaps the most striking aspect of the nonverbal band is its pervasion into all of the realms of our senses. We must remember, however, that most of these nonverbal behaviors have a verbal interpretation and, as such, must be considered an inseparable part of our communication system. Birdwhistell (1967) concluded that spoken language and body language must be considered "only in their interrelationship with each other" (p. 234). Yet, in our studies of communication disorders (speech-language pathology), we are all but devoid of knowledge concerning nonverbal interactions, normal or pathological. Studies utilizing the PONS continue to impact on knowledge about individuals' decoding skills. It would benefit speech,

language clinicians-in-training during their early careers to discover their own sensitivity to others' nonverbal messages. They and their supervisors would then have added information concerning their development as clinicians of clients with communication disorders.

CHAPTER 3

METHODS

The strategy employed in this study was to investigate the ability of speech, language clinicians-in-training to decode nonverbal communication as measured by the PONS test and to profile their scores and compare these to the profiles in related professions.

Participants

Participants in this study were 37 female speech, language clinicians-in-training at Appalachian State University, Boone, North Carolina. Fourteen subjects were graduate students and the remaining 23 were undergraduates at the junior and senior levels. The median age of participants was 22.5, with ages ranging from 20 to 33.

Instrument

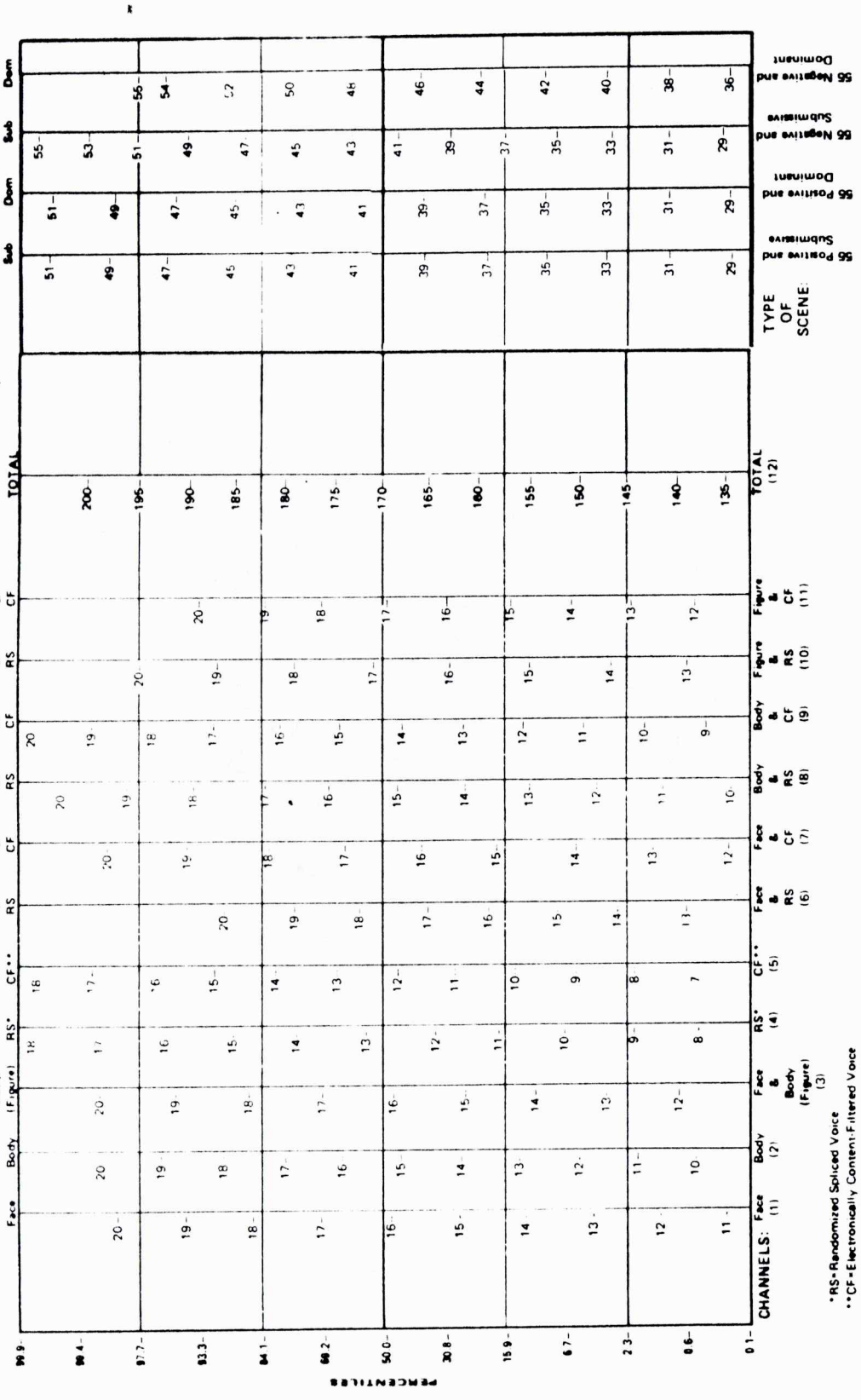
The Profile of Nonverbal Sensitivity (PONS) (Rosenthal et al., 1975) is a comprehensive method for testing nonverbal decoding ability. The PONS is a 45 minute monochrome sound video recording composed of 220 two second segments. Each segment is an excerpt from 20 affective scenes portrayed by a young Caucasian woman to which the viewer is asked to respond. Five of the scenes portray a positive-dominant situation, such as expressing motherly love; five portray a positive-submissive affect, such as ordering food in a restaurant; five show a negative-submissive attitude as in returning a faulty item to a store; and five portray a negative-dominant affect

such as nagging a child (see Appendix A for description of each scene). Each of the scenes was shown to the viewer in 11 channels of pure and mixed audio-visual cues. The 11 channels are: Face, Body, Figure (face + body), Randomized Spliced Speech (RS), Content Filtered Speech (CF), Face + RS, Face + CF, Body + RS, Body + CF, Figure + RS, Figure + CF. In addition, each of the four affective states (quadrants) was tabulated along with the total score of the 11 channels. The viewer responded to the test using a multiple choice format and obtained a score for each individual channel and quadrant in addition to a total score.

Psychometric Characteristics

The PONS was standardized using 492 public senior high school students from the east, midwest and west coasts of the United States. Intellect and aptitude data collected indicated that students were of average intelligence and ability and were primarily from middle class families. The participants viewed the PONS video recording and then judged which of two choices that accompanied them were appropriate or inappropriate. A point was awarded for each correct response, no points were awarded for incorrect responses, and 1/2 point was awarded for no response. The maximum possible score for the total PONS test was 220. The maximum possible score on each of the four quadrants was 55 and the maximum possible for each of the 11 channels was 20. Using the means and standard deviations, standard scoring sheets (Figures 1) for channel scores, totals and affective quadrants were constructed. The 50th percentile represents the mean with 84.1 and 15.9 percentile representing the +1 and -1 standard deviations. The average total

FIGURE 1



Adapted from Rosenthal et al., 1979

accuracy for the normative group was 77.29% (*SD* = 5.63) or a total score of 170.05 (*SD* = 12.38), "indicating that . . . average scores were well above chance, but with no danger of a ceiling effect" (Rosenthal et al., 1979, p. 70).

Accuracy was higher on items where the face was present (face and figure (body + face)) in both pure and mixed channel. Accuracy on the RS channel was higher than the CF channels and accuracy with any tone was greater than with no tone. When the face was present, dominant affect was easier to ascertain as was the positive attitude. When the face was not present, the opposite was true. Negative-dominant and positive-submissive affects were "easier to read" than their counterparts.

Reliability

The reliability of the PONS was computed for both internal consistency and stability reliability. Internal consistency, or the extent to which the items represent a homogeneous set of measurements, was computed for the total score, individual channels, and quadrants using the Kuder Richardson - 20 formula. Overall reliability obtained was $r = .86$. Using another method of measuring internal consistency, Armor's θ, overall reliability was $r = .92$ (Rosenthal et al., 1979).

Stability reliability, or the extent to which the test yields consistent results from testing to testing, was assessed using two methods. Pretest/posttest profiles remained essentially constant from first to second testing. There was a slight increase in scores from test to retest which the authors ascribed to "practice". Retest reliablity was $r = .69$ (Rosenthal et al., 1979).

Validity

The construct validity of the PONS was difficult to establish because the construct had not been extensively researched or measured in past tests. There was no single criterion with which to validate the instrument. However, Rosenthal et al. (1979) noted that the criterion validity coefficients obtained in research with the PONS have fallen near those obtained for personality measures. Measures which were expected to be low in correlation, such as intelligence, were low. The authors stated that "nonverbal sensitivity" best described the construct investigated (Rosenthal et al., 1979).

Procedures

All subjects were administered the Profile of Nonverbal Sensitivity (PONS) during a regularly scheduled clinicians' meeting in a conference room adjacent to the Appalachian State University Speech and Hearing Clinic. The subjects viewed the video recording in small groups of no more than 15 persons. The following instructions were read:

> The film and sound track you are about the 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 been 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 only on these speech altered portions of the sound track, and for these there will be no film to watch at all. The first segment is like this.
>
> Each segment you will see and/or hear has been numbered on the screen and the number corresponds to a number on your answer sheet. 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, circle the letter corresponding to what you believe to be the correct answer . . . .
>
> Many of the choices will be difficult, but you should choose one of the descriptions even though you may feel uncertain about the correct answer (Rosenthal et al., 1979, p. 59-60).

Choose an answer even if you feel you may be guessing. Do not change an answer once you have made a choice. Does anyone have any questions?

The responses of the participants were recorded on the answer sheet that appears in Appendix B. The examiner then recoded the responses to a standardized computer answer sheet.

CHAPTER 4

RESULTS AND ANALYSIS

Results

Performance of speech, language clinicians-in-training on nonverbal decoding as measured by the PONS is reported in Table 1. Total PONS scores ranged from 159 to 192, with a mean level of performance of 176.40 (*SD* = 8.67).

Presented in Table 2 are the results of the clinicians' performance. The total PONS scores ranged from 166.97 to 180.78, with a median level of performance of 174.88 (*SD* = 3.77).

Table 3 contains the results obtained from educators. The total PONS scores ranged from 160.14 to 179.07 with a mean level of performance of 172.05 (*SD* = 5.63).

Analysis of the Data

The data were analyzed by the Kruskal-Wallis one-way analysis of variance. In order for the comparisons to be considered significant at the .05 level, the value of the derived chi-square variable had to be greater than or equal to 5.99 (Gibbons, 1976). To determine which comparisons were significantly different, post hoc analyses using multiple comparisons, critical *z* value, were made. The mean ranks of the groups and the significance levels of each of the variables are reported in Table 4.

Table 1

Group 1 - Results of speech, language clinicians-in-training (SLCIT) on the PONS test (n = 37)

Channels	M	SD	Minimum	Maximum
Face	16.75	1.60	12	20
Body	16.29	1.68	12	19
Figure	16.29	1.61	12	19
RS	13.70	1.68	9	17
CR	12.51	2.09	7	17
Face + RS	18.18	1.50	14	20
Face + CF	16.83	1.32	13	19
Body + RS	16.13	1.37	13	18
Body + CF	15.24	1.57	11	18
Figure + RS	17.27	1.17	14	19
Figure + CF	17.16	1.86	12	19
Quadrants				
PS	40.81	3.30	33	46
PD	40.94	3.96	31	48
NS	44.51	3.64	33	52
ND	50.13	2.73	42	54
TOTAL	176.40	8.67	159	192

Table 2

Group 2 - Results of Clinicians (CL) on the PONS test (n = 31)

Channels	M	SD	Minimum	Maximum
Face	16.59	0.55	15.40	17.66
Body	16.02	0.70	15	17.33
Figure	16.61	0.86	13.39	17.75
RS	12.76	0.67	11	14.62
CF	12.59	0.59	11.73	14.35
Face + RS	18.13	0.34	17.37	18.77
Face + CF	16.72	0.62	15.11	17.87
Body + RS	15.59	0.44	14.93	16.64
Body + CF	14.97	0.65	13.42	16.18
Figure + RS	17.13	0.57	15.05	18.25
Figure + CF	17.50	0.53	16.14	19
Quadrants				
PS	40.66	1.36	37.94	42.81
PD	41.29	1.43	36.85	43.62
NS	43.91	1.03	42.06	46.41
ND	48.87	1.16	45.61	50.66
TOTAL	174.88	3.77	166.97	180.78

Table 3

Group 3 - Results of Educators (ED) on the PONS test (n = 11)

Channels	M	SD	Minimum	Maximum
Face	16.39	0.46	15.46	17.11
Body	15.78	0.80	13.93	16.80
Figure	16.44	0.73	14.66	17.40
RS	12.59	0.56	11.39	13.34
CF	12.19	0.55	11.18	13.03
Face + RS	17.79	0.54	16.65	18.37
Face + CF	16.51	0.52	15.37	17.18
Body + RS	15.53	0.51	14.82	16.26
Body + CF	14.66	0.61	13.62	15.75
Figure + RS	17.06	0.43	16.35	17.56
Figure + CF	17.07	0.70	15.69	18.13
Quadrants				
PS	40.38	1.33	37.66	42.04
PD	40.79	1.76	36.87	42.80
NS	42.85	1.28	40.65	44.77
ND	48.02	1.39	44.98	49.80
TOTAL	172.05	5.63	160.14	179.07

Table 4

Mean Ranks and Significance Level by Channels, Quadrants, and Total (n = 79)

	Groups			
	1 (SLIT)	2 (CL)	3 (ED)	P
Face	43.70	38.34	32.23	0.301
Body	44.50	37.47	32.00	0.206
Figure	39.27	42.77	34.64	0.577
RS	49.74	32.40	28.64	0.002*
CF	39.96	42.45	33.23	0.518
Face + RS	43.50	38.73	29.82	0.173
Face + CF	43.50	38.73	31.82	0.305
Body + RS	47.22	34.90	30.09	0.027*
Body + CF	45.59	38.03	26.73	0.046*
Figure + RS	39.92	40.65	38.45	0.963
Figure + CF	42.85	39.97	30.50	0.290
PS	41.32	39.71	36.36	0.817
PD	41.11	40.16	35.82	0.797
NS	46.20	37.92	25.00	0.021*
ND	49.01	34.69	24.64	0.002*
TOTAL	45.00	37.95	28.95	0.103

*$p < .05$

Hypotheses Testing

Ho.1, 1.1, 1.2

There is no significant difference among the groups on the PONS Face channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	43.70	38.34	32.23

Chi-square = 2.403; p = 0.301.

These hypotheses were not rejected.

Ho.2, 2.1, 2.2

There is no significant difference among the groups on the PONS Body channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	44.50	37.47	32.00

Chi-square = 3.158; p = 0.206

These hypotheses were not rejected.

Ho.3, 3.1, 3.2

There is no significant difference among the groups on the PONS Figure channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	39.27	42.77	34.64

Chi-square = 1.098; p = 0.577

These hypotheses were not rejected.

Ho.4, 4.1, 4.2

There is no significant difference among the groups on the PONS RS channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	49.74	32.40	28.64

Chi-square = 12.835; p = 0.002

Significant differences are those greater than or equal to z = 12.28.

The difference between groups 1 and 2 is 17.34 (Ho. 4.1)

The difference between groups 1 and 3 is 21.10 (Ho. 4.2)

Null hypothesis 4, null subhypothesis 4.1, and 4.2 were rejected.

Ho.5, 5.1, 5.2

There is no significant difference among the groups on the PONS CF channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	39.96	42.45	33.23

Chi-square = 1.316; p = 0.518

These hypotheses were not rejected.

Ho.6, 6.1, 6.2

There is no significant difference among the group on the Face + RS channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	44.16	38.65	29.82

Chi-square = 3.513; p = 0.173

These hypotheses were not rejected.

Ho.7, 7.1, 7.2

There is no significant difference among the groups on the PONS Face + CF channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	43.50	38.73	31.82

Chi-square = 2.378; p = 0.305

These hypotheses were not rejected.

Ho.8, 8.1, 8.2

There is no significant difference among the groups on the PONS Body + RS channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	47.22	34.90	30.09

Chi-square = 7.289; p = 0.026

z = 12.28

The difference between groups 1 and 2 is 12.32.

The difference between groups 1 and 3 is 17.32.

These hypotheses were rejected.

Ho.9, 9.1, 9.2

There is no significant difference among the groups on the PONS Body + CF channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	45.59	38.03	26.73

Chi-square = 6.147; p = 0.046

z = 12.28

The difference between groups 1 and 2 is 7.56.

The difference between groups 2 and 3 is 18.86.

Hypotheses 9 and 9.2 were rejected.

Hypothesis 9.1 was not rejected.

Ho.10, 10.1, 10.2

There is no significant difference among the groups on the PONS Figure + RS channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	39.92	40.65	38.45

Chi-square = 0.076; p = 0.963

These hypotheses were not rejected.

Ho.11, 11.1, 11.2

There is no significant difference among the groups on the PONS Figure + CF channel.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	42.85	39.97	30.50

Chi-square = 2.437; p = 0.290

These hypotheses were not rejected.

Ho.12, 12.1, 12.2

There is no significant difference among the groups on the PONS PS quadrant.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	41.32	39.71	36.36

Chi-square = 2.473; p = 0.290

These hypotheses were not rejected.

Ho.13, 13.1, 13.2

There is no significant difference among the groups on the PONS PD quadrant.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	41.11	40.16	35.82

Chi-square = 0.453; p = 0.797

These hypotheses were not rejected.

Ho.14, 14.1, 14.2

There is no significant difference among the groups on the PONS NS quadrant.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	46.20	37.92	25.00

Chi-square = 7.680; p = 0.021

z = 12.28

The difference between groups 1 and 2 is 8.28.

The difference between groups 1 and 3 is 21.20.

Hypotheses 14 and 14.2 were rejected.

Hypothesis 14.1 was not rejected.

Ho.15, 15.1, 15.2

There is no significant difference among the groups on the PONS ND quadrant.

Kruskal-Wallis ANOVA

	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	49.01	34.69	24.64

Chi-square = 12.317; p = 0.002

z = 12.28

The difference between groups 1 and 2 is 14.32.

The difference between groups 1 and 3 is 24.37.

All of these hypotheses were rejected.

Ho.16, 16.1, 16.2

There is no significant difference among the groups on the PONS Total score.

Kruskal-Wallis ANOVA

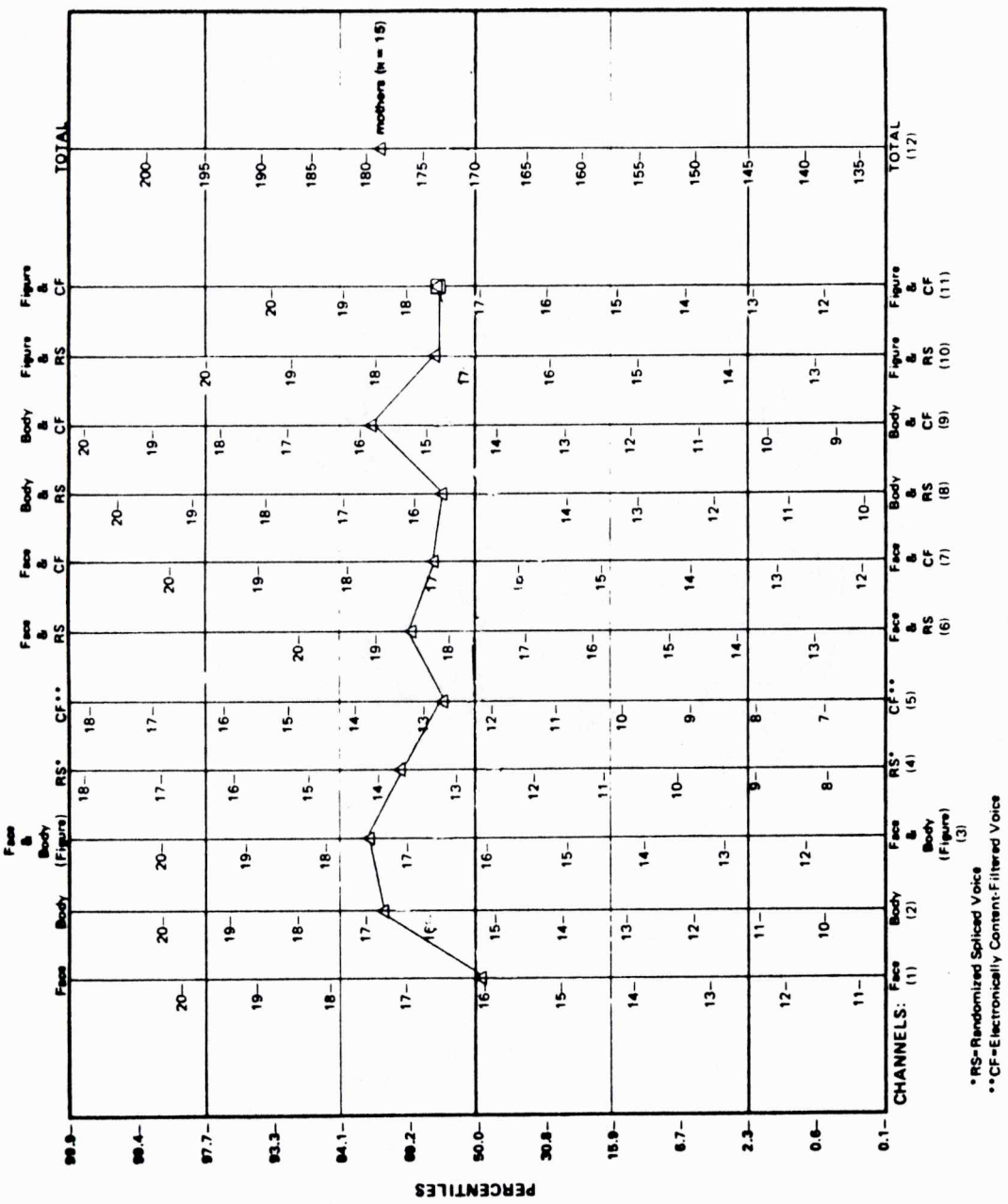
	SLCIT	CL	ED
Group	1	2	3
Mean Ranks	45.00	37.95	28.95

Chi-square = 4.553; p = 0.103

These hypotheses were not rejected.

In the course of comparing the three groups under study and the groups previously studied by Rosenthal et al. (1979), it was noted that the speech, language clinicians-in-training performed similarly to mothers of pre-linguistic children. Although the raw scores for this group were not available, Rosenthal et al. (1979) generated a decoding profile (Figure 2) which may be interesting to note in a post hoc comparison of mothers and speech, language clinicians-in-training.

FIGURE 2


PERCENTILES
99.9
99.4
97.7
93.3
84.1
69.2
50.0
30.8
15.9
6.7
2.3
0.6
0.1
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)
mothers (n = 15)
*RS=Randomized Spliced Voice
**CF=Electronically Content-Filtered Voice

CHAPTER 5

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Summary

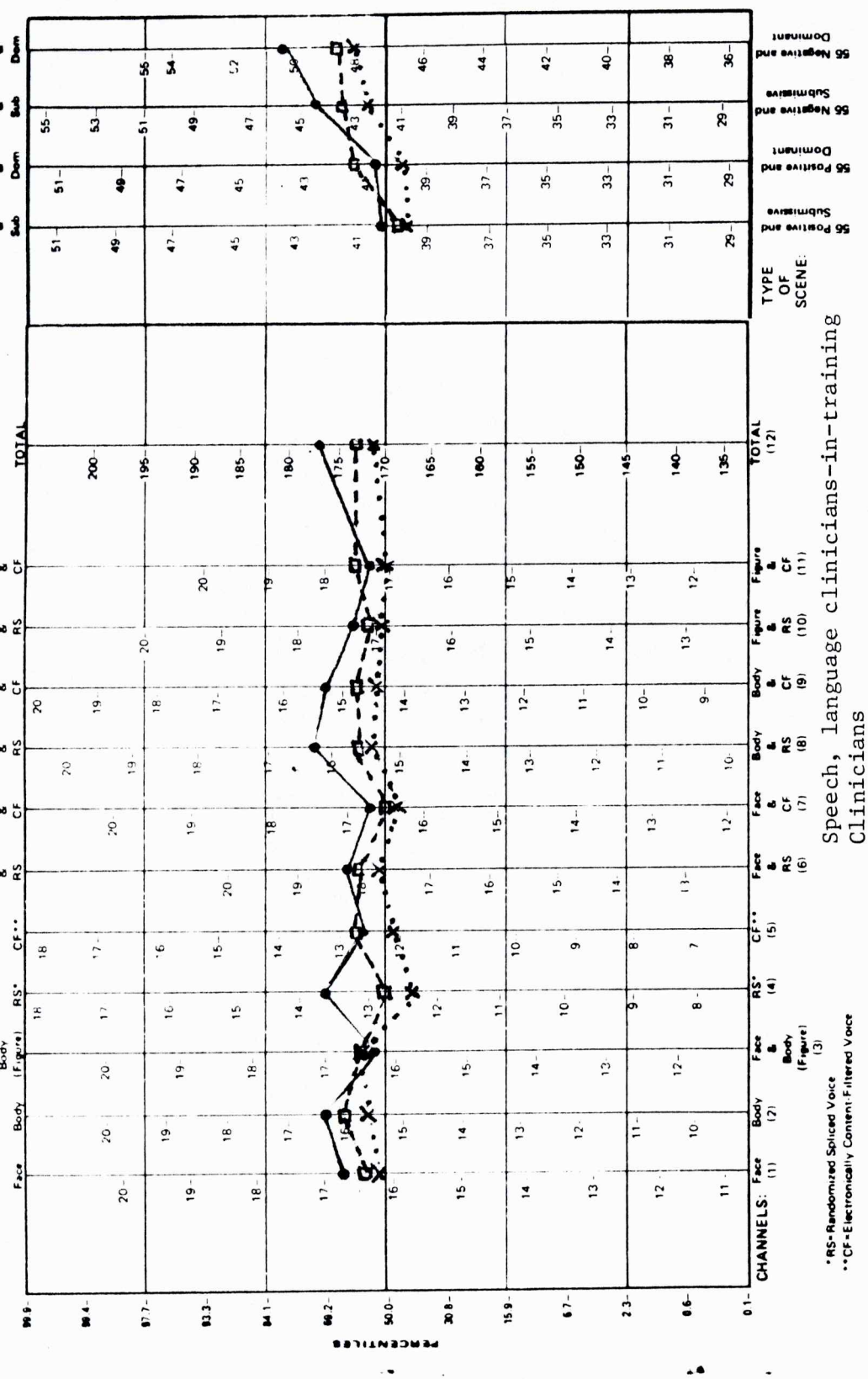
The purpose of this study was to explore the nonverbal decoding abilities of speech, language clinicians-in-training at Appalachian State University and to determine if there were differences among the profiles of other clinicians, educators, and speech, language clinicians-in-training.

The 37 speech, language clinicians-in-training at Appalachian State University viewed The Profile of Nonverbal Sensitivity (PONS) (Rosenthal et al., 1975) video recording and judged accompanying verbal statements as appropriate or inappropriate for the segment seen, heard, or seen and heard. The data were analyzed by a Kruskal-Wallis one-way analysis of variance followed by post hoc analyses using multiple comparisons.

The analyses revealed that the speech, language clinicians-in-training performed significantly better than the other two groups on five of the 16 variables: Randomized Spliced Speech (RS), Body + RS, Body + Content Filtered Speech (CF), Negative-Submissive (NS) quadrant, and Negative-dominant ND quadrant.

The performance of the speech, language clinicians-in-training was compared to that of the other two groups in Figure 3. As was shown there was a tendency for the student clinicians-in-training to perform better overall than the other two groups on the PONS. This trend was

FIGURE 3


PROFILE OF NONVERBAL SENSITIVITY: STANDARD SCORING SHEET
Channel Scores and Total
PERCENTILES
CHANNELS:
Face (1)
Body (2)
Face & Body (Figure) (3)
Face & RS* (4)
CF** (5)
Face & RS (6)
Face & CF (7)
Body & RS (8)
Body & CF (9)
Figure & RS (10)
Figure & CF (11)
TOTAL (12)
TYPE OF SCENE:
Pos & Sub
Pos & Dom
Neg & Sub
Neg & Dom
55 Positive and Submissive
55 Positive and Dominant
55 Negative and Submissive
55 Negative and Dominant
*RS=Randomized Spliced Voice
**CF=Electronically Content-Filtered Voice
Speech, language clinicians-in-training
Clinicians
Educators

obtained on 13 out of 16 variables comparing speech, language clinicians-in-training and clinicians and 16 out of 16 variables when comparing the clinicians-in-training and educators.

Discussion

Speech, language clinicians-in-training performed significantly better than clinicians and educators on five variables: RS, Body + RS, Body + CF, Negative-Dominant (ND), Negative-Submissive (NS). Perhaps, speech, language clinicians-in-training, due to training in listening skills in class and early experience in dealing with communicatively handicapped clients (hearing, speech, language, voice, and fluency), have developed skills that correlate to higher scores on some of the variables.

It was noted that the RS scores of the speech, language clinicians-in-training and the RS scores of mothers with pre-linguistic children appear identical (Figures 2 and 3). Mothers of pre-linguistic children have been shown to be more sensitive to their children's attempts at language and more aware of their children's use of nonverbal cues to communicate. Mothers 'change' their language to correspond to that of their child. Speech, language clinicians-in-training encounter these facts early in their careers and explore them in greater depth during graduate coursework. Because of early clinical experience it may be that speech, language clinicians-in-training have learned to respond to children's speech, and unintelligible speech, in a manner which leads to higher RS scores.

Speech, language clinicians-in-training performed similarly to mothers of pre-linguistic children on both the Body + RS and Body + CF channels also, and it is again supposed that this similarity is due to both coursework in early communication development and hands-on-experience with toddlers and unintelligible children in the clinic.

It has been demonstrated in earlier studies (Rosenthal et al., 1979) that more effective clinicians tended to perform better on those quadrants dealing with negative affect. As can be seen from the profile (Figure 2) and the results (Table 4), speech, language clinicians-in-training did significantly better on both negative quadrants than the groups of clinicians and educators. Rosenthal et al. (1979) also pointed out that females performed better on negative scenes than on positive scenes, although they did better on the negative submissive quadrant than on the negative dominant quadrant. The speech, language clinicians-in-training, however, performed significantly better on the negative dominant affective quadrant. This may be due in part to early exposure to the clinical setting which forces speech, language clinicians-in-training to 'sink or swim' in relating to their clients, both verbally and nonverbally. Students receive feedback, both positive and negative, on their therapy procedures from their supervisors. Students commonly hear that they failed to reinforce correct responses or did not correct unacceptable responses in their clients' speech and language. They are encouraged to listen more closely for errors and to inform clients of unacceptable speech/language. In a sense, they have been warned to watch for the

negative and as their performance indicates, these particular speech, language clinicians did just that.

The speech, language clinicians-in-training, while performing well on the PONS had the largest ranges of all groups tested. This suggested that some speech, language clinicians-in-training may be in need of specific training relating to nonverbal cues in order to be more successful clinicians. Schubert (1978) believes that all student clinicians in speech pathology needed training in nonverbal behaviors and suggests that all students take a short course (seminar) on nonverbal skills and be videotaped with their clients. Their own nonverbal cues, both positive and negative, would be discussed with them by their supervisors.

Recommendations

This study, while differentiating a particular group of speech, language clinicians-in-training from clinicians and educators, raised many questions.

1. It would be advantageous to use the PONS as a diagnostic tool for those entering the practicum course of clinical therapy. Following Schubert's suggestions, all clinicians would be required to attend a nonverbal workshop and be videotaped with their clients twice in a semester. Their nonverbal PONS score and their videotapes would be discussed with them by their supervisors.

2. Speech, language clinicians-in-training from other training programs should be tested to see if any significant differences arise when compared to the results of the present study.

3. Speech clinicians in the field should be tested to determine if their profiles are significantly different from those of the current group tested in order to broaden our understanding of the nonverbal decoding abilities of those in this profession.

4. Speech professionals at different points in their careers should be compared to establish if their PONS score decrease as their academic/professional careers advance.

5. The current group of students should be tested again as they advance in their professional careers to provide a longitudinal study of nonverbal decoding abilities.

6. Speech clinicians-in-training and in the field and audiologists-in-training and in the field should be compared to discover if there are differences between those in audiology and those in speech pathology.

REFERENCES

Birdwhistell, R. L. (1970). Kinesics and context. Philadelphia: University of Pennsylvania Press.

Birdwhistell, R. L. (1967). Some body motion elements accompanying spoken American English. In L. Thayer (Ed.), Communication: Concepts and perspectives (pp. 53-76). Washington, D.C.: Spartan Books.

Borden, G. (1971). An introduction to human communication. Iowa: Brown Publishing Company.

Brannigan, C. R., & Humphries, D. A. (1972). Human non-verbal behavior, a means of communication. In N. B. Jones (Ed.), Ethological studies of child behavior (pp. 37-64). Cambridge: Cambridge University Press.

Bryngelson, B. (1964). Personality development through speech. Minneapolis, MN: Denison.

Cordon, W. S., & Ogston, W. D. (1967). A segmentation of behavior. Journal of Psychiatric Research, 5, 221-235.

Critchley, M. (1975). Silent Language. London: Butterworths.

Darwin, C. (1872). The expression of emotions in man and animals. London: John Murray.

DePaulo, B. M., & Rosenthal, R. (1979). The structure of nonverbal decoding skills. Journal of Personality, 47, 506-517.

Dittman, A. T., & Llewellyn, L. G. (1967). The phonemic clause as a unit of speech decoding. Journal of Personality and Social Psychology, 6, 341-349.

Egolf, D. B., & Chester, S. L. (1973). Nonverbal communication and the disorders of speech and language. ASHA, 15, 511-518.

Eibl-Eibesfeldt, I. (1970). Ethology: The biology of behavior. New York: Holt, Rinehart and Winston.

Eibl-Eibesfeldt, I. (1972). Similarities and differences between cultures in expressive movements. In R. Hinde (Ed.), Non-verbal communication (pp. 175-188). Cambridge: Cambridge University Press.

Eisenberg, A. M., & Smith, R. R., Jr., (1972). Nonverbal communication. New York: Bobbs-Merrill.

Ekman, P. (1973). Cross-cultural studies of facial expression. In P. Ekman (Ed.) Darwin and facial expression: A century of research in review (pp. 129-143). New York: Academic Press.

Ekman, P., & Friesen, W. V. (1974). Detecting deception from the body or face. Journal of Personality and Social Psychology, 29, 288-298.

Ekman, P., & Freisen, W. V. (1969). The repertoire of nonverbal behavior: Categories, origins, usage, and coding. Semiotica, 2, 49-98.

Ekman, P., & Friesen, W. V. (1975). Unmasking the face. Englewood Cliffs, NJ: Prentice-Hall.

Flocken, J. M. (1980). Personality characteristics of communicative disorders graduate students. ASHA, 22, 7-16.

Goffman, E. (1971). Behavior in public places. New York: Free Press.

Hall, E. T. (1966). The hidden dimension. Garden City, NJ: Doubleday.

Hall, E. T. (1959). The silent language. Garden City, NJ: Doubleday.

Hall, J. A., & Halberstadt, A. G. (1981). Sex roles and nonverbal communication skills. Sex Roles, 7, 273-287.

Hegstrom, T. G. (1979). Message impact: What percentage is nonverbal? The Western Journal of Speech Communication, 43, 134-142.

Johnson, H. G., Ekman, P., & Friesen, W. V. (1975). Communicative body movements: American emblems. Semiotica, 15, 335-353.

Knapp, M. L. (1981). Nonverbal communication in human interaction (2nd ed.). New York: Holt, Rinehart and Winston.

Kumin, L. ,& Lazar, M. (1974). Gestural communication in preschool children. Perceptual and motor skills, 38, 708-710.

Mehrabian, A. (1968). Communication without words. Psychology Today, 2, 52-55.

Mehrabian, A. (1972). Nonverbal communication. Chicago: Aldine-Atherton.

Mehrabian, A. (1981). Silent messages (2nd ed.). Belmont, CA: Wadsworth.

Merleau-Ponty, M. (1969). Signs. Evanston, IL: Northwestern University Press.

Moerk, E. L. (1977). Pragmatics and semantic aspects of early language development. Maryland: University Park Press.

Rosenthal, R. (1976). Experimenter effects in behavioral research (2nd Ed.). New York: Irvington.

Rosenthal, R., Archer, D., DiMatteo, M., Koivumaki, J. H., & Rogers, P. L. (1975). Sensitivity to nonverbal communication: The PONS test. [Videotape]. Irvington.

Rosenthal, R., Archer, D., DiMatteo, M., Koivumaki, J. H., & Rogers, P. L. (1975). Sensitivity to nonverbal communication: The PONS test. Baltimore and London: The Johns Hopkins University Press.

Sapir, E. T. (1949). The unconscious patterning of behavior in society. In D. G. Madelbaum (Ed.)., Selected writings of Edward Sapir in language, culture, and personality. (pp. 544-559). Berkley: University of California Press.

Scherer, K. R. (1971). Randomized splicing: A note of a simple technique for masking speech content. Journal of Experimental Research in Personality, 5, 155-159.

Scherer, K. R., Koivumaki, J. & Rosenthal, R. (1972). Minimal cues in the vocal communication of affect: Judging emotions from content-masked speech. Journal of Psycholinguistic Research, 1, 269-285.

Schubert, G. W. (1978). Clinical supervision in speech pathology and audiology. St. Louis, MO.: Green.

Schubert, G. W., & Gudmundson, P. H. (1976, November). Effects of videotape feedback and interaction upon nonverbal behaviors of student clinicians. Paper presented at the annual convention of the American Speech and Hearing Association, Houston, TX.

Schubert, G. W. & Mercer, A. L. (1975). Nonverbal behaviors used by two different groups of clinicians during therapy. Acta Symbolica, 6, 41-57.

Shriberg, L. D., Bless, D. M., Carlson, K. A., Filley, F. S., Kwiatkowski, J., & Smith, M. E. (1977). Personality, academic performance and clinical competence in communicative disorders majors. ASHA, 19, 311-321.

Starkweather, J. A. (1956). The communication value of content-free speech. American Journal of Psychology, 69, 121-123.

Weaver, W. (1964). Recent contributions to the mathematical theory of communication. In C. Shannon & W. Weaver (Eds.) The mathematical theory of communication. (pp. 1-29). Urbana: University of Illinois Press.

Whitehurst, G. J., & Zimmerman, B. J. (1979). The function of language and cognition. New York: Academic Press.

Wood, B. S. (1981). Children and communication: Verbal and nonverbal language development (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Appendix A

Affect Scenes Arranged in Quadrants

APPENDIX A

Positive-Dominant Scenes
- Talking about one's wedding
- Leaving on a trip
- Expressing motherly love
- Admiring nature
- Talking to a lost child

Positive-Submissive Scenes
- Helping a customer
- Ordering food in a restaurant
- Expressing gratitude
- Expressing deep affection
- Trying to seduce someone

Negative-Dominant Scenes
- Critizing someone for being late
- Nagging a child
- Expressing strong dislike
- Threatening someone
- Expressing jealous anger

Negative-Submissive Scenes
- Talking about the death of a friend
- Talking about one's divorce
- Returning a faulty item to a store
- Asking forgiveness
- Saying a prayer (asking for help)

Appendix B

Full PONS Test

Full PONS Test

NONVERBAL COMMUNICATION

Name _____

Present Address _____

Age _____ Sex _____

Field of Study _____ Grade in 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 2. A. talking to a lost child
B. admiring nature

Scene 3. A. talking about the death of a friend
B. talking to a lost child

Scene 4. A. leaving on a trip
B. saying a prayer

Scene 5. A. criticizing someone for being late
B. expressing gratitude

Scene 6. A. helping a customer
B. expressing gratitude

Scene 7. A. criticizing someone for being late
B. leaving on a trip

Scene 8. A. talking about one's wedding
B. expressing gratitude

Scene 9. A. helping a customer
B. talking about one's divorce

Scene 10. A. talking about the death of a friend
B. trying to seduce someone

Scene 11. A. talking to a lost child
B. helping a customer

Scene 12. A. admiring nature
B. expressing motherly love

Scene 13. A. expressing deep affection
B. nagging a child

Scene 14. A. expressing motherly love
B. asking forgiveness

Scene 15. A. admiring nature
B. helping a customer

Scene 16. A. admiring nature
B. saying a prayer

Scene 17. A. nagging a child
B. admiring nature

Scene 18. A. nagging a child
B. criticizing someone for being late

Scene 19. A. asking forgiveness
B. leaving on a trip

Scene 20. A. expressing gratitude
B. leaving on a trip

Scene 21. A. leaving on a trip
B. returning faulty item to a store

Scene 22. A. returning faulty item to a store
B. talking about one's divorce

Scene 23. A. expressing jealous anger
B. talking about one's divorce

Scene 24. A. talking about the death of a friend
B. threatening someone

Scene 25. A. expressing deep affection
B. saying a prayer

Scene 26. A. expressing deep affection
B. trying to seduce someone

Scene 27. A. nagging a child
B. expressing motherly love

Scene 28. A. leaving on a trip
B. ordering food in a restaurant

Scene 29. A. helping a customer
B. expressing jealous anger

Scene 30. A. criticizing someone for being late
B. expressing gratitude

Scene 31. A. threatening someone
B. talking about one's wedding

Scene 32. A. admiring nature
B. expressing strong dislike

Scene 33. A. ordering food in a restaurant
B. criticizing someone for being late

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

VITA

Regina M. Walsh attended high school in Akron, OH at St. Mary's and graduated from Miami University with an A.B. in both Psychology and Sociology. She was a full-time graduate assistant at Appalachian State University for two years and a part-time graduate assistant for a year. Regina was elected to the Graduate Student Association Senate and was Secretary/Treasurer of that body for the year 1982-1983. She was honorary marshall for the graduate school during its last summer commencement.