GEIZER, Ronald Stanley, 1941-
INTERACTION CONTEXT AND THE PERCEPTION OF
NONVERBAL DYADIC COMMUNICATION SYSTEMS.
The Ohio State University, Ph.D., 1971
Speech

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INTERACTION CONTEXT AND THE PERCEPTION OF
NONVERBAL DYADIC COMMUNICATION SYSTEMS

DISSERTATION
Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Ronald Stanley Geizer, B.A.

The Ohio State University
1971

Approved by

William C. Fotheringham
Adviser
Department of Speech Communication
ACKNOWLEDGMENTS

With gratitude for the many who, somewhere along the way, have made the journey a little easier and much more meaningful. To Dr. Wallace C. Fotheringham, my special thanks for providing encouragement and support far above and beyond the "call of duty."
VITA

September 28, 1941 . . . . Born - Bronx, New York

1963 . . . . . . . . . . . . . . . B.A., City College of New York, New York City

1966-1967. . . . . . . . . . Research Associate, Department of Psychiatry, New York Medical College, New York City

1967-1968/1969-1970. . . . Research Assistant/Research Associate, Department of Speech, The Ohio State University, Columbus, Ohio

1970-1971. . . . . . . . . . Academic Adviser, University College, The Ohio State University, Columbus, Ohio

PUBLICATIONS


FIELDS OF STUDY

Major Field: Communication Behavior

Studies in Interpersonal Communication: Professors Wallace C. Fotheringham, Franklin H. Knower and Jack E. Douglas

Studies in Mass Communication: Professors Galen R. Rarick and Enrico L. Quarantelli
**TABLE OF CONTENTS**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>VITA</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td><strong>I. BACKGROUND AND SETTING FOR THE STUDY.</strong></td>
<td>7</td>
</tr>
<tr>
<td>Nonverbal Behavior</td>
<td></td>
</tr>
<tr>
<td>Person Perception</td>
<td></td>
</tr>
<tr>
<td>Communication Systems: Process and Interaction</td>
<td></td>
</tr>
<tr>
<td>Communication Process and Nonverbal Behavior</td>
<td></td>
</tr>
<tr>
<td>Research: A Synthesis and Discussion</td>
<td></td>
</tr>
<tr>
<td>Summary and Purpose</td>
<td></td>
</tr>
<tr>
<td><strong>II. PROCEDURE AND METHOD.</strong></td>
<td>45</td>
</tr>
<tr>
<td>Selection of the Subjects</td>
<td></td>
</tr>
<tr>
<td>The Experimental Stimulus</td>
<td></td>
</tr>
<tr>
<td>Test Instruments</td>
<td></td>
</tr>
<tr>
<td>The Pilot Study</td>
<td></td>
</tr>
<tr>
<td>Administration of the Experiment</td>
<td></td>
</tr>
<tr>
<td>Hypotheses to be Tested</td>
<td></td>
</tr>
<tr>
<td><strong>III. RESULTS</strong></td>
<td>61</td>
</tr>
<tr>
<td>Statistical Analysis</td>
<td></td>
</tr>
<tr>
<td>Findings</td>
<td></td>
</tr>
<tr>
<td><strong>IV. DISCUSSION.</strong></td>
<td>97</td>
</tr>
<tr>
<td><strong>V. CONCLUSION.</strong></td>
<td>105</td>
</tr>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td></td>
</tr>
<tr>
<td>Suggestions for Further Study</td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. NARRATIVE DESCRIPTION OF NONVERBAL BEHAVIORS OF THE PHYSICIAN AND PATIENT DURING THE THREE INTERACTS</td>
<td>112</td>
</tr>
<tr>
<td>B. VERBAL CONTENT AND TIME DURATION OF THE THREE INTERACTS</td>
<td>115</td>
</tr>
<tr>
<td>C. TEST INSTRUMENTS</td>
<td>117</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>126</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>1. Percentage Description of Student Population Enrolled in Speech 105 During Spring Quarter 1971</td>
<td>6</td>
</tr>
<tr>
<td>2. Mean &quot;Observations&quot; Scores of Subjects by Interacts</td>
<td>65</td>
</tr>
<tr>
<td>4. Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Involved-Uninvolved&quot; of the Nonverbal Behavior &quot;Head Direction&quot; for the Five Experimental Conditions and Three Interacts</td>
<td>68</td>
</tr>
<tr>
<td>5. Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Active-Inactive&quot; of the Nonverbal Behavior &quot;Head Direction&quot; for the Five Experimental Conditions and Three Interacts</td>
<td>69</td>
</tr>
<tr>
<td>7. Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Involved-Uninvolved&quot; of the Nonverbal Behavior &quot;Posture&quot; for the Five Experimental Conditions and Three Interacts</td>
<td>70</td>
</tr>
<tr>
<td>10. Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Involved-Uninvolved&quot; of the Nonverbal Behavior &quot;Posture&quot; for the Five Experimental Conditions and Three Interacts</td>
<td>71</td>
</tr>
</tbody>
</table>

**LIST OF TABLES**
<table>
<thead>
<tr>
<th>Table</th>
<th>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Involved-Uninvolved&quot; of the Nonverbal Behavior &quot;Gestures&quot; for the Five Experimental Conditions and Three Interacts.</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Active-Inactive&quot; of the Nonverbal Behavior &quot;Gestures&quot; for the Five Experimental Conditions and Three Interacts.</td>
<td>74</td>
</tr>
<tr>
<td>12</td>
<td>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Pleasant-Unpleasant&quot; of the Nonverbal Behavior &quot;Facial Expression&quot; for the Five Experimental Conditions and Three Interacts.</td>
<td>75</td>
</tr>
<tr>
<td>13</td>
<td>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Involved-Uninvolved&quot; of the Nonverbal Behavior &quot;Facial Expression&quot; for the Five Experimental Conditions and Three Interacts.</td>
<td>76</td>
</tr>
<tr>
<td>14</td>
<td>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Active-Inactive&quot; of the Nonverbal Behavior &quot;Facial Expression&quot; for the Five Experimental Conditions and Three Interacts.</td>
<td>77</td>
</tr>
<tr>
<td>15</td>
<td>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Pleasant-Unpleasant&quot; of the Nonverbal Behavior &quot;Overall Impression&quot; for the Five Experimental Conditions and Three Interacts.</td>
<td>78</td>
</tr>
<tr>
<td>16</td>
<td>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Active-Inactive&quot; of the Nonverbal Behavior &quot;Overall Impression&quot; for the Five Experimental Conditions and Three Interacts.</td>
<td>79</td>
</tr>
<tr>
<td>17</td>
<td>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Involved-Uninvolved&quot; of the Nonverbal Behavior &quot;Overall Impression&quot; for the Five Experimental Conditions and Three Interacts.</td>
<td>80</td>
</tr>
<tr>
<td>18</td>
<td>Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension &quot;Active-Inactive&quot; of the Nonverbal Behavior &quot;Overall Impression&quot; for the Five Experimental Conditions and Three Interacts.</td>
<td>81</td>
</tr>
<tr>
<td>19</td>
<td>Summary of Chi-Square Tests Associated with Selection of One of the Stimulus Communicants as the Better Communicator.</td>
<td>83</td>
</tr>
<tr>
<td>20</td>
<td>Summary of Chi-Square Tests Associated with Subject Agreement-Disagreement as to the Appropriateness of the Nonverbal Behaviors Observed for the Stimulus Communicants.</td>
<td>85</td>
</tr>
</tbody>
</table>
Table 21. Summary of the Frequency by Interact with which Subjects Indicated their "Most Awareness" of the Different Nonverbal Behaviors and Dimensions of Affect ........................................ 87

22. Summary of Chi-Square Tests Associated with Subject Indication of Most Awareness of the Five Different Nonverbal Behaviors by Interact .............................................. 88

23. Summary of the Chi-Square Tests Associated with Subject Indication of Most Awareness of the Three Different Dimensions of Affect by Interact .............................................. 91

24. Summary of Chi-Square Tests Associated with Subject Identification of Either of the Stimulus Communicants as the Physician (Condition D only) ........................................ 92

25. Summary of Chi-Square Tests Associated with Subject Identification of Either of the Stimulus Communicants as the Person with Higher Status (Condition E only) ..................... 94

26. Test-Retest Reliability of Observations Instrument Items for Interact I .............................................. 95
INTRODUCTION

In their studies, speech scholars have emphasized the verbal — specifically, the oral-verbal — aspects of communication events. While this orientation, a consequence of the rhetorical and literary heritage of the speech field, is easily understood, it has nonetheless served to limit more complete investigation and understanding of the communication process.

Concern with a new direction in the study of speech was evidenced at the Conference on Research and Instructional Development in Speech-Communication, often referred to as the New Orleans Conference. The predominantly behaviorally oriented conference participants offered for the Speech Association of America's acceptance a number of recommendations related to research and study in speech-communication (speech-communication was preferred by conferees over other terms to name the area of study with which they identified). Recommendation 29 suggests a specific research strategy:

The conferees encourage research emphasizing the interactive, on-going, process nature of speech-communication.\(^2\)

\(^1\)Organization was renamed in 1970 to Speech Communication Association.

Including dyadic communication as a relevant speech-communication research concern, the conferees further clarified the above recommendation:

Research to date in speech-communication often has oversimplified the multi-dimensional, real-life communicative process by taking a static view of communicative behaviors. Studies most often have been restricted to the consequences of single messages. Too few studies have focused on interactions, with detailed and specific examination of moment-to-moment, sequential, contingent behavior.³

But, not only are some of these more subtle dimensions of the communication process seldom studied; certain highly visible communication behaviors are also neglected from study. Nonverbal behaviors, because of their relatively high degree of ambiguity, have not provided researchers with a fertile area that encourages systematic empirical investigation. Yet, in face-to-face communication, the verbal message generates no more than thirty-five percent of that event's social meaning.⁴ Although Harrison provides no justification or support for this assertion, its meaning is quite clear: nonverbal behaviors provide valuable information pertinent to the social situation and nature of the communication event. In summarizing the nonverbal communication studies reported in several select journals, Thompson concludes:

Communication is an imperfect process in which the influence of nonverbal stimuli is very

³Ibid., p. 35

Definitions

Before involving himself more deeply in this study, the reader might find the definitions of certain key concepts useful. Although the language to be employed in the reporting of this research will be consistent with the traditional vocabulary of the social and behavioral sciences, substantial author-reader agreement on three major study concepts -- nonverbal communication, dyadic communication system, and interact -- is essential if reader understanding is to be maximized. The uniqueness or ambiguity of each of the terms warrants their explicit definition.

Nonverbal communication refers to the overt, visible, nonvocal and nonlinguistic behaviors generated by individuals during communication. The behaviors may be intentional and consciously emitted but are most often unintentional and unconsciously generated. This definition is not unlike:

... the complex of facial expressions, gestures, body positions, and movement which are "emitted" by every individual. In contrast, verbal behavior refers to the individual's spoken or written productions.6


... the nonverbal motions which play a part in communication.7

Nonverbal communication is often distinguished from nonverbal behavior in terms of its communicative function; nonverbal behavior that remains unobserved cannot, by definition, be nonverbal communication.8 Since, for purposes of this study, nonverbal communication has already been defined as the "overt, visible, nonvocal and nonlinguistic behaviors generated by individuals" it will be synonymous with the author's use of nonverbal behavior. The nonverbal behaviors studied for this research are overt, visual, nonvocal and nonlinguistic.

By dyadic communication system I mean to describe a face-to-face, interdependent, dynamic, two-person communication situation in which each co-present communicant enjoys a relational position within the system that is a function of the position of the other system member. These relational positions are role-specific and task-specific. Hence, the role of interviewee is complementary to the role of interviewer, the role of leader exists only if there are followers and the salesman role exists only if there are customers. These relational positions, then, are determined by the status of each system member. Berlo's definition of social system is relevant for the concept of dyadic communication system:


A social system is a collection of role behaviors that have been assigned interdependent positions. Each set of behaviors is related to each other set of behaviors. Each position is related to each other position. Each is interdependent with all of the others.9

Interact refers to the simultaneous and concatenous nonverbal behaviors of the communicants as they occur within a to be defined sequence. The behaviors are simultaneous because each communicant's behavior may occur at precisely the same time as does the other communicant's. Because they are not only sequential but also interdependent, the behaviors are concatenous.

For purposes of this present study, one interact shall consist of the nonverbal behaviors of each of two co-acting communicants during a brief period in which each of these persons has assumed two different roles relative to the other: communicator and communicatee. Interacts, then, are directly related to the verbal emissions of the dyad members, both of whom are viewed concurrently in each interact sequence.

The concept of interact is not original with this writer. Weick argues that the interact is the most basic unit of analysis in the study of organizational behavior, and that by stressing the study of individual isolated behaviors, scientists have been "... observing the 'wrong' behaviors." He states:

An important caution must also be introduced.
Even though we have used the phrase "observable

individual behaviors," this should not be read as the "observable behavior of a single person." Given that interdependence is the crucial element from which a theory of organizations is built, interacts rather than acts are the crucial observables that must be specified. The unit of analysis is contingent response patterns, patterns in which an action by actor A evokes a specific response in actor B which is then responded to by actor A.  

The relevance of Weick's remarks for the study of communication behavior is apparent. As a dynamic system with interdependent members and behaviors, interpersonal communication can be profitably studied from the interact perspective. Such study has in fact, already begun. Defining interacts as "... concatenous and progressive pairs of antecedent and subsequent acts ...," Hawes has conducted a verbal interact investigation of the initial medical interview.  

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CHAPTER I

BACKGROUND AND SETTING FOR THE STUDY

Although the literatures of psychology, psychiatry, anthropology, sociology and speech are replete with studies of nonverbal communication, many special problems are presented by the research reported. Unlike those areas of investigation which are clearly defined and systematically studied, nonverbal communication research suffers from a decided lack in theoretical orientation. The problem is compounded by the number of disciplines active and the diverse methods employed in the study of nonverbal communication. In this chapter, then, the author will review relevant literature from those areas regardless of discipline or method, bearing directly upon the present study.

Nonverbal Behavior

Research findings have led students of nonverbal communication to general agreement concerning the nature of those nonverbal behaviors that trained and untrained judges are able to observe. In his study of instrumental affiliative acts, Rosenfeld\textsuperscript{12} concluded that untrained observers were able to identify six nonverbal behaviors: smile, positive head nod, negative head nod, gesticulation, self-manipulation, and postural changes. These behaviors were emitted by subjects during

the course of an interview. Like this writer, Rosenfeld was concerned with only the overt, visible, nonverbal, and nonvocal behaviors that are a part of interpersonal communication. Vocal behaviors were not studied.

Ekman and Friesen, in their structural studies of nonverbal behavior, differentiate four types of body motion cues: body acts (clear movements), body positions (no movement of a body part), facial expressions, and head directions. In their research into the effect of the basic public speaking course on the bodily action of speakers, Brooks and Strong indicate that trained judges used the following nonverbal behavior categories for their judgments: posture, gestures of the hands and arms, eye contact, facial expression, and gestures of the head and shoulders.

Although Birdwhistell, the founder of the science of kinesics, has developed an elaborate annotation system for investigating eight body areas deemed relevant for the study of body motion, he nevertheless suggests that "... 'gestures' and 'posture' and 'facial expression' are probably the body motion events most accessible to the American


14For a discussion of the structural approach to the study of nonverbal behavior, see: Starkey Duncan, Jr., "Nonverbal Communication," Psychological Bulletin, 72, 1969, pp. 118-137.


16Birdwhistell, Introduction to Kinesics.
'folk' viewer." Sufficient agreement exists as to the nature of four observable nonverbal behaviors to warrant their further discussion.

Facial Expression

Of all the features that identify a man, none is as differentiating as his face; of all the parts of the body none is as richly expressive.18

In light of Barnlund's statement, it is not too surprising that, "Most past research on nonverbal behavior has focused on the interpretation of only one set of nonverbal cues, usually those provided by the face."19 The research reported, however, has been contradictory in describing the role played by facial expression in nonverbal communication and in the ability of judges to correctly identify these expressions.

Buzby20 found that the mouth is not as important as is the upper part of the face for the correct identification of facial expression. Seven-hundred and sixteen psychology students viewed six photographs of facial expressions and attempted to identify the emotion portrayed in each photograph. Women were slightly more accurate than men and the more sophisticated (had taken more psychology courses) observers made fewer correct judgments than did

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the unsophisticated observers. Dusenbury and Knower also found women to be more accurate than men in interpreting facial expressions of emotion. A high degree of reliability was associated with these judgments of emotion. Guilford and Shapiro reported no sex differences in the accurate reading of facial expression.

In studying the influence of the upper and lower parts of the face upon the identification of facial expression, Hanawalt found that subjects' judgments of facial expression were equally accurate whether they had viewed upper or lower face cues. In one study, subjects viewed paintings and sculpture photographs which were presented in whole face, upper face half, or lower face half cues only. Although subjects viewing whole face presentations enjoyed the greatest accuracy in judging facial expressions, subjects were still able to "... make fair discriminations on the basis of half a face." In a


25 Ibid., p. 346.
later study, Hanawalt reported no difference in accuracy of facial expression identification between subjects viewing either face half. Also, in some instances "... a half-face view is as good or 'better' than a full face view."\(^\text{27}\)

Thompson and Meltzer,\(^\text{28}\) in a study of the communication of facial expression, reported considerable unexplainable differences in the ability of expressors to communicate emotional intent. However, the researchers did discover that in judging emotions observers generally identified with the expressor and compared the simulated expressions with those of known persons.

This latter finding suggests that in making judgments, man is, as expected, greatly influenced by his own personal experiences. And, it is these experiences which contribute to the accurate discrimination of facial expressions. Of course, if these expressions are presented within a defined social context, then even greater accuracy of judgment will result. Frijda\(^\text{29}\) exposed two groups of subjects to identical


\(^{27}\)Ibid., p. 35.


photographs but described the situations in the photograph differently for each group. When the responses of the two groups were compared, differences attributable to the situational cues were found. But, similarities were also found. The author argued:

... that expressive cues give rise to recognition of a general attitude or activity, the nature of which in terms of emotion can only be specified with the help of situational cues.30

In addition to demonstrating that facial expressions could not only be judged but could also be evoked in a live laboratory experiment, Gubar31 discovered that personal experience with the evoking situation resulted in more accurate judgment of the emotion expressed than did mere verbal familiarity with that same situation. In making their judgments, subjects apparently relied on global impressions. As a result, Gubar is unable to contribute insight into the controversy over which face half is more relevant for the judgment of facial expression.

Similar findings in three experiments led Fernberger32 to conclude that a positive relationship existed between the specificity

of instruction suggestion and the number of facial expression photographs correctly identified. In three different experimental conditions, subjects were instructed to identify the emotions suggested by six different facial expressions. The order of suggestion magnitude in the conditions was: 1) from a list of undefined terms with which the subjects had been provided, 2) in terms of the degree of excellence -- poor, fair, good, -- of the individual expressions, after they had been previously explained to subjects, or 3) after the individual expressions had been thoroughly analyzed and discussed with the subjects. The percentage of correct judgments increased with each condition. Fernberger suggests that when stimulus situations are correctly described, there is a high probability of correct subject judgment of facial expression. Conversely, there is a low probability of correct subject judgment when stimulus situations are incorrectly indicated.

Landis concluded that, "It is practically impossible to name accurately the 'emotion' being experienced by a subject when one has only a photograph of the face on which to base the judgment."33 Also, Landis found that only a slight advantage existed for posed over "actual situation" photographs in making correct judgments. Munn's34 research suggests that more accurate judgments are made from unposed


expressions than are from posed expressions. Only limited support was found for the contention that "... a knowledge of the precipitating situation is essential to correct interpretation of emotion from overt behavior ...." 35

Gestures

Gestures are hard to classify and it is difficult to make a conscious separation between that in gesture which is of merely individual origin and that which is referable to the habits of the group as a whole ... we respond to gestures with an extreme alertness and, one might also say, in accordance with an elaborate and secret code that is written nowhere, known by none, and understood by all. 36

Although not as expressive as the face, hands, probably because of their ease of maneuverability, communicate valuable information. While individual hand expressions are useful indicators of an individual's internal state, rates of hand movement have also been found to provide similar information. So, while a clenched fist might suggest tension or anger and scratching oneself might suggest nervousness, the frequency or rapidity of hand movements have also been found to convey psychological information. During psychiatric interviews in which stressful and unstressful topics were discussed, "... significantly more movements occurred in the stressful periods." 37

In the interviews studied, increased gesture was also associated with words reflecting greater disturbance of patient or interviewee affect. Hypothesizing the existence of an inverse relationship between amount of topic familiarity and gestural behavior, investigators instead found a positive correlation between these two variables. Each subject engaged in two live five minute presentations; in one performance, the subject would speak about that topic with which he was most familiar and, in another performance, the subject would speak about that topic with which he was least familiar. Judges of these presentations found that more subject gestural behavior appeared in the "most familiar" condition. This suggested that the gestural behavior observed was not a substitute for but a supplement to the verbal behavior.

In their studies in which either films or photographs of an actor's hands served as the stimulus, Carmichael, Roberts, and Wessel found that certain manual gestures were judged with high agreement. Subjects were in most agreement in their identification of the more expressive of the emotional gestures. Gitin reported that subjects viewing posed hand expressions made reliable and accurate judgments of

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the emotions expressed by the hands. Her research is more relevant for the discussion of the dimensions of the emotions conveyed by nonverbal behavior and is reported upon more completely in another section of this chapter.

Posture

The shape and configuration of the human body, as well as facial and manual expressions, communicate psychological information. In their study of subjects' personality stereotyping of the basic body types or somatotypes proposed by Sheldon -- ectomorph or slender build, mesomorph or medium build, and endomorph or heavy build -- and an original body type labelled "average physique", Wells and Siegel discovered that physique and personality stereotype were positively related. Prior to the experiment, the subjects were found to be unfamiliar with Sheldon's typologies.

Using the Stick Figure Test, Rosenberg and Langer found that many different judges consistently matched the unidentified postural-gestural figures with similar referent choices. Eighty-seven subjects matched twenty-five stick figures to one of the items in each of six conditions: chromatic color (red, green, yellow, blue), achromatic color (black, grey, white), horizontal direction (backward, forward), feeling (positive, neutral, negative), vertical direction (up, down),


41 William D. Wells and Bertram Siegel, "Stereotyped Somatotypes," Psychological Reports, 8, 1961, pp. 77-78.
and stability (flighty, stable). These uniform judgments were interpreted as suggesting that "... postural gestures may function as an independent source of communication."  

James conducted an extensive investigation of the expression of bodily posture. A human manikin dressed in a white shirt and athletic shorts was photographed on thirty-five mm film. He wore a black face mask to eliminate possible facial expression influence upon subject judgment. Three-hundred and forty-seven frames reflecting different postures were identified and used in the study. Although the postures were rated globally, subjects were able to indicate that factor of the posture contributing most to their judgments. James suggested that "The head and trunk taken together are basic to the postural expression; arms, hands, distribution of weight, etc., are to make more specific the more general expression of the head and trunk."  

Distinguishing between psychological, sociological, and cultural approaches to the study of human communication behavior, Scheflen suggests that systems of posture can be profitably studied from a cultural perspective. The cultural approach is concerned


44Ibid., p. 435.

with the identification and description of normative postural systems or those postural behaviors that are culture specific. A cultural approach to the study of postural behavior can provide information related to the identification of, "... the beginnings and endings of units of communicative behavior, the ways in which participants are related to each other, and the steps in a program."46

In his investigation of psychiatric counseling sessions, Dittman discovered patterns of nonverbal behavior which suggest support for Scheflen's thesis. Specifically, Dittman found varying frequencies of movement for three body areas -- head, legs and hands -- during different moods in the sessions.47 These interview moods were a manifestation of the relationship of therapist and patient during the process of therapy.

Head Direction

"Head direction" research is the least frequently reported of the four specific nonverbal behaviors emphasized in this review. While research has described the relationship between head direction movement and the marking or delineation of communication units, little has been reported about the affective information communicated by nonverbal head behaviors.

46 Ibid., p. 331.

An exception to the above is found in the work of Mehrabian.\textsuperscript{48} In studies where different experimenter head orientations were expressed, subjects rated the experimenter’s attitude toward themselves and other subjects. While the role of head orientations were found to be most crucial in evaluating experimenter–other subject interaction it was also relevant for the evaluation of experimenter–self interactions. Body orientation, however, was not found to contribute to the communication of affect.

In their research, Dittman and Llewellyn\textsuperscript{49} discovered a clear relationship in the frequency of joint occurrence of vocalizations and head nods. These occurrences were observed more often at the "... points of interaction between speaker and listener,"\textsuperscript{50} and apparently serve a valuable function for social interaction. A similar functional aspect of head movement direction was noted by Scheflen.\textsuperscript{51}

Some nonverbal head behavior research has been conducted as studies of "visual," "glance" or "gaze" behavior. The difficulty in interpreting these findings is in the failure of the researchers to provide clear operational definitions of the dependent variables studied. But because "looking" and "glancing" behaviors are closely


\textsuperscript{50} Ibid., p. 82.

related to, if not identical with, head position, the pertinent findings from these research areas are also reviewed here. Kendon reported that "... where a person is looking during interaction may function as a signal regulating the exchange and maintenance of speaker role." A speaker's looking at an auditor with a sustained gaze frequently marks the conclusion of his speaking while an auditor's looking away often indicates his beginning to speak. Also, communicants can decide the degree of emotionality desired in their interaction through the extent of mutual gaze in which they engage.

Efran and Broughton found that amount of eye contact is related to expectancies for social approval; the higher the expectancy, the greater the contact. In another reported study, subjects demonstrated a "tendency to increase the amount to which they looked into a line of regard of another who praised them, but significantly decreased the amount to which they shared glances with a severe critic." Strongman and Champness found dominance hierarchies "... to be positively related to eye contact, direct gaze and speech with gaze" in their investigation of dyadic communication. Specifically, the

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more dominant member in experimentally created dyads would engage in more eye contact, direct gaze and speech with gaze than would the more submissive dyad member. Dominance and submission were determined on the basis of frequency with which a dyad member broke eye contact with the other dyad member; the dominant dyad member would do this less frequently.

Much about nonverbal communication has been left unsaid. In the review provided, it was the writer's specific intent to focus upon studies of the information communicated by four distinct nonverbal behaviors. The extensive literature in kinesics, the structural science of human body motion, has not been discussed by the writer. This conscious omission was influenced by the realization that not all kinesically described nonverbal behaviors have communicative value.

Ekman suggests that investigations of nonverbal behavior are characterized by two basic types of inquiry: "indicative" and "communicative." In the former, concern is with inferring internal states of individuals through their nonverbal behaviors while, in the latter, concern is typically with studying what the behaviors indicate to others.

Exacting detailed analysis of nonverbal behavior is the


methodology of kinesics and other indicative approaches. However, the behaviors described indicatively need not necessarily be those that are noticed by the untrained observer.

While trained indicative researchers may be able to distinguish twenty-three different positions of the eyebrows or the barely perceptible movement of a finger or two, these behaviors, when they remain completely unnoticed by the average person, provide no communicative information. And frequently, these gestures or movements that are discovered only after extensive and detailed study of a relatively small sample of behavior, are usually not noticed during the normal flow of communication. Thus, in reporting their studies of visual behavior, Exline and Winters comment that, "An important but as yet untested question concerns whether the recipient of the glance interprets the increments and decrements of eye contact in terms of the motives we have assigned to the sender ...."58 This problem of what is or is not normally noticed pertains to all nonverbal behaviors described kinesically or "indicatively" and, hence, limits the inferences that can be made about the "communicative" function of these behaviors.

What, then, is communicated by nonverbal behaviors and do different nonverbal behaviors communicate different information? Brooks59 proposes three principles of nonverbal communication:


1. "One cannot not communicate" - there is information or message value in all observed behaviors.

2. "Nonverbal channels are especially effective in communicating feelings, attitudes and relationships."

3. "Expressionistic nonverbal messages are believed to have high validity."

These principles direct attention to the thesis that nonverbal behaviors constantly provide information, that this information is of an affective or emotional quality and that "... when the nonverbal message contradicts the verbal, people tend to believe the nonverbal ... We rely on the nonverbal cues to gain our real impression of others."^{60}

Shapiro, in his study of communication in interviews, found that subjects rely on both verbal and nonverbal cues in understanding communication. The cues were not positively correlated -- each mode apparently provided different information. Shapiro concluded that nonverbal behavior was important for understanding the "... emotional variables in the communication process."^{61}

Schlosberg suggests that the dimensions of emotion communicated by facial expressions are pleasant - unpleasant, attention - rejection, and sleep - tension.^{62} The pleasant - unpleasant dimension refers to

^{60}Ibid., p. 116.


the degree of pleasantness or unpleasantness communicated by the facial expression. The attention - rejection dimension refers to the open or closed nature of the emotion expressed. Maximum attention exists when the environment is being searched for other stimuli or when there is an openness to stimulation. Maximum rejection is characterized by a failure to respond to other stimuli in the environment or the effort to shut out other stimulation. The sleep - tension dimension represents the activity dimension of emotional expression. Sleep is the state of complete relaxation or maximum inactivity while tension is the state of maximum activity or excitement.

The dimensions proposed by Schlosberg are somewhat consistent with Osgood's dimensions of meaning — evaluative, potency and activity — and reflect some of the dimensions in Birdwhistell's nonverbal behavior modifier categories. "Action" and "interaction" categories were proposed by Birdwhistell as conceptual and research tools useful in the study of nonverbal behavior. These categories evolved from Birdwhistell's own research efforts and include such dimensions as specific - generalized, graceful - awkward, fast - slow, rhythmic - disrhythmic and open - closed.

Williams and Tolch found only two dimensions of emotion,


general evaluation and dynamism, in their research on the recognition of facial expressions. These two dimensions, however, are identical with two of the dimensions reported by Osgood and Schlosberg. In their studies of facial expression, Frijda and Philipszoon identified four factors of expressive meaning. These factors were pleasantness - unpleasantness, naturalness and submission - artificiality and condescension, intensity of expression - control of expression, and attentional activity - disinterest, and they also closely mirror those dimensions reported by Schlosberg and Osgood.

Commenting on Schlosberg's work, Triandis and Lambert suggest that:

In short, although the present data involves judgments of facial expressions, it may be possible to generalize the dimensions abstracted from these data to subsume a good portion of the variance of the actual emotions people feel.

Triandis and Lambert demonstrated the validity of the Schlosberg dimensions for cross-cultural studies in their investigation of two populations from Greece.

Gitin used the Schlosberg dimensions in her study of the manual expression of emotion. Thirty-six photographs of an actor's

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68 Gitin, "A Dimensional Analysis of Manual Expression."
hands selected on the basis of their naturalness and representativeness of a large sample of hand positions were judged by subjects. In contrast with Schlosberg's findings that the pleasantness dimension was most important for the description of facial expression, Gitin found the activity dimension to be the most important and the pleasantness dimension to be the least important for the description of manual expression. A possible interpretation of this finding is that not all nonverbal behaviors communicate the same information.

This conclusion is supported by Ekman. Finding that judgments of the affective state of head cues were more accurate than were judgments of similar body position affective states, Ekman hypothesized that

... head cues carry information primarily about what particular affect is being experienced (anger, sadness, joy, etc.) but provide relatively little information about the intensity of the affect or the level of arousal; body cues reverse this pattern, communicating information primarily about the level of arousal or the degree of intensity of the affective experience, but providing relatively few cues about what particular affect is being experienced.

Using time sample photographs of individuals in an interview situation, Ekman found that the judgments made generally supported his hypothesis. Some qualification of his theory was found necessary,

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70 Ekman, "Differential Communication of Affect by Head and Body Cues," p. 727.
however, and in a later article Ekman and Friesen\textsuperscript{71} suggested that both head and body cues provide information about the intensity and nature of emotion. Head cues, however, were apparently more relevant for judgments about the quality of the emotion while body cues were more relevant for judgments about the intensity of emotion.

In summary, then, while studies of nonverbal behavior have contributed significantly to man's understanding of human communication, relatively little is known about the information communicated by and the importance to the observer of different nonverbal behaviors when viewed in "real" interpersonal communication settings. Some of the problems presented by nonverbal communication research will be mentioned in the discussion section of this chapter. The limitations of this study have necessarily precluded any discussion of kinesics, temporal and spatial factors, paralinguistics and other related dimensions of nonverbal communication.

**Person Perception**

Person perception studies differ from studies of nonverbal behavior in that person perception judgments or inferences are principally "... about events that are inside the person and strictly psychological."\textsuperscript{72} Judgments or observations of nonverbal behavior usually reflect concern with the meaning of overt behaviors while "... students of person perception have tended to avoid the measurement

\textsuperscript{71}Ekman and Friesen, "Head and Body Cues in the Judgment of Emotion: A Reformulation.*

of overt variables and have concentrated on more covert ones. This difference forms the criterion for distinguishing between the two research areas.

Although the writer is primarily concerned with the study of nonverbal behavior, some literature in the area of person perception is relevant for this research. Specifically, in that person perception research is normally directed at studying the relationship between the observed characteristics or behaviors and the inferred internal states of individuals, this research is pertinent to a study which attempts to infer interpersonal relationships from observed nonverbal behaviors.

A shift in the emphasis of person perception studies from "accuracy" to "process" has been reported by Tagiuri and Hastorf, Schneider, and Polefka. This different approach to the study of person perception was undoubtedly influenced by the "New Look" in perception psychology. Bruner and Postman, arguing for recognition of the social nature of perception, claimed:

> It is by now a truism to say that it is impossible to predict the nature of perceptual organization from a knowledge of the physical properties of the stimulus and/or the characteristics of sensory neural processes alone.

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Numerous variables and their interactions contribute to the perception process. Estes reports that judgment accuracy in person perception varies with the judge, the object, and the aspects of personality being judged. The judgment or context field also influences the impression of personality formed by an observer. Rosenkrantz and Crockett, in reviewing the literature related to impression formation, state, "The evidence indicates that either primacy or recency effects may be produced, depending upon how often and at what points the subjects are required to record their impressions of the other person." 

Studies of the accuracy of interpretation or the ability to express oneself fail to generate all the kinds of information that will provide insight into the process of person perception. These studies do not provide any analyses of the process involved in perceiving or knowing others or to suggest rules or laws of perception behavior. Hastorf, Schneider, and Polefka comment upon process research in person perception:

We are impressed with the underlying thesis implicit in the research ... that perceivers

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do develop certain rules regarding the relationships between personality characteristics ... what is important is that the rules not only exist but almost certainly play a role in structuring our perceptions of other people.80

Although a valid assumption, this thesis did not originate with the study of person perception. Bruner, perhaps the most visible of the "New Look" psychologists, maintains that man comes to know himself and his environs as a result of a unique categorization process. This process is similar to the "structuring" of perceptions described by Hastorf, Polefka, and Schneider. Specifically, Bruner states:

What a society does for its members, what they could surely not achieve on their own in a lifetime, is to equip them with ready means for entering a world of enormous potential complexity. It does all this by providing the means of simplification -- most notably, a language and an ordering point of view to go with the language.81

Franz From conducted a study in which subjects viewed a three minute film segment of human behavior and then described that which they saw.82 From discovered that subjects perceived the individual movements and purpose as one. Changes in the behavior observed

80Hastorf, Schneider and Polefka, Person Perception, p. 25.
did not necessarily result in changes in the perceived purpose of the behavior. And all behaviors were interpreted in terms of the original set or hypothesis (the latter term is Bruner's).

In another study of the influence of set upon perception, Dittman, Parloff, and Boomer determined that occupational groups differ in the kind of cues they will use in making inferences from nonverbal behavior. Body cues had a greater effect on the perceptions of professional dancers than on the perceptions of psychotherapists. This tendency for professional dancers to be more cognizant of body cues was especially well illustrated by the judgments of a dance therapist. Both occupational groups were equally adept at making inferences from the facial expressions observed. The authors hypothesized that occupation may actually influence the perceptual sets of individuals. 83

This finding that "set," "hypothesis," or "Einstellung" greatly influences that which is perceived was dramatically demonstrated in a number of ingenious "New Look" experiments. Although the stimuli in these experiments were objects and not persons, it is generally agreed that the perception process is relatively similar regardless of stimulus type. 84 In light of this thesis, Kaplan's findings


become all the more relevant and critical. Using line patterns as stimuli, the researcher instructed subjects "... that a given design was to be taken as the representation first of one state of affairs and then of another which was contrary or antithetical." While subjects perceived the lines as a function of the set with which the researcher had provided them, they did more than merely associate the design with the prescribed set. Subjects "... imaginatively transformed the linear pattern so that it fit now one and now the other of the two conceptions." Although an arbitrary relationship existed between the linear pattern and its conception, subjects described the relationship as a natural one.

If, as is proposed by Taft, the same principles of perception apply whether the stimulus is an object or a person, then subjects will conceivably attempt to logically explain identical nonverbal behaviors observed in different contexts as consistent with those contexts. This thesis has serious implications for the meanings assigned by subjects to the nonverbal behaviors they observe.

**Communication Systems: Process and Interaction**

Most definitions of interpersonal communication usually at least suggest a dynamic process involving two or more co-present individuals whose behaviors are goal-directed. Much of the research

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reported, however, fails to reflect concern for the study of some of
the overt, observable parameters of this process. So, while
communication is described as a process involving both covert and
overt dimensions, current behavioral communication research is
characterized by the investigation of covert variables related to the
individual psyche.

Rhetoric, one of the oldest areas of study in the humanities,
and psychology, the oldest science of human behavior, have contributed
to the monadic nature of current and past communication research.
Focusing attention on one member of the communication system, the
speaker, rhetoricians developed a source-oriented communication model
which is still reflected in some of the current speech literature.
In the twentieth century, however, the behavioral movement in speech
proposed a receiver-oriented model of communication, the still
dominant orientation of this new group of "scientific rhetoricians."
In either approach, the focus is upon "... symbolic transmission and
the mechanistic models associated with it," and is monadic in nature.
Psychology, the science of the individual, was that behavioral science
which has most influenced the efforts of speech-communication scholars.
Because rhetoricians had always viewed the speaker monadically, they

88 This label appears in: Nathan Maccoby, "The New Scientific
Rhetoric," The Science of Human Communication, ed., Wilbur Schramm

89 Donald K. Darnell, "Toward a Reconceptualization of Communication,"
were better able and relatively more eager to accept psychological principles and methods than they were the principles and methods of other behavioral sciences.  

But, although communication researchers have seen the relevance for studying the receiver, few attempts have been reported in which the study focus was the dyadic communication system. In a sense, the communication dyad consists of the reciprocal exchange of communication roles between two co-acting individuals. The two communication roles exchanged are those of speaker and listener (communicator and communicatee; source and receiver).

This approach to the study of communication emphasizes examining both speaker and listener simultaneously as they interact within a given social context. While the dyadic communication relationship could easily be described, and has been traditionally, on a monadic level of analysis — in terms of categories and dimensions appropriate to one of the individuals in the dyad — a dyadic analysis would provide information related to the interaction itself.

The effect of the psychological viewpoint on speech-communication studies has been to encourage specific theoretical and methodological conceptualizations to the exclusion of others. This condition is best described by Lennard and Bernstein:

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Social scientists, despite their devotion to the study of behavior systems, have largely focused their attention only on the characteristics of the behavior that takes place within such systems rather than upon the characteristics of the systems themselves.91

Rogers and Bhowmik suggest that by focusing on the individual or "... the intrapersonal characteristics of sources or receivers ..."92 communication researchers have virtually ignored the communication relationship or the "... interactive process of communication flows from a source to a receiver ...."93 The authors propose that communication research would be greatly enhanced if efforts were made to study communication relationships, i.e., source-receiver, leader-follower, etc.

Although individuals are usually the unit of response, they need not always be the unit of analysis. Even behavioral communication research which emphasizes the study of communication effects is monadic when it fails to describe or explain the interpersonal communication system. Goffman clearly presents this systems view:

I assume that the proper study of interaction is not the individual and his psychology, but rather the syntactical relations among the acts of different


93Ibid.
persons mutually present to one another. 94

Other conceptions of communication have been proposed that
reflect the same orientation as Goffman's. Birdwhistell suggests
that:

Communication is not a process made up of a total
of individual expressions in some action-reaction
sequence. It is a system of interaction with a
structure independent of the behavior of its
individual participants. One person does not
"communicate to" another person; he engages in
communication with him. 95

Watzlawick, Beavin, and Jackson propose that in studying communication
systems rather than individuals who happen to be communicating, "The
observer of human behavior then turns from an inferential study of
the mind to the study of the observable manifestations of relationship." 96

In interactional systems as in all systems:

... every part of a system is so related to its
fellow parts that a change in one part will
cause a change in all of them and in the total
system. That is, a system behaves not as a
simple composite of independent elements, but
coherently and as an inseparable whole. 97

Some recent definitions of communication by speech-communication
scholars have made reference to the interactive process in communication.

94 Erving Goffman, Interaction Ritual: Essays on Face-to-Face

95 Ray L. Birdwhistell, "The Kinesic Level in the Investigation
of the Emotions," Expression of the Emotions in Man, ed., Peter H.

96 Paul Watzlawick, Janet Helmick Beavin and Don D. Jackson,
Pragmatics of Human Communication (New York: W. W. Norton and Company,

97 Ibid., p. 123.
Wiseman and Barker suggest that "... communication is a process which involves a series of interactions where relationships are discovered and integrated towards a specific objective.

Similarly, Sereno and Mortensen define communication as "... a process by which senders and receivers of messages interact in given social contexts."

These conceptualizations are more appropriate for the study of interpersonal communication process than are traditional linear models of communication and provide another direction for the study of speech-communication generally.

Communication Process and Nonverbal Behavior Research:
A Synthesis and Discussion

Previous nonverbal communication research has produced numerous valuable findings and has suggested research parameters for this investigation. For example, "communicative" nonverbal behaviors and the dimensions of the emotions they express have been identified and the effect of context on the perception of these behaviors has also been noted.

But, although nonverbal behaviors are an integral part of the interpersonal communication event, research in nonverbal communication has not reflected the interactive and process-like nature of communication. While the main focus of a study may indeed have been with the


communicative function of nonverbal behavior, the behavior studied was that of an individual and not the behavior in an interpersonal communication system.

The stimulus in studies of nonverbal communication has not only usually been monadic, it has also frequently been posed and static. Hence, the stimulus in most nonverbal communication research has generally been a still photograph of an expression posed by an individual (frequently an experienced actor). This stimulus is in no way representative of a dynamic interaction process. Argyle has criticized this genre of social psychological research that ignores the social interaction dimension of human behavior in that:

1. Key elements and processes may be omitted.
2. The results may be exaggerated.
3. The results may be wrong.100

Other researchers have been critical of the traditional approach to the study of nonverbal communication. Tagiuri suggests that

... in the process of categorizing and judging his environment, the individual generally does not deal with discrete events but rather with extended sequences and contingencies of events. 101

Ekman102 and Warr and Knapper103 also allude to the failure of research to reflect the sequential nature of behavior. This failure

has serious consequences on two levels of analysis. First, the movement inherent in individual nonverbal behaviors is destroyed and, second, the social interaction process is ignored.

Most of the nonverbal communication research reported then, does not even begin to study what might be considered normal or typical interpersonal communication behaviors. Not only are the interacting individuals ignored but the behaviors examined are artificial. When an individual, and especially an actor, is instructed to transmit certain feeling states through one channel only (nonverbal), then the behavior emitted is apt to be extreme and atypical. Ekman argues:

... sampling nonverbal behavior occurring outside the context of an on-going relationship, devoid of any continuing verbal exchange, removes an important and perhaps critical constraint. Rarely do people express anger or joy unrestrictedly; usually the nature of the interpersonal relationship imposes constraints on the manner and extent of expression.\textsuperscript{104}

Having stressed the need for the study of interactive nonverbal behavior, Ekman proceeds to report his research in which still photographs of individuals taken during the course of experimentally controlled interviews were evaluated by judges. In some studies, judges were simultaneously shown two photographs -- one each of the interviewer and interviewee -- and were asked to determine which phase ("stress" vs. "final") of the interview was indicated in the photograph. In most of the studies, however, judges were shown photographs of only the interviewee. While judges were generally

\textsuperscript{104} Exline and Winters, "Affective Relations and Mutual Glances in Dyads," p. 349.
accurate in their ratings, they were more accurate when able to simultaneously view both of the interview participants.

Although Ekman opted to use time sample still photographs of nonverbal behavior, Hoffman, a student of Ekman's, used five second bursts of film in the training of judges of nonverbal behavior. In this film, though, the interviewer was not in view (camera was positioned behind the interviewer and over his shoulder) and only the interviewee's behavior was recorded. The interview phases ("stress" vs. "final") in this study were also experimentally controlled. 105

Levy and Richter noted the paucity of research dealing with individual impressions of groups and explain the need for such research. In their research, however, Levy and Richter presented grouped photographs of individuals to subjects for judgment. 106 This stimulus type does not reflect interaction or even "groupness." Of course, the finding that judgments of the "group" were merely the combined values for the individual photographs comprising the group is not surprising.

While the study of interaction was stressed by the last three researchers, their efforts fall short of their stated goals. Static photographs of individuals were the stimuli in two of the studies. Film was used by Hoffman to better describe the sequence and movement of nonverbal behavior but the stimulus object was the individual whose

105 Hoffman, "The Effects of Training on the Judgment of Non-verbal Behavior. An Experimental Study."

behaviors had been experimentally induced. In none of the studies was an interpersonal communication system examined nor were the emitted nonverbal behaviors obtained under natural conditions.

Although students of nonverbal behavior have examined "real" behavior or have used a film stimulus and not photographs, they have generally studied posed, static behavior. However, Dusenbury and Knowler found an advantage in the film stimulus for studying the emotions communicated by facial expression. Carmichael, Roberts, and Wessel also discovered that film was a better medium than the still photograph to describe certain dynamic gestures.

107 "Real" or unposed behavior has been used as a stimulus in nonverbal communication research by: Brooks and Strong, "An Investigation of Improvement in Bodily Action as a Result of the Basic Course in Speech;" Hanawalt, "The Role of the Upper and Lower Parts of the Face as a Basis for Judging Facial Expressions: II. In Posed Expressions and 'Candid Camera' Pictures;" Munn, "The Effect of Knowledge of the Situation Upon Judgment of Emotion from Facial Expression."


Carmichael, Roberts and Wessel, "A Study of the Judgment of Manual Expression as Presented in Still and Motion Pictures."
Of course, film has been employed extensively by structural researchers and Renneker strongly urges the use of film in kinesic research so as to provide a more complete recording of the behaviors emitted by individuals. In his criticism of the still photograph for the study of nonverbal behavior, Barnlund states:

> It is not the stopped position of the hand or body that is significant so much as the transition from one gestural pattern to another. Differences in the speed or direction of a particular movement may carry as much meaning as does its form. Thus any device, such as a photograph, which freezes an action and captures only its pattern may remove much of its meaning. There is some risk, therefore, that in resorting to static representations of continuing physical actions, the very features that distinguish the nonverbal code may be obscured.

The study of the nonverbal dyadic communication system would provide information relevant to the study of all communication relationships and systems of communication. The importance of interaction research is noted by Levy and Richter:

> Substantively, any comprehensive theory of social perception or impression formation must be prepared to deal not only with impressions of individuals, but of groups as well. For it seems likely that groups, as entities, enter into the total ecology of social interactions of the individual with as great an incidence

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112Barnlund, Interpersonal Communication: Survey and Studies, p. 525.
as do individuals. Thus, impressions of groups, and the laws governing these, should they differ, are just as important as those governing impressions of individuals. Therefore a study of impression formation vis-a-vis groups is an important problem in its own right.\textsuperscript{113}

Watzlawick, Beavin and Jackson suggest that communication relationships are best described by the nonverbal behaviors of interacting individuals and not their verbal language.\textsuperscript{114} Similarly, Clevenger and Matthews indicate that nonverbal cues are effective in defining the roles of interacting individuals.\textsuperscript{115}

Summary and Purpose

This literature review indicates a direction for nonverbal communication research. The following is known about nonverbal communication:

1. Facial expressions, gestures, posture, and head direction are those nonverbal behaviors most accessible to the untrained observer.

2. Nonverbal behaviors have been demonstrated to effectively communicate affective information.

3. The perception of other persons is influenced by the observer's "Einstellung" or mental set.

\textsuperscript{113} Levy and Richter, "Impressions of Groups as a Function of the Stimulus Values of Their Individual Members," p. 350.

\textsuperscript{114} Watzlawick, Beavin and Jackson, Pragmatics of Human Communication, p. 63.

4. Nonverbal behaviors are useful in describing communication relationships or interaction roles.

The writer was unable to discover any reported research dealing with the investigation of nonverbal behavior within a dynamic process model of the dyadic interpersonal communication system. The purpose in conducting this research then is to study the relevance of specified nonverbal behaviors for the perception and evaluation of dyadic communication systems and to explore the influence of perceived interactant role upon subject judgments of those systems. In the research conducted, an attempt was made to compensate for the exclusion in past nonverbal research of the interactive, spontaneous, dynamic, and sequential properties of the face-to-face interpersonal communication event. The stimuli presented to the subjects were:

(1) not posed, but rather, were real nonverbal behaviors videotaped during an actual, not simulated or acted, doctor-patient initial medical interview,

(2) dyadic interactions, not just the actions or reactions of a single individual, and

(3) not static photographs, but videotape recordings that preserve the movement dimension of nonverbal behavior and the dynamic process inherent in communication interactions.
CHAPTER II

PROCEDURE AND METHOD

Selection of the Subjects

The subjects for the experiment were students enrolled in the introductory public speaking course (Speech 105) at The Ohio State University during the Spring Quarter, 1971. Five different recitation sections of this course were asked to participate in the experiment; a total of 95 subjects were tested during their regular class hours. These students were considered appropriate for the experimental task primarily on the basis of their presumed lack of expertise in the perception of nonverbal behavior. Other criteria influencing the use of these subjects were convenience, availability, and number.

Because students enrolled in the introductory public speaking course are not a random sample of the student population of the University, descriptive data about the subjects are presented in Table 1. These data were collected during the first week of the quarter as part of a demographic and attitude survey conducted for course use. The writer assumes that the subjects used in the experiment represent a random sample of the total student population enrolled in the course.
Table 1

Percentage Description of Student Population Enrolled in Speech 105 During Spring Quarter 1971

1. Class: Freshman - 40; Sophomore - 26; Junior - 19; Senior - 14; Continuing Education - 1

2. Age: 18 or under - 18; 19-20 - 53; 21-22 - 19; 23-29 - 9; 30 or over - 2

3. Occupational Goal: Business - 15; Science, Engineering; Agriculture or Technical - 32; Education - 27; Arts - 6; Government or Law - 13; None reported - 6

4. Marital Status: Unattached - 79; Engaged - 12; Married - 5; Married with Children - 2; Divorced - 0; None reported - 1

5. College Grade Average: 3.5-4.0 - 4; 3.0-3.5 - 17; 2.5-3.0 - 32; 2.0-2.5 - 37; Below 2.0 - 9; None reported - 1

6. Past Residence: Ohio (Franklin County only) - 15; Ohio only - 54; Ohio and other states - 21; Out of State - 8; Foreign - 1

7. Watch TV most often for: News, weather or sports - 31; Talk shows - 20; Educational programs and documentaries - 8; Situation comedies - 13; Variety shows (comedy and music) - 26; None reported - 2

8. Parental Family Income: Below 5,000 - 2; 5,000-10,000 - 16; 10,000-15,000 - 32; 15,000-25,000 - 30; Over 25,000 - 16; None reported - 5
The Experimental Stimulus

In this section, information related to the actual videotape recording of the physician-patient interviews and the subsequent selection and editing of a specific interview for experimental purposes is provided.

Recording the Physician-Patient Medical Interviews

During the 1970 Spring Quarter, Hawes^1^ collected sixteen videotape recordings of physician-patient initial medical interviews as part of a study conducted under the auspices of the Department of Family Practice and Community Health at the University of Minnesota School of Medicine. Four male physicians conducted the sixteen interviews.

A total of sixteen different patients -- eight male and eight female patients -- were interviewed. All patients were twenty-one years of age or older and had made appointments at the Student Health Service of the University of Minnesota for physical examinations. The median interview length was thirty minutes with interviews ranging in length from twenty to forty-five minutes.

Hawes held three variables constant during the interview-conducting and recording stage of the research. First, the room and the placement of the camera, tape recorder, microphones and chairs were held constant for all interviews. Second, the interviewing

^1^ For a detailed account of the procedures employed and a discussion of physician-patient medical interviews as communication systems, see: Hawes, "An Empirical Definition and Analysis of Physician-Patient Communication Systems."
physicians all wore traditional dress suits. Third, the sex of the patients and the physicians was controlled; each physician interviewed two male and two female patients. While the introduction of systematic controls serves to limit the generalizability of the findings, controls, nevertheless, do facilitate both replication of the research and comparison of the research findings.

Several variables were not able to be controlled or held constant. First, all interviews were not conducted during the same time of day. Second, the length of the interviews varied even though physicians had been instructed to attempt to conduct thirty minute interviews. Third, except for the stipulation that each physician interview two male and two female patients, there were no other methods used to determine the matching of interviewer and interviewee. For example, matching might be attempted on the basis of intelligence, personality traits, social status, etc.

Selection and Editing of the Experimental Stimulus

One of the sixteen physician-patient interviews recorded by Hawes was selected for use in this experiment. Because of the effects upon subject perception caused by stimulus cues, certain criteria influenced the selection of the experimental stimulus. The experimental conditions dictated that differences in the physical appearances of the physician and patient be minimized. For this reason, the recorded interview selected for use in this research was that one in which the physician and patient were of the same sex, were most nearly the same
age and were most alike in dress.\textsuperscript{117}

Only one interview most effectively met these criteria. Other pertinent characteristics of this interview are:

1. The median length of the interview is approximately thirty minutes, the median length of all interviews recorded.

2. The patient is slightly older than the physician. In all other interviews, the physician is older than the patient.

3. The patient is an employed guidance counselor continuing his graduate education. The educational differences between the physician and the patient are thus less than in the other interviews where the patients are typically undergraduate students.

From this thirty minute interview, three consecutive sequences of physician-patient interaction were extracted for use as the experimental stimuli. Factors governing the selection of these particular interacts were related primarily to time but consideration was given to the representativeness of the nonverbal behaviors of the interview participants and the nature of the verbal content of the interview during these specific sequences.\textsuperscript{118}

As the reader will recall, interact has been operationally

\textsuperscript{117}The effect of clothing upon person perception has been reported in: Thomas Ford Hoult, "Experimental Measurement of Clothing as a Factor in Some Social Ratings of Selected American Men," American Sociological Review, 19, 1954, pp. 324-328.

\textsuperscript{118}See Appendices A and B for a description of the nonverbal and verbal content of each interact.
defined as a brief time period during which occur the simultaneous and concatenous nonverbal behaviors of two communicants. The sequences were viewed and judged for their appropriateness and relevance for the research by the writer and an assistant professor in the Department of Speech Communication.

A decision was made to control the length of the sequences. Although Hoffman has successfully used five second bursts of film\(^{119}\) and Renneker recommends use of one minute sequences of film\(^{120}\) approximate fifteen second videotape sequences were used in this research. This length was felt appropriate in that while ample time was allowed for presenting the nonverbal behaviors of the interacting individuals, each sequence was not so long as to be too amorphous or ambiguous for the subjects. The approximately equi-length interacts controlled for the possible effect upon subject perception of different length interacts but, because the three interacts are samplings of "real" behavior, their lengths are not exactly identical. Since the interacts are sequential, the process nature of the communication event is retained (See Appendix B for length of each interact).

During the period in the interview from which the interacts were taken, the physician is confronting the patient about the serious nature of the patient's physical condition and the precautions that he must take to insure continued good health. The exchanges are relatively brief and highly interactive. Each sequence or interact is

\(^{119}\) Hoffman, "The Effects of Training on the Judgment of Non-verbal Behavior. An Experimental Study."

\(^{120}\) Renneker, "Comments."
characterized by reciprocal behaviors: the physician addresses the patient and the patient addresses the physician. The overt system of communication visible in the sequences is: physician to patient -- patient to physician (Interact I); physician to patient -- patient to physician (Interact II); physician to patient -- patient to physician (Interact III). The patterns of communicator-communicatee behaviors as they occur in the stimuli are:

<table>
<thead>
<tr>
<th>Act</th>
<th>Communicator</th>
<th>addresses</th>
<th>Communicatee</th>
<th>Interact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Physician</td>
<td>Patient</td>
<td>Physician</td>
<td>I</td>
</tr>
<tr>
<td>2</td>
<td>Patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Physician</td>
<td>Patient</td>
<td>Physician</td>
<td>II</td>
</tr>
<tr>
<td>4</td>
<td>Patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Physician</td>
<td>Patient</td>
<td>Physician</td>
<td>III</td>
</tr>
<tr>
<td>6</td>
<td>Patient</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although the term "addresses" has been used to indicate pattern of influence, the reader should remember that only nonverbal behaviors comprise the stimulus. While these behaviors are directly related to the verbal behaviors of the dyad members, verbal behaviors are not a direct concern in the present study.

**Test Instruments**

For each stimulus interact viewed, subjects responded to two test instruments. One instrument was identical for all experimental conditions while the second instrument was modified for each condition. (See Appendix C for copies of the instruments.)

"Observations" Instrument

The "Observations" instrument was used by subjects to record the affective information communicated by the nonverbal behaviors in
each of the three interacts under the five conditions viewed. This instrument is similar to the *semantic differential*\textsuperscript{121} in form and function. Each subject responded to five categories of nonverbal behavior. Each category was rated on three seven-point bi-polar scales with each scale representing the following situation:\textsuperscript{122}

\begin{align*}
\text{Polar term } A^+ & : : : : : : \text{ Polar term } A^- \\
(1) & \text{ extremely } A^+ \\
(2) & \text{ quite } A^+ \\
(3) & \text{ slightly } A^+ \\
(4) & \text{ neither } A^+ \text{ nor } A^-; \text{ equally } A^+ \text{ and } A^- \\
(5) & \text{ slightly } A^- \\
(6) & \text{ quite } A^- \\
(7) & \text{ extremely } A^- \\
\end{align*}

Verbal instructions given the subjects to guide their responses to this test instrument were consistent with the above description.

The nonverbal behavior categories rated were facial expression, gestures, posture, head direction and overall impression. The first four categories were those that previously discussed research had determined to be observable by the untrained eye. The fifth category was suggested by the research findings of Clevenger\textsuperscript{123} and Brooks and Strong.\textsuperscript{124}

\begin{flushright}
\textsuperscript{121}Osgood, Suci and Tannenbaum, *The Measurement of Meaning.*
\textsuperscript{122}Ibid., pp. 28-29.
\textsuperscript{124}Brooks and Strong, *"An Investigation of Improvement in Bodily Action as a Result of the Basic Course in Speech."*
\end{flushright}
The sequence of the nonverbal behavior categories on this instrument was rotated to compensate for order effects. This rotation was across subjects in all conditions. All forms given any one individual were identical so as to avoid the possible introduction of error resulting from the need for subjects to constantly adjust to instruments with different formats. The only category not rotated was that of "overall impression." On all instruments this behavior appeared last; this was done to avoid the "halo" effect reported by Thorndike.¹²⁵

The bi-polar terms were pleasant-unpleasant, active-inactive and involved-uninvolved. These three scales represent the affective dimensions of nonverbal behavior discovered by researchers and modified for the present study. The modifications were suggested by subjects in a pilot study and are reported upon in another section of this chapter.

This instrument was selected as the measurement tool for several reasons. First, it is economical and convenient to use. Second, the evaluative scales of the semantic differential were found to correlate very well with Thurstone and Guttman scales.¹²⁶ Third, Warr and Knapper report the semantic differential to be "... a very satisfactory measure which can fruitfully be used to measure a wide variety of


aspects of person perception." And finally, Tolch, as a result of his research in the identification of facial expression, reports that the problems presented by language and measurement in these judgment tasks may be minimized by the use of a semantic differential-like instrument.  

"Questionnaire" Instrument

This instrument consists of several forced choice items designed to provide additional information about the perception and interpretation of the nonverbal behaviors, the affective dimensions of those behaviors, and the nature of the communication relationship perceived by subjects. The subjects were also provided with an opportunity to supplement their answers with more detailed responses.

The information sought from this instrument pertained to the nonverbal behaviors and the dimensions of affect of which subjects were most aware, the appropriateness of the role behaviors observed, the communication effectiveness of the interview participants, and the identification of interpersonal relationships.

The Pilot Study

Before conducting the actual experiment, the writer ran a "pilot" study to determine the viability of the stimuli and the test instruments. Five students enrolled in an advanced undergraduate


speech course volunteered to serve as experimental subjects. For this exercise no identification was made of the stimulus persons; the fewest number of cues are thus provided the subjects. This is the most ambiguous and probably the most difficult of the experimental conditions.

Although they admitted that the stimuli and the judgment task were unlike those in most experiments in which they had participated, the "pilot" subjects indicated having experienced no difficulties in complying with the demands of the study. They found the experiment interesting, one in which they became "involved," and were able to respond easily to the test instruments.

Several suggestions made by these "pilot" subjects resulted in some minor changes in the conduct of the actual experiment. The most significant change was the addition of a "practice" interact for subjects' viewing prior to their exposure to the three experimental interacts. Hence, when the first of the three experimental stimuli was shown, the subjects would already be prepared for the nature of the stimulus. This change served to decrease possible variance of initial subject response resulting from lack of familiarity with the nature of the stimulus and the response procedure. It was desired because subjects' responses to the second and third interacts would not reflect this variance.

The practice interact was a fifteen second sequence of dyadic interaction. The interactants were students who had been instructed to engage in social conversation. Their distances from each other and
the camera angle were similar to those of the physician and patient in the videotaped medical interview.

Although Schlosberg's dimensions (see page 23) as explained to the subjects prior to the study were reported understandable, the subjects nevertheless found the terms misleading when they attempted to respond to the instrument. The dimensions were, however, thought appropriate for the task by these pilot subjects. By relabeling the scales, the writer was able to retain the meaning of Schlosberg's original dimensions while providing subjects with a seemingly more viable and valid instrument. The scale "tension-sleep" was changed to "activity-inactivity." Subjects felt the latter scale to have a less negative connotation than the former scale. The scale "attention-rejection" was changed to "involved-uninvolved." Subjects felt the latter terms to be more descriptive of this dimension's meaning than was the former scale. This revised scale was also seen as more appropriate for the interaction orientation of the investigation.

**Administration of the Experiment**

All conditions of the experiment were administered on the same day. Arrangements were made to have the classes involved report to the same room. Students had merely been informed that they would be engaged in an investigation of nonverbal behavior.

**Physical Setting and Equipment**

The room used in the administration of the experiment was especially designed for audio-visual use. Chairs were arranged to afford all students excellent views of the screen and monitor.
Although sound was not used in this experiment, the facilities also provide for complete room sound coverage from ceiling mounted speakers.

The three interacts had been transferred from the original videotaped interview to 1/2 inch videotape stock and were presented to the subjects on a 23 inch Shibaden diagonal screen monitor/receiver. The videotape was played on a Shibaden 700 videotape recorder/playback unit.

**Instructions to Subjects**

The writer introduced himself to the subjects and explained that he was conducting a study in nonverbal communication, that the students' help had been solicited from the individual instructors and the course supervisor, and that, hopefully, the experience would be helpful to the students in furthering their understanding of the importance of nonverbal behavior in communication.

The instruments were distributed to the students. Each student was asked to write any five same random numbers on his test papers. No other subject identification was necessary. This procedure enabled the writer to distinguish among subjects while insuring subject anonymity. Because their names had not been recorded, subjects would recognize that their performance on this study would not influence their course grade. Their responses, therefore, might better reflect their own perceptions rather than what were considered to be expected or desired responses.

The instructions to the students on the use of the "Observations" instrument were consistent with those recommended by Osgood, Suci, and
Instrument language and instructions were discussed informally and subjects were able to question the experimenter about the instruments. The subjects were believed to be in substantial agreement on their understanding of the instruments.

Subjects were told that they would be viewing the nonverbal behaviors of two individuals who were engaged in communication. Because the sound had been eliminated from the recording, subjects were to concentrate only on the nonverbal behaviors. The "practice" stimulus was then shown the subjects and questions were again entertained. The instructions and orientation having been provided, the subjects were then engaged in the experiment.

In each experimental condition, subjects were given different information about the roles of the persons they would observe in the videotape sequences:

Condition A: The two people observed are physician (left side of screen) and patient (right side of screen).

Condition B: The two people observed are patient (left side of screen) and physician (right side of screen.)

Condition C: The two people observed are both physicians.

Condition D: The two people observed are doctor and patient. No further identification was made.

Condition E: The two people in the recording were left unidentified.

---


130 Condition A represents the actual interview situation.
Following the presentation of each stimulus interact, subjects were given seven minutes in which to enter their responses to the two test instruments. (The appropriateness of this response period had been determined during the pilot study.) All instruments were collected at the completion of the experiment. Subjects were then informed about the purpose of the experiment and the actual stimulus person roles were identified.

**Hypotheses to be Tested**

Several important research hypotheses were suggested to the investigator from his review of the theoretical and experimental literature in nonverbal behavior and communication process. Stated as null hypotheses, these are:

1. There is no significant variance between the mean "Observations" scores for the five experimental conditions on each dimension of affect for each nonverbal behavior category.

2. There is no significant variance between the mean "Observations" scores for the three interacts on each dimension of affect for each nonverbal behavior category.

3. There is no significant interaction effect between experimental conditions and interacts on the mean "Observations" scores for each dimension of affect of each nonverbal behavior category.

4. There is no significant difference in the frequency with which subjects select either of the stimulus communicants as the better communicator.

5. There is no significant difference in the frequency with
which subjects indicate that the stimulus communicants did or did not appear to act their roles.

6. There is no significant difference in the frequency with which subjects indicate most awareness of the different nonverbal behavior categories.

7. There is no significant difference in the frequency with which subjects indicate most awareness of the different dimensions of affect.

8. There is no significant difference in the frequency with which subjects designate either stimulus communicant as the physician or patient. (Condition D only)

9. There is no significant difference in the frequency with which subjects designate either stimulus communicant as occupying a higher status than the other. (Condition E only)
CHAPTER III

RESULTS

Statistical Analysis

Analysis of "Observations" Data

In order to test hypotheses one through three, a 3x5 factorial analysis of variance was used. The two factors were the interacts and the experimental conditions. The design was repeated fifteen times; once for each of the dimension of affect/nonverbal behavior combinations (3 dimensions of affect x 5 nonverbal behaviors). An after-only research design was employed in which the experimental groups were tested after the experimental treatments.\(^\text{131}\)

The computer program used for the two-way analyses of variance was generated from BMD 05V,\(^\text{132}\) and had been modified to treat unbalanced designs. Significant main effects were further tested with the Newman-Keuls Method\(^\text{133}\) to determine which pairs of means were significantly different and had contributed to the significant F values


obtained. The .05 level of significance was accepted as the critical level for these two statistical tests.

The scores treated in the analysis of variance and Newman-Keuls tests were the numerical values that had been assigned to the scale positions of the "Observations" instrument. Scores on each dimension could range in magnitude from one to seven. The values of the scales have been identified in Chapter II.

The results of the Newman-Keuls tests administered for significant F values are reported along with each analysis of variance summary table. The individual conditions and interacts that differed significantly as determined by the Newman-Keuls Method are presented in either ascending or descending order of mean magnitude. Interacts and conditions with the lowest and highest mean scores are labeled as such. The actual mean scores for the different dimension of affect/nonverbal behavior combinations are reported in Tables 2 and 3.

Analysis of "Questionnaire" Data

Chi-square was used to test hypotheses four through nine for statistical significance. These hypotheses dealt with subjects' responses to questions about the nonverbal behaviors and dimensions of affect of which subjects were most aware, the subjects' selection of one of the stimulus communicants as either the better communicator or the dyad member of higher status and the subjects' agreement or disagreement as to the realness of the role behaviors observed.

In chi-square tests with 1 degree of freedom Yates's correction
for continuity was applied to the data. This procedure provides for more conservative values of chi-square. As with the other statistical tests, the .05 level of significance was accepted as the critical level for the chi-square tests performed.

When chi-square tests were inapplicable because expected cell frequencies were too small (such was frequently the case in testing for significance between experimental conditions), then the writer examined the data visually in an attempt to determine whether or not different response patterns existed between samples. Noticeably different patterns were not observed.

Findings

The means of the scores used to test hypotheses one through three are provided in Tables 2 and 3.

---

Table 2

Mean "Observations" Scores of Subjects by Interacts

<table>
<thead>
<tr>
<th>Dimension of Affect/Nonverbal Behavior</th>
<th>I (N=95)</th>
<th>II (N=95)</th>
<th>III (N=95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasant-Unpleasant/Head Direction</td>
<td>3.884</td>
<td>3.232</td>
<td>2.695</td>
</tr>
<tr>
<td>Involved-Uninvolved/Head Direction</td>
<td>4.421</td>
<td>3.358</td>
<td>2.474</td>
</tr>
<tr>
<td>Active-Inactive/Head Direction</td>
<td>5.189</td>
<td>3.653</td>
<td>2.729</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Posture</td>
<td>4.211</td>
<td>3.663</td>
<td>3.221</td>
</tr>
<tr>
<td>Involved-Uninvolved/Posture</td>
<td>4.674</td>
<td>3.874</td>
<td>2.989</td>
</tr>
<tr>
<td>Active-Inactive/Posture</td>
<td>5.937</td>
<td>4.147</td>
<td>3.368</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Gestures</td>
<td>4.674</td>
<td>3.474</td>
<td>2.705</td>
</tr>
<tr>
<td>Involved-Uninvolved/Gestures</td>
<td>5.758</td>
<td>3.916</td>
<td>2.263</td>
</tr>
<tr>
<td>Active-Inactive/Gestures</td>
<td>6.211</td>
<td>4.042</td>
<td>2.242</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Facial Expression</td>
<td>4.389</td>
<td>2.695</td>
<td>2.653</td>
</tr>
<tr>
<td>Involved-Uninvolved/Facial Expression</td>
<td>4.874</td>
<td>3.158</td>
<td>2.516</td>
</tr>
<tr>
<td>Active-Inactive/Facial Expression</td>
<td>5.516</td>
<td>3.579</td>
<td>2.632</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Overall Impression</td>
<td>4.716</td>
<td>3.189</td>
<td>2.611</td>
</tr>
<tr>
<td>Involved-Uninvolved/Overall Impression</td>
<td>5.147</td>
<td>3.516</td>
<td>2.368</td>
</tr>
<tr>
<td>Active-Inactive/Overall Impression</td>
<td>5.842</td>
<td>3.832</td>
<td>2.621</td>
</tr>
</tbody>
</table>

See Appendices A and B for verbal and nonverbal descriptions of the interacts.
Table 3

Mean "Observations" Scores of Subjects by Experimental Conditions

<table>
<thead>
<tr>
<th>Dimension of Affect/Behavior</th>
<th>A (N=20)</th>
<th>B (N=18)</th>
<th>C (N=14)</th>
<th>D (N=22)</th>
<th>E (N=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasant-Unpleasant/Head Direction</td>
<td>3.333</td>
<td>3.228</td>
<td>2.357</td>
<td>3.348</td>
<td>3.730</td>
</tr>
<tr>
<td>Involved-Uninvolved/Head Direction</td>
<td>3.550</td>
<td>3.389</td>
<td>2.595</td>
<td>3.258</td>
<td>4.032</td>
</tr>
<tr>
<td>Active-Inactive/Head Direction</td>
<td>3.750</td>
<td>3.833</td>
<td>3.500</td>
<td>3.712</td>
<td>4.370</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Posture</td>
<td>3.450</td>
<td>3.704</td>
<td>2.929</td>
<td>3.909</td>
<td>4.222</td>
</tr>
<tr>
<td>Involved-Uninvolved/Posture</td>
<td>3.750</td>
<td>3.907</td>
<td>3.571</td>
<td>3.909</td>
<td>4.000</td>
</tr>
<tr>
<td>Active-Inactive/Posture</td>
<td>3.900</td>
<td>4.667</td>
<td>4.405</td>
<td>4.500</td>
<td>4.921</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Gestures</td>
<td>3.433</td>
<td>3.685</td>
<td>2.905</td>
<td>3.788</td>
<td>4.032</td>
</tr>
<tr>
<td>Active-Inactive/Gestures</td>
<td>3.817</td>
<td>4.185</td>
<td>4.238</td>
<td>4.106</td>
<td>4.492</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Facial Expression</td>
<td>3.117</td>
<td>3.185</td>
<td>2.405</td>
<td>3.485</td>
<td>3.730</td>
</tr>
<tr>
<td>Active-Inactive/Facial Expression</td>
<td>3.550</td>
<td>3.926</td>
<td>3.619</td>
<td>3.955</td>
<td>4.381</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Overall Impression</td>
<td>3.350</td>
<td>3.648</td>
<td>2.810</td>
<td>3.561</td>
<td>3.937</td>
</tr>
<tr>
<td>Involved-Uninvolved/Overall Impression</td>
<td>3.600</td>
<td>3.889</td>
<td>2.929</td>
<td>3.606</td>
<td>4.143</td>
</tr>
<tr>
<td>Active-Inactive/Overall Impression</td>
<td>3.750</td>
<td>4.222</td>
<td>4.024</td>
<td>4.030</td>
<td>4.444</td>
</tr>
</tbody>
</table>

*Experimental conditions are described in Chapter II.*
Hypothesis One

The first null hypothesis of the study dealt with the differences between means for the five experimental conditions. (See Tables 4-19) It was rejected for all dimensions of affect for each nonverbal behavior category with the exception of the "involved-uninvolved" dimensions of "gestures" (Table 11) and the "active-inactive" dimensions of "gestures" (Table 12) and "overall impression" (Table 19). However, for both the "active-inactive" dimensions of "gestures" and "overall impression," the .05 level of significance was approached.

Of the twelve instances where significant differences between means of the experimental conditions were found, the Newman-Keuls procedure revealed that the mean scores for Condition C were significantly lower than the mean scores for most other conditions in eight of those cases. The mean scores for Condition E were significantly higher than were the mean scores for most other conditions in eleven of the twelve cases where significant F values for condition effects had been observed.

The mean score for Condition C was not lower than that of Condition A for both the "active-inactive" dimensions of "posture" and "facial expression." In the latter case, the difference between Conditions A and C was not significant.

Hypothesis Two

The second null hypothesis was concerned with the difference between mean scores for the three interacts on the fifteen dimension of affect/nonverbal behavior scales. (See Tables 4-19) It was rejected
Table 4

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Pleasant-Unpleasant" of the Nonverbal Behavior "Head Direction" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>48.988</td>
<td>4</td>
<td>12.276</td>
<td>7.182***</td>
</tr>
<tr>
<td>Interacts</td>
<td>68.365</td>
<td>2</td>
<td>34.182</td>
<td>20.013***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>30.684</td>
<td>8</td>
<td>3.836</td>
<td>2.246**</td>
</tr>
<tr>
<td>Error</td>
<td>461.108</td>
<td>270</td>
<td>1.708</td>
<td></td>
</tr>
</tbody>
</table>

On this and all subsequent analysis of variance tables the different levels of significance for F will be denoted as follows:

*p ≤ .05, **p ≤ .025, ***p ≤ .01

Newman Keuls Results
The pairs of means that differed significantly (p ≤ .05) were:
- Conditions: C (lowest mean) from B, A, D and E (highest mean)
- Interacts: III (lowest mean), II and I (highest mean) from each other
Table 5

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Involved-Uninvolved" of the Nonverbal Behavior "Head Direction" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>54.938</td>
<td>4</td>
<td>13.734</td>
<td>6.281***</td>
</tr>
<tr>
<td>Interacts</td>
<td>173.891</td>
<td>2</td>
<td>86.941</td>
<td>39.753***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>35.222</td>
<td>8</td>
<td>4.403</td>
<td>2.013*</td>
</tr>
<tr>
<td>Error</td>
<td>590.502</td>
<td>270</td>
<td>2.187</td>
<td></td>
</tr>
</tbody>
</table>

Newman Keuls Results
The pairs of means that differed significantly (p<.05) were:
- Conditions: C (lowest mean) from D, B, A and E (highest mean)
  D from B, A and E (highest mean)
- Interacts: III (lowest mean), II and I (highest mean) from each other
Table 6

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Active-Inactive" of the Nonverbal Behavior "Head Direction" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>25.789</td>
<td>4</td>
<td>6.447</td>
<td>2.739*</td>
</tr>
<tr>
<td>Interacts</td>
<td>295.664</td>
<td>2</td>
<td>147.832</td>
<td>62.794***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>50.629</td>
<td>8</td>
<td>6.329</td>
<td>2.688***</td>
</tr>
<tr>
<td>Error</td>
<td>635.648</td>
<td>270</td>
<td>2.354</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results
The pairs of means that differed significantly (p<.05) were:
- Conditions: C (lowest mean) from D, A, B and E (highest mean)
  E (highest mean) from B, A, and D
- Interacts: III (lowest mean), II and I (highest mean) from each other
Table 7

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Pleasant-Unpleasant" of the Nonverbal Behavior "Posture" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>48.809</td>
<td>4</td>
<td>12.202</td>
<td>5.142***</td>
</tr>
<tr>
<td>Interacts</td>
<td>45.940</td>
<td>2</td>
<td>22.970</td>
<td>9.679***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>15.783</td>
<td>8</td>
<td>1.973</td>
<td>0.831ns</td>
</tr>
<tr>
<td>Error</td>
<td>640.777</td>
<td>270</td>
<td>2.373</td>
<td></td>
</tr>
</tbody>
</table>

**Newman-Keuls Results**

The pairs of means that differed significantly (p≤.05) were:
- Conditions: C (lowest mean) from A, B, D and E (highest mean)
  - A from B, D and E (highest mean)
- Interacts: I (highest mean) from II and III (lowest mean)
Table 8

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Involved-Uninvolved" of the Nonverbal Behavior "Posture" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>40.453</td>
<td>4</td>
<td>10.113</td>
<td>4.023***</td>
</tr>
<tr>
<td>Interacts</td>
<td>217.711</td>
<td>2</td>
<td>108.886</td>
<td>43.299***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>13.957</td>
<td>8</td>
<td>1.745</td>
<td>0.694 ns</td>
</tr>
<tr>
<td>Error</td>
<td>678.797</td>
<td>270</td>
<td>2.514</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results
The pairs of means that differed significantly (p ≤ 0.05) were:
Conditions: none
Interacts: III (lowest mean), II and I (highest mean) from each other
Table 9

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Active-Inactive" of the Nonverbal Behavior "Posture" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>34.543</td>
<td>4</td>
<td>8.636</td>
<td>3.676***</td>
</tr>
<tr>
<td>Interacts</td>
<td>330.713</td>
<td>2</td>
<td>1.656</td>
<td>70.381***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>26.773</td>
<td>8</td>
<td>3.347</td>
<td>1.424ns</td>
</tr>
<tr>
<td>Error</td>
<td>634.352</td>
<td>270</td>
<td>2.349</td>
<td></td>
</tr>
</tbody>
</table>

**Newman-Keuls Results**

The pairs of means that differed significantly (p≤.05) were:
- **Conditions**: A (lowest mean) from C, D, B and E (highest mean)
  - B from D and C
  - E from B, D and C
- **Interacts**: III (lowest mean), II and I (highest mean) from each other
### Table 10

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Pleasant-Unpleasant" of the Nonverbal Behavior "Gestures" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>36.344</td>
<td>4</td>
<td>9.086</td>
<td>4.073*</td>
</tr>
<tr>
<td>Interacts</td>
<td>187.507</td>
<td>2</td>
<td>93.753</td>
<td>42.023***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>15.560</td>
<td>8</td>
<td>1.950</td>
<td>0.874ns</td>
</tr>
<tr>
<td>Error</td>
<td>602.373</td>
<td>270</td>
<td>2.231</td>
<td></td>
</tr>
</tbody>
</table>

**Newman-Keuls Results**

The pairs of means that differed significantly (p≤0.05) were:

**Conditions:** C (lowest mean) from B, D and E (highest mean)
- B from A and C
- D from A and C
- E from A and C

**Interacts:** III (lowest mean), II and I (highest mean) from each other
Table 11

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Involved-Uninvolved" of the Nonverbal Behavior "Gestures" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>15.109</td>
<td>4</td>
<td>3.777</td>
<td>1.602 ns</td>
</tr>
<tr>
<td>Interacts</td>
<td>589.066</td>
<td>2</td>
<td>294.533</td>
<td>124.919***</td>
</tr>
<tr>
<td>Conditions x</td>
<td>43.469</td>
<td>8</td>
<td>5.434</td>
<td>2.305**</td>
</tr>
<tr>
<td>Interacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>636.605</td>
<td>270</td>
<td>2.358</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results
The pairs of means that differed significantly (p ≤ .05) were:
- Conditions: none
- Interacts: III (lowest mean), II and I (highest mean) from each other
Table 12

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Active-Inactive" of the Nonverbal Behavior "Gestures" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>14.488</td>
<td>4</td>
<td>3.622</td>
<td>2.170\textsuperscript{ns}</td>
</tr>
<tr>
<td>Interacts</td>
<td>753.941</td>
<td>2</td>
<td>376.971</td>
<td>225.937\textsuperscript{***}</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>18.078</td>
<td>8</td>
<td>2.260</td>
<td>1.354\textsuperscript{ns}</td>
</tr>
<tr>
<td>Error</td>
<td>450.488</td>
<td>270</td>
<td>1.668</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results
The pairs of means that differed significantly (p≤.05) were:
- Conditions: none
- Interacts: III (lowest mean), II and I (highest mean) from each other
Table 13

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Pleasant-Unpleasant" of the Nonverbal Behavior "Facial Expression" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>49.458</td>
<td>4</td>
<td>12.365</td>
<td>7.131***</td>
</tr>
<tr>
<td>Interacts</td>
<td>193.870</td>
<td>2</td>
<td>96.935</td>
<td>55.908***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>14.679</td>
<td>8</td>
<td>1.835</td>
<td>1.058ns</td>
</tr>
<tr>
<td>Error</td>
<td>468.138</td>
<td>270</td>
<td>1.734</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results
The pairs of means that differed significantly (p<.05) were:
- Conditions: C (lowest mean) from A, B, D, and E (highest mean)
- Interacts: I (highest mean) from II and III (lowest mean)
### Table 14

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Involved-Uninvolved" of the Nonverbal Behavior "Facial Expression" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>29.349</td>
<td>4</td>
<td>7.337</td>
<td>3.117**</td>
</tr>
<tr>
<td>Interacts</td>
<td>293.198</td>
<td>2</td>
<td>146.600</td>
<td>62.274***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>43.883</td>
<td>8</td>
<td>5.486</td>
<td>2.330**</td>
</tr>
<tr>
<td>Error</td>
<td>635.606</td>
<td>270</td>
<td>2.354</td>
<td></td>
</tr>
</tbody>
</table>

**Newman-Keuls Results**

The pairs of means that differed significantly (p ≤ 0.05) were:
- **Conditions:** C (lowest mean) from D, A, B and E (highest mean)
- E (highest mean) from B, A and D
- **Interacts:** III (lowest mean), II and I (highest mean) from each other
Table 15

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Active-Inactive" of the Nonverbal Behavior "Facial Expression" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>25.441</td>
<td>4</td>
<td>6.360</td>
<td>3.222**</td>
</tr>
<tr>
<td>Interacts</td>
<td>416.684</td>
<td>2</td>
<td>208.342</td>
<td>105.555***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>18.637</td>
<td>8</td>
<td>2.330</td>
<td>1.180ns</td>
</tr>
<tr>
<td>Error</td>
<td>532.918</td>
<td>270</td>
<td>1.974</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results
The pairs of means that differed significantly (p<.05) were:
- Conditions: A (lowest mean) from B and D
  - C from B and D
  - E (highest mean) from D, B, C and A (lowest mean)

- Interacts: III (lowest mean), II and I (highest mean) from each other
Table 16

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Pleasant-Unpleasant" of the Nonverbal Behavior "Overall Impression" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>34.796</td>
<td>4</td>
<td>8.699</td>
<td>4.393***</td>
</tr>
<tr>
<td>Interacts</td>
<td>226.279</td>
<td>2</td>
<td>113.139</td>
<td>57.133***</td>
</tr>
<tr>
<td>Conditions x</td>
<td>19.030</td>
<td>8</td>
<td>2.379</td>
<td>1.201ns</td>
</tr>
<tr>
<td>Interacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>534.680</td>
<td>270</td>
<td>1.980</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results

The pairs of means that differed significantly (p ≤ .05) were:
- **Conditions**: C (lowest mean) from A, D, B and E (highest mean)
- **Interacts**: III (lowest mean), II and I (highest mean) from each other
Table 17

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Involved-Uninvolved" of the Nonverbal Behavior "Overall Impression" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>40.309</td>
<td>4</td>
<td>10.077</td>
<td>4.506***</td>
</tr>
<tr>
<td>Interacts</td>
<td>364.513</td>
<td>2</td>
<td>182.257</td>
<td>81.505***</td>
</tr>
<tr>
<td>Conditions x Interacts</td>
<td>25.699</td>
<td>8</td>
<td>3.212</td>
<td>1.437ns</td>
</tr>
<tr>
<td>Error</td>
<td>603.762</td>
<td>270</td>
<td>2.236</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results
The pairs of means that differed significantly (p<.05) were:
  Conditions: C (lowest mean) from A, D, B and E (highest mean)
  Interacts: III (lowest mean), II and I (highest mean) from each other
Table 18

Summary of Analysis of Variance of the Difference Between Means of Scores on the Dimension "Active-Inactive" of the Nonverbal Behavior "Overall Impression" for the Five Experimental Conditions and Three Interacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Sums of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Squares</th>
<th>F Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>16.184</td>
<td>4</td>
<td>4.046</td>
<td>2.157ns</td>
</tr>
<tr>
<td>Interacts</td>
<td>496.441</td>
<td>2</td>
<td>248.221</td>
<td>132.320***</td>
</tr>
<tr>
<td>Conditions x</td>
<td>13.625</td>
<td>8</td>
<td>1.703</td>
<td>0.908ns</td>
</tr>
<tr>
<td>Interacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>506.496</td>
<td>270</td>
<td>1.876</td>
<td></td>
</tr>
</tbody>
</table>

Newman-Keuls Results
The pairs of means that differed significantly (p≤.05) were:
- Conditions: none
- Interacts: III (lowest mean), II and I (highest mean) from each other
(p<.01) for all dimensions of affect of each nonverbal behavior category. Interact III was always associated with the lowest mean score while Interact I was always associated with the highest mean score. Results of the Newman-Keuls tests revealed that all three interacts differed significantly from each other for all dimensions of affect of every nonverbal behavior with the exception of the "pleasant-unpleasant" dimension of both "facial expression" and "posture". In both of these cases, only Interact I differed significantly from both Interacts II and III.

**Hypothesis Three**

The null hypothesis that there are no significant interaction effects between the interacts and the experimental conditions was rejected for five of the fifteen scales. (See Tables 4-18) The significant interaction effects were for all dimensions of affect associated with "head direction" and the "involved-uninvolved" dimension of both "gestures" and "facial expression". The interaction for the "active-inactive" dimension of "head direction" was the only one to achieve the .01 level of significance.

**Hypothesis Four** (Table 19)

The null hypothesis that subjects would not choose one of the stimulus communicants as the better communicator over the other communicant was rejected for each interact. The stimulus communicant to the audience's left was more frequently chosen as the better communicator for Interacts I and II while the stimulus communicant to the audience's right was selected as the better communicator for Interact III.
### Table 19

**Summary of Chi-Square Tests Associated with Selection of One of the Stimulus Communicants as the Better Communicator**

<table>
<thead>
<tr>
<th>Samples</th>
<th>Degrees of Freedom</th>
<th>$\chi^2$ Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Conditions (Interact I)</td>
<td>4</td>
<td>3.49&lt;sup&gt;ns&lt;/sup&gt;</td>
</tr>
<tr>
<td>Experimental Conditions (Interact II)</td>
<td>4</td>
<td>8.87&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Experimental Conditions (Interact III)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Interact I</td>
<td>1</td>
<td>4.40&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>Interact II</td>
<td>1</td>
<td>5.62&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Interact III</td>
<td>1</td>
<td>29.89&lt;sup&gt;***&lt;/sup&gt;</td>
</tr>
<tr>
<td>Interacts I, II and III</td>
<td>2</td>
<td>41.75&lt;sup&gt;***&lt;/sup&gt;</td>
</tr>
<tr>
<td>All Interacts Combined</td>
<td>1</td>
<td>0.23&lt;sup&gt;ns&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

* $p<0.05$
** $p<0.02$
*** $p<0.001$
There was no significant difference between conditions in the selection of either stimulus communicant as the better communicator for Interact I, but a significant difference ($\chi^2 = 8.867, p < 0.02$) was found between conditions for Interact II. For Interact II of Condition D the stimulus communicant to the audience's right was selected as the better communicator. This was inconsistent with the selection made in the other conditions. A chi-square test could not be applied to examine the difference between conditions for Interact III because test requirements of minimal expected cell frequencies could not be satisfied.

There was a significant difference between interacts ($p < 0.001$) in the frequency with which one or the other of the stimulus communicants was selected as the better communicator. For Interact III the communicant to the audience's right was selected as the better communicator while the reverse situation existed for Interacts I and II.

No significant difference was found in the frequency with which either of the stimulus communicants was selected as the better communicator for the treatment with all interacts combined.

Hypothesis Five (Table 20)

The fifth null hypothesis, which states that subjects will not differ in the extent of their agreement or disagreement as to the "realness" of the nonverbal behavior roles observed, was rejected within each interact and between interacts. However, no significant difference was found between the experimental conditions for Interact I. Chi-square tests could not be performed to determine differences between
Table 20

Summary of Chi-Square Tests Associated with Subject Agreement-Disagreement as to the Appropriateness of the Nonverbal Behaviors Observed for the Stimulus Communicants

<table>
<thead>
<tr>
<th>Samples</th>
<th>Degrees of Freedom</th>
<th>$\chi^2$ Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Conditions (Interact I)</td>
<td>4</td>
<td>5.51 ns</td>
</tr>
<tr>
<td>Experimental Conditions (Interact II)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Experimental Conditions (Interact III)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Interact I</td>
<td>1</td>
<td>8.26**</td>
</tr>
<tr>
<td>Interact II</td>
<td>1</td>
<td>26.32***</td>
</tr>
<tr>
<td>Interact III</td>
<td>1</td>
<td>35.42***</td>
</tr>
<tr>
<td>Interacts I, II and III</td>
<td>2</td>
<td>6.67*</td>
</tr>
<tr>
<td>All Interacts Combined</td>
<td>1</td>
<td>66.82***</td>
</tr>
</tbody>
</table>

*p < .05

**p < .01

***p < .001
conditions for Interacts II and III because test assumptions could not be met. Visual inspection of the data, however, revealed patterns of response across conditions for Interacts II and III similar to those found for Interact I.

Significant differences for the three interacts were found in the frequency with which subjects agreed or disagreed about the "realness" of the behaviors they observed in the stimulus. For each interact, subjects agreed more than disagreed that the stimulus communicants appeared to act their roles.

A significant difference was found between the interacts in the frequency of subject agreement or disagreement. This difference was caused by the inordinately large number of agreements for Interacts III as compared with Interacts I and II.

The largest chi-square value was obtained in testing for the difference in the frequency of agreement vs. disagreement for the treatment with all interacts combined. Agreements far outnumbered disagreements.

**Hypothesis Six** (Table 22)

The sixth null hypothesis was concerned with the extent to which subjects indicated most awareness of the different nonverbal behavior categories. It was rejected for each interact and for the treatment with all interacts combined. For each interact, either different categories or different combinations of categories accounted for the significant differences found. For Interact I, the greater frequency with which the categories "posture" and "overall impression" were
Table 21

Summary of the Frequency by Interact\textsuperscript{a} with which Subjects Indicated their "Most Awareness" of the Different Nonverbal Behaviors and Dimensions of Affect

<table>
<thead>
<tr>
<th>Dimension of Affect/Nonverbal Behavior</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasant-Unpleasant/Head Direction</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Involved-Uninvolved/Head Direction</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Active-Inactive/Head Direction</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Posture</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Involved-Uninvolved/Posture</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Active-Inactive/Posture</td>
<td>16</td>
<td>4</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Gestures</td>
<td>0</td>
<td>4</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Involved-Uninvolved/Gestures</td>
<td>5</td>
<td>12</td>
<td>28</td>
<td>45</td>
</tr>
<tr>
<td>Active-Inactive/Gestures</td>
<td>8</td>
<td>17</td>
<td>30</td>
<td>55</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Facial Expression</td>
<td>1</td>
<td>22</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Involved-Uninvolved/Facial Expression</td>
<td>5</td>
<td>8</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Active-Inactive/Facial Expression</td>
<td>5</td>
<td>7</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Overall Impression</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Involved-Uninvolved/Overall Impression</td>
<td>13</td>
<td>4</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Active-Inactive/Overall Impression</td>
<td>15</td>
<td>0</td>
<td>6</td>
<td>21</td>
</tr>
</tbody>
</table>

\textsuperscript{a}See Appendices A and B for verbal and nonverbal descriptions of the interacts.
Table 22

Summary of Chi-Square Tests Associated with Subject Indication of Most Awareness of the Five Different Nonverbal Behaviors by Interact

<table>
<thead>
<tr>
<th>Samples</th>
<th>Degrees of Freedom</th>
<th>( \chi^2 ) Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interact I</td>
<td>4</td>
<td>16.10*</td>
</tr>
<tr>
<td>Interact II</td>
<td>4</td>
<td>46.01**</td>
</tr>
<tr>
<td>Interact III</td>
<td>4</td>
<td>186.52**</td>
</tr>
<tr>
<td>All Interacts Combined</td>
<td>4</td>
<td>87.265**</td>
</tr>
</tbody>
</table>

*\( p<.01 \)  
**\( p<.001 \)
selected over the other categories accounts for the differences found. For Interact II, "facial expression" and "gestures" were selected significantly more often over the other categories. For Interact III, "gestures" was that behavior of which subjects indicated most awareness; approximately seventy-five percent of the subjects selected this category over the others. (See Table 21 for a summary of the frequency data used in the testing of hypotheses six and seven.)

When all of the interacts were combined, a significant difference was still found in the frequency with which subjects indicated their awareness of the nonverbal behavior categories. "Gestures" was overwhelmingly selected as that category of which subjects were most aware, while "head direction" was selected least often by subjects.

Because visual inspection and, where the assumptions for the test had been met, chi-square tests revealed that generally no differences existed between experimental conditions in the testing of this hypothesis, the effects of the experimental conditions were not treated separately. The only apparent exception to the general finding that no significant differences existed between experimental conditions was in the frequency with which subjects in one experimental condition indicated that "posture" and "overall impression" were those nonverbal behaviors of which they were most aware.

At slightly greater than the .001 level of significance, subjects in Condition D chose "posture" more often than did subjects in other conditions as the category of which they were most aware for Interact I. At the .05 level of significance, "overall impression" was chosen less
frequently by subjects in Condition D than subjects in other conditions as the behavior of which they were most aware for Interact I. The relatively large number of subjects selecting "posture" helps to account for the small number of subjects selecting "overall impression" as that category of which they were most aware for Interact I in Condition D.

Hypothesis Seven (Table 23)

The null hypothesis that no significant differences would be found in the frequency with which subjects indicated most awareness of the different dimensions of affect was rejected for two interacts and for the treatment with all interacts combined. Where statistically sound, chi-square tests of the differences between conditions for the dimensions of affect of which subjects claimed most awareness were performed. These were all non-significant. Visual inspection of the findings for the dimensions of affect unable to be tested statistically also revealed no apparent differences between experimental conditions.

Although no significant differences were found between dimensions of affect for Interact II, highly significant differences were found for Interacts I, III and the treatment with all interacts combined. For each of these interacts and the combined interact treatment the "pleasant-unpleasant" dimension was selected significantly less frequently than the other dimensions of affect. The "activity-inactivity" dimension was selected by subjects as the dimension of affect of which they were most aware for Interact I and the combined interact treatment. While this dimension was also important for
Table 23

Summary of the Chi-Square Tests Associated with Subject Indication of Most Awareness of the Three Different Dimensions of Affect by Interact

<table>
<thead>
<tr>
<th>Samples</th>
<th>Degrees of Freedom</th>
<th>( \chi^2 ) Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interact I</td>
<td>2</td>
<td>35.96**</td>
</tr>
<tr>
<td>Interact II</td>
<td>2</td>
<td>.58ns</td>
</tr>
<tr>
<td>Interact III</td>
<td>2</td>
<td>8.86*</td>
</tr>
<tr>
<td>All Interacts Combined</td>
<td>2</td>
<td>22.505**</td>
</tr>
</tbody>
</table>

*\( p < .02 \)
**\( p < .001 \)
Table 24

Summary of Chi-Square Tests Associated with Subject Identification of Either of the Stimulus Communicants as the Physician (Condition D only)

<table>
<thead>
<tr>
<th>Samples</th>
<th>Degrees of Freedom</th>
<th>$\chi^2$ Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interact I</td>
<td>1</td>
<td>$3.68^{ns}$</td>
</tr>
<tr>
<td>Interact II</td>
<td>1</td>
<td>$3.68^{ns}$</td>
</tr>
<tr>
<td>Interact III</td>
<td>1</td>
<td>$13.14^*$</td>
</tr>
<tr>
<td>Interacts I, II and III</td>
<td>2</td>
<td>$2.99^{ns}$</td>
</tr>
<tr>
<td>All Interacts Combined</td>
<td>1</td>
<td>$20.74^*$</td>
</tr>
</tbody>
</table>

3.84 needed for .05 level of significance

*p<.001
Interact III, the "involved-uninvolved" dimension had a greater frequency (39 vs. 38) of selection.

**Hypothesis Eight** (Table 24)

Null hypothesis eight stated that subjects in Condition D would not choose either of the stimulus communicants significantly more often as the physician or the patient. It was rejected ($p<.001$) for Interact III and the treatment for all interacts combined. The .05 level of significance was approached for Interacts I and II. The stimulus communicant to camera right was chosen as the physician with greater frequency than was the other communicant for all interacts.

**Hypothesis Nine** (Table 25)

The null hypothesis stating that subjects in Condition E would not designate either of the stimulus communicants significantly more often as the dyad member of higher status was rejected for Interact III and the treatment for all interacts combined. The stimulus communicant to camera right was more frequently designated as the dyad member of higher status for all interacts. Chi-square could not be performed to test for significant differences between interacts because the test requirement of minimal expected cell frequencies could not be satisfied.

**Reliability of the "Observations" Instrument** (Table 26)

Assessment of the reliability of the "Observations" instrument was made through a test-retest procedure. In Condition D only, Interact I was shown to the subjects a second time. Subjects in this condition had been told that they would be viewing four and not three
Table 25

Summary of Chi-Square Tests Associated with Subject Identification of Either of the Stimulus Communicants as the Person with Higher Status (Condition E only)

<table>
<thead>
<tr>
<th>Samples</th>
<th>Degrees of Freedom</th>
<th>$\chi^2$ Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interact I</td>
<td>1</td>
<td>3.76 $^{\text{ns}}$</td>
</tr>
<tr>
<td>Interact II</td>
<td>1</td>
<td>1.75 $^{\text{ns}}$</td>
</tr>
<tr>
<td>Interact III</td>
<td>1</td>
<td>5.82 $^*$</td>
</tr>
<tr>
<td>Interacts I, II and III</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>All Interacts Combined</td>
<td>1</td>
<td>12.25 $^{**}$</td>
</tr>
</tbody>
</table>

3.84 needed for .05 level of significance

*$p<.02$

**$p<.001$
Table 26

Test-Retest Reliability of Observations
Instrument Items for Interact I

<table>
<thead>
<tr>
<th>Item</th>
<th>Reliability (r_{xx})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasant-Unpleasant/Head Direction</td>
<td>.514**</td>
</tr>
<tr>
<td>Involved-Uninvolved/Head Direction</td>
<td>.679***</td>
</tr>
<tr>
<td>Active-Inactive/Head Direction</td>
<td>.538***</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Posture</td>
<td>.609***</td>
</tr>
<tr>
<td>Involved-Uninvolved/Posture</td>
<td>.686***</td>
</tr>
<tr>
<td>Active-Inactive/Posture</td>
<td>.600***</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Gestures</td>
<td>.433*</td>
</tr>
<tr>
<td>Involved-Uninvolved/Gestures</td>
<td>.178ns</td>
</tr>
<tr>
<td>Active-Inactive/Gestures</td>
<td>.614***</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Facial Expression</td>
<td>.609***</td>
</tr>
<tr>
<td>Involved-Uninvolved/Facial Expression</td>
<td>.329ns</td>
</tr>
<tr>
<td>Active-Inactive/Facial Expression</td>
<td>.673***</td>
</tr>
<tr>
<td>Pleasant-Unpleasant/Overall Impression</td>
<td>.614***</td>
</tr>
<tr>
<td>Involved-Uninvolved/Overall Impression</td>
<td>.503**</td>
</tr>
<tr>
<td>Active-Inactive/Overall Impression</td>
<td>.636***</td>
</tr>
</tbody>
</table>

*p ≤ .05

**p ≤ .02

***p ≤ .01
interacts.

Generally, the "active-inactive" dimension was judged most reliably while the "involved-uninvolved" dimension was judged least reliably. The nonverbal behavior category with the highest average reliability among the dimensions of affect was "posture". "Gestures" was the nonverbal behavior category generally least reliably rated on these same dimensions.

The .01 level of significance was exceeded by the reliability coefficients of ten test items. Only two of the fifteen test items, the "involved-uninvolved" dimension of both "gestures" and "facial expression", did not achieve the .05 level of significance.
CHAPTER IV

DISCUSSION

All of the null hypotheses were rejected, at least in part, by the data obtained in the study. In this chapter, the writer will attempt to explain the findings and to indicate their relevance for the study of interactive nonverbal behavior.

The Experimental Conditions

The cognitions held of the stimulus communicants apparently influenced subjects' judgments on the dimensions of affect for the different nonverbal behaviors. Condition E, the experimental condition in which the stimulus communicants were not identified, was always rated closer to the negative end of each of the dimension of affect continua than were any of the other conditions. Condition C, the experimental condition in which both stimulus communicants had been identified as physicians, was almost always rated closer to the positive end of each of the dimension of affect continua than were any of the other conditions. Specifically, whereas the nonverbal behaviors in Condition C were usually rated more pleasant, involved and active the nonverbal behaviors in Condition E were always rated more unpleasant, uninvolved and inactive than were these same behaviors in the other conditions.

Apparently, when the stimulus communicants had been described
to the subjects as equal in status (both were physicians), their nonverbal behaviors were interpreted more positively than when the communicants were assigned unequal status or were unidentified. The assignment of equal status to the stimulus communicants conceivably served to eliminate subject perceived situations of dominance and submission, evaluation, anxiety and other stressful conditions in the stimulus frequently associated with hierarchically based or unidentified communication systems.

The tendency for subjects to rate stimulus persons increasingly more favorably commensurate with increased subject familiarity of the stimulus persons has already been noted. Beier and Stumpf suggest that a common pattern for judges or observers of stimulus persons may be to progress from a state of "caution" to one of "greater acceptance" of the stimulus person. The Beier and Stumpf findings, however, are based upon a research design in which judges or observers were gradually presented with increased stimulus person cues: from only hearing the stimulus person's voice, to viewing his gestures, to seeing his face, and finally, to both seeing and hearing the stimulus person present a three minute talk. While the experimental conditions in this and the Beier and Stumpf research are not identical, the factor of increased subject knowledge of the stimulus person, be it of his status or, as in Beier and Stumpf's work, of his actual behaviors, is a significant feature of both designs.

The general finding that there were no significant differences between experimental conditions in the frequency with which subjects indicated most awareness of either the three dimensions of affect or the five nonverbal behaviors suggests that the different ratings assigned these dimensions of the behaviors were a function of the value ascribed to the behaviors. The experimental conditions did not seem to significantly influence which behaviors were perceived but, rather, what the behaviors meant within the context in which they occurred.

The Interacts

Highly significant $F$ values ($p<.01$) were found between the three interacts on every dimension of affect for each nonverbal behavior. While these values reflect the fact that the behaviors in each interact were indeed different, a most obvious trend in the subjects' ratings was observed. Regardless of experimental condition, Interact I was always rated more negatively and Interact III was always rated more positively than the other interacts.

In that the three interacts together comprised a consecutive 40 second sequence of nonverbal behaviors from the original interview, it was doubtful that the tone of the interview changed that much between each interact. Inspection of the nonverbal and verbal content of the interacts (Appendices A and B) did not reveal any information to warrant concluding that the different ratings assigned behaviors within the interacts were solely a function of the different behaviors observed. Rather, the increasingly more positive ratings probably reflect actual differences in the behaviors, a different context for
viewing each interact in terms of the preceding stimulus, and increased subject familiarity with the stimulus communicants as determined by the amount of subject exposure to the stimuli. For example, when subjects viewed the third interact they had already viewed the first and second interacts and their exposure to the stimulus communicants was greater at this time than during any previous time. Obviously, with each successive interact, subject exposure time to the stimulus communicants was increased.

Subjects claimed most awareness of different nonverbal behaviors and dimensions of affect for each of the interacts. Like Gitin, this writer found the "active-inactive" dimension of affect most important and the "pleasant-unpleasant" dimension least important for subjects in their judgments of the interacts. Schlosberg's contradictory findings can probably be explained in terms of the stimulus used in his research, e.g., a static facial expression no doubt suggests more about an evaluative dimension than it would about dimensions associated with movement or interpersonal relationship. Subjects indicated most awareness of the nonverbal behaviors that were most animated in each interact. It is not surprising, then, that "gestures" were found to be the nonverbal behavior category of which subjects were most aware.

\[136\] Gitin, "A Dimensional Analysis of Manual Expression."

\[137\] Schlosberg, "Three Dimensions of Emotion;" Schlosberg, "A Scale for the Judgment of Facial Expressions."
Reliability of the "Observations" Instrument

Test-retest reliability of the "Observations" instrument was not demonstrated to be high. The writer attempted to only generally measure instrument reliability. Hence, reliability tests were not made for all conditions and interacts but for only one interact of one condition. Condition D was chosen because it represented a compromise between the specificity of stimulus communicant roles assigned in Conditions A, B and C and the lack of specificity of stimulus communicant roles assigned in Condition E.

Interact I was chosen because of the sequence of interacts; Interacts II and III separated the initial and later playback of Interact I. This was the maximum possible separation between interacts given the research design and was felt to be the most appropriate procedure in controlling for learning effects. Also, because Interact I was the first stimulus interact to be observed and therefore, most apt to reflect response deviation between subjects, it would have elicited responses with the most variance. As subjects acquired greater experience in the perception of the stimuli this response deviation, or response error, would decrease.

The low reliabilities obtained might also indicate the lack of validity in using dimensions of affect, discovered in the study of facial expression stimuli that were monadic and static, for the study of dynamic interpersonal communication. The reliability scores obtained are therefore, probably conservative estimates of overall reliability.
Of course, when subjects viewed the first interact a second time, they were actually viewing a different interact. True, the same stimulus was used, but the contexts in which it was viewed were different. The judgments made for Interact I when shown as Interact IV were, in part, a function of the interacts that had preceded it. The significance level achieved by the reliability coefficients (for ten of the fifteen coefficients, $p < 0.01$) indicates that the judgments made were far from random; some basic laws of behavior influenced the subjects' evaluations of the stimulus.

While the behaviors observed were physically identical, subjects evaluated them differently. The relevant behaviors separating Interacts I and IV no doubt helped to determine these differences. In measuring reliability in such studies, the test-retest procedure could conceivably be employed but only when an appropriate period of time, and not test relevant behaviors, separates the two test periods.

The Dyadic Communication System

Clearly, subjects found the nonverbal behaviors observed to be consistent with whichever roles had been assigned the stimulus communicants in the experimental conditions. So, whether both stimulus communicants had been designated as physicians, or one a physician and the other a patient (and vice-versa) or neither one had been identified, subjects agreed in each interact and for the treatment with all interacts combined that the subjects appeared to behave in accord with their respectively designated roles.

Regardless of experimental condition, subjects always indicated
the stimulus communicant to camera left (to the audience's left side) as the "better communicator" in Interacts I and II and the stimulus communicant to camera right (to the audience's right side) as the "better communicator" in Interact III. Invariably, the stimulus communicant chosen as the "better communicator" was that one whose nonverbal behaviors were the most demonstrative and animated during that particular interact. Subjects were apparently not influenced by the perceived roles of the stimulus communicants in choosing the "better communicator." The nonverbal behaviors and dimensions of affect of which subjects were most aware for each interact were those which best described the actions of the stimulus communicant selected as the "better communicator."

For each interact in Condition D, most subjects selected the stimulus communicant to camera right as the physician and the stimulus communicant to camera left as the patient. Although these choices were not statistically significant for Interacts I and II the .05 level of significance was approached. In the actual initial medical interview, the physician appears to camera right and the patient to camera left. So, while subjects were usually able to correctly identify the physician and the patient, they were not necessarily influenced by this selection in the subsequent designation of the "better communicator."

Subjects in Condition E perceived the stimulus communicant to camera right to be of higher status than the stimulus communicant to camera left. Although statistically significant only for Interact III
and the treatment for all interacts combined, this same association (stimulus communicant to camera right of higher status) was made for all interacts.

What is suggested by these findings then is that nonverbal behaviors do provide information about the roles of interacting communicants. This information, in turn, apparently little influences the subjects' selection of the better communicator; higher status need not be correlated with designation as the better communicator.
CHAPTER V

CONCLUSION

The purpose in conducting this research was to examine the communicative function of nonverbal behaviors within the context of a dyadic communication system. The communication system under study was that of an actual physician-patient initial medical interview.

Summary

Ninety-five students enrolled in five recitation sections of the introductory public speaking course at The Ohio State University during Spring Quarter, 1971 served as the experimental subjects. In each course section, different instructions were given the subjects about the interview they were to observe. Although all subjects viewed the same three interacts, they were given different information about the roles of the stimulus communicants. The three stimuli or interacts shown the subjects were excerpts from the medical interview.

Two basic test instruments were used to record the subjects' responses. The "Observations" instrument, a semantic differential-like form, reported the values assigned by the subjects to five nonverbal behavior categories -- facial expression, gestures, posture, head direction and overall impression -- on three dimensions of affect. These dimensions were "pleasant-unpleasant," "involved-uninvolved" and "active-inactive" and represent the dimensions of affect (for
some nonverbal behaviors) previously identified by researchers and relabeled for the present study. The "Questionnaire" instrument was designed to report, primarily through agreement-disagreement items, information about the perception and interpretation of the nonverbal behaviors, the affective dimensions of those behaviors, and the quality of the communication relationship perceived by the subjects.

In testing the hypotheses of the study, the writer found the following:

1) Subjects' ratings of the nonverbal behaviors in the stimuli were, at least in part, a function of the experimental conditions. Subjects rated the nonverbal behaviors more positively when the communicants had been presented as equal in status and more negatively when status or role had not been defined or had been described in terms of unequal status.

2) Interacts were perceived differently, with increasingly more positive ratings being assigned to each successive interact.

3) For the first two interacts the stimulus communicant to camera left was designated the better communicator while for the third interact, the stimulus communicant to camera right was designated the better communicator.

4) Subjects found the nonverbal behaviors of the stimulus communicants to be appropriate or in character regardless of how these roles had been described to the subjects.

5) Subjects indicated most awareness of those nonverbal behaviors that were most animated during each interact. For each
interact subjects were most aware of different nonverbal behaviors or different combinations of nonverbal behaviors.

6) For each interact, subjects indicated being most aware of different dimensions of affect. However, no significant difference for this behavior was found in the subjects' awareness of Interact II. For Interacts I and II, subjects indicated least awareness for the "pleasant-unpleasant" dimension of affect.

7) When the stimulus communicants were identified only as physician and patient (Condition D), subjects correctly designated the stimulus communicant to camera right as the physician and the stimulus communicant to camera left as the patient. However, while these findings were not statistically significant for Interacts I and II, the .05 level of significance was approached.

8) In Condition E, the experimental condition in which stimulus communicants were completely unidentified, subjects correctly indicated the stimulus communicant to camera right to be of higher status than the stimulus communicant to camera left. As with the experimental condition in which stimulus communicants were only identified as physician and patient, the findings were not statistically significant for Interacts I and II.

Comments

The findings of this study lead the writer to conclude that nonverbal behaviors do provide information about the roles or status relationships of communicants and that subjects' previously held cognitions about the interaction contexts do influence the evaluative
ratings assigned to the nonverbal behaviors observed. Subjects apparently observe the same physical behaviors but evaluate or interpret them in a manner consistent with that which is known about the social context in which the behaviors occur. In studies of interpersonal communication, then, increased emphasis needs to be placed upon the relevance of the social context for the understanding of behavior.

Perhaps of even greater importance is the finding that subjects can evaluate sequences of dynamic, interactive nonverbal communication with a fair degree of accuracy. This finding has consequences not only for nonverbal behavior, but for the study of communication behavior, generally.

Several limitations of the present study, however, rightly impinge upon any conclusions that might be drawn from the findings. First and probably foremost of the study's limitations is the assumption made by the researcher that subjects' responses adequately reflect the subjects' perceptions of the stimuli; in other words, that the pencil and paper responses correspond highly with that which was felt by the subjects.

Second, the interacts were not of equal length; the first interact was fifteen seconds, the second was fourteen seconds and the third was eleven seconds in length. Also, each of the stimulus communicants did not function as the "talker" for the same length of time. Any judgments of the nonverbal behaviors were undoubtedly influenced by this factor. For example, the stimulus communicant to
camera right was perceived as the dyad member of higher status in Interact III. During this sequence, this communicant assumes the "talker" role for eight of the total eleven seconds of the interact.

The researcher's inability to control certain time elements of the interacts is, of course, a consequence of the "real" nature of the stimulus. In *The Stream of Behavior*, Barker argues that "behavior units" are to be distinguished from "behavior tesserae" on the basis of their independence of experimenter manipulation. Or, as stated by Barker, "Behavior units are discovered and behavior tesserae are designed." Although the experimental stimuli were selected from the original interview and, to that extent, are more like "behavior tesserae," the experimenter was unable to control or plan the behaviors of the communicants at the time of the interview.

Third, any attempt to study nonverbal behaviors independently of their concurrent verbal behaviors presents a situation that is atypical of most communication events where verbal cues, as well as nonverbal cues, usually abound. So, while nonverbal behaviors have been demonstrated to communicate certain information (in this as well as in other research), this information might not be sought in situations where verbal cues are available. In other words, because the information might be provided verbally, there would be less reason to seek it in the nonverbal mode. While the writer is fully

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138 Ibid., p. 16.
aware of this predicament, the study of nonvocal, nonverbal behaviors as communicators of information has traditionally been conducted in a context free of verbal behaviors. Perhaps other research methodologies not so restricted could be developed and employed in future studies.

**Suggestions for Further Study**

Several important questions are raised by the findings and limitations of this study. They seem to justify additional, more specific research.

The dimensions of affect upon which the nonverbal behaviors were rated might be more appropriate for the study of the nonverbal behaviors of an individual rather than interactive nonverbal behaviors. Future research could begin to employ some of the dimensions proposed by Birdwhistell (mirror-parallel, rhythmic-disrhythmic and open-closed) for the study of communication interaction.\(^\text{139}\) Perhaps efforts could be directed at discovering still other dimensions appropriate for the study of interaction.

The experimental stimuli in this research were three consecutive sequences or interacts of nonverbal behavior; increasingly more positive ratings were made by subjects with each successive interact. Would this same result be obtained if the sequence of the interacts were to be altered? In other words, were the ratings a function of the behaviors observed, the sequence of the interacts or a combination of both?

In this study, subjects indicated being most aware of different nonverbal behaviors and dimensions of affect for each interact. Are behaviors or dimensions related? Do the behaviors or dimensions of which subjects are most aware influence the perception and interpretation of other nonverbal behaviors and dimensions of affect?

Finally, the examination of a broad sampling of nonverbal behaviors occurring within different social contexts could provide valuable information related to the social system under study, the nonverbal behaviors manifest in that system and the perception process. For example, how are salesman-client, teacher-student, and employer-employee interactions different from each other and physician-patient interactions? Are the same nonverbal behaviors critical to each? Under what conditions will subjects not perceive the stimulus persons' roles as had been described or defined?

Of course, further investigation of communication systems -- be they verbal or nonverbal -- will serve the useful purpose of contributing to the language, concepts and ultimately, to a science of human interaction.
APPENDIX A

NARRATIVE DESCRIPTION OF NONVERBAL BEHAVIORS OF THE PHYSICIAN AND PATIENT DURING THE THREE INTERACTS
Physician and patient are seated facing the camera at an approximate angle of forty-five degrees. The patient appears on camera left and the physician appears on camera right. Patient sits with his hands clasped and placed between his legs. Physician's left leg is crossed over his right leg.

**Interact I**

Looking directly at the patient, physician begins speaking. He moves his torso back slightly from patient while pulling the top of his left sock with his right hand. He then rests his right hand on the top of his left sock. Physician’s left arm remains folded across his waist area during the entire interact. While the physician is speaking, the patient remains in a relatively fixed position. However, his lower facial area is seen to twitch.

Moving his head to his right side and smiling some, patient begins to speak. His hands remain clasped but he flexes them briefly. Patient's head is inclined toward the physician. While the patient has been speaking, the physician has barely moved remaining in the same position as when he had just finished talking.

**Interact II**

Physician moves his head to his right, begins to speak and clasps both his hands in his lap. He is smiling at patient and, loosening his hand clasp, turns the palms of his hands upward and toward himself. While speaking, he looks directly at the patient. During this time, patient has been rocking back and forth in his chair, has retained a barely perceptible smile and then quickly looks to both sides of the
physician and to the floor. Patient never looks directly at the physician.

Patient continues to look at floor and begins speaking. Without altering gaze direction, patient lifts his left hand to his left eye. He rubs his eye and his left cheek bone area with his left index finger and then returns his left hand to a lap clasp with his right hand. During this time, the physician has continued to look directly at the patient while keeping both hands clasped in his lap.

**Interact III**

Breaking his hand clasp, physician begins speaking and moves slightly to his right. He places his right hand on top of desk to his rear and moves his left hand back-and-forth on a horizontal plane in the foreground. Physician then rests his left hand on his left thigh. He continues to look directly at the patient during this time. When physician began speaking, patient was moving upper half of his body to his left. He quickly focused attention on the physician and, keeping his hands clasped, continued to look directly at physician.

Patient begins speaking. He inclines his head slightly forward and points his clasped hands upward toward himself. Physician's position remains unchanged since last speaking. As before, he looks directly at the patient.
APPENDIX B

VERBAL CONTENT AND TIME DURATION OF THE THREE INTERACTS
Interact I

Physician: Six miles twice a day would be ... uh ... uh ... pretty good. It isn't quite far enough to do too much to spur your weight loss, but if you'd walk fast it'd come down ....

Patient (laughing): I was thinking something like ... uh ... three quarters of a mile in the evening.

Time Spent Speaking

<table>
<thead>
<tr>
<th></th>
<th>seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician</td>
<td>10</td>
</tr>
<tr>
<td>Patient</td>
<td>5</td>
</tr>
<tr>
<td>Total Time of Interact</td>
<td>15</td>
</tr>
</tbody>
</table>

Interact II

Physician: No. No. No. That's just a teaser. No. Twelve ... Twelve (laughing) a day would be about right. Uh (pause) ... Uh ... what do you have to say?

Patient: Uh. No ... I didn't think ... I didn't think it would require that much.

Time Spent Speaking

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<td>Patient</td>
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<td>Total Time of Interact</td>
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Interact III

Physician: Oh, yeah. You see ... You'd ... You'd have to .... If you're going to do anything you're going to have to burn off a fair amount of calories. And ....

Patient: If I'm going to continue eating as I am and otherwise ....

Time Spent Speaking

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APPENDIX C

TEST INSTRUMENTS
Observations

Head Direction

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Gestures

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Facial Expression

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## Observations

### Facial Expression

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### Gestures

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### Overall Impression

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Conditions A and B

QUESTIONNAIRE

1. In this sequence, did each of the persons appear to act or behave their part or role? Yes No Why? Please be specific.

2. In this sequence, which person appeared to be the more effective communicator? Doctor Patient Why? Please be specific.

3. In your judgement, in the sequence just viewed, of which were you most aware? Check one only.
   - facial expression
   - head direction
   - posture
   - gestures
   - overall impression

4. In your judgement, in the sequence just viewed, of which were you most aware? Check one only.
   - pleasant-unpleasant
   - involved-uninvolved
   - active-inactive
Condition C

QUESTIONNAIRE

1. In this sequence, did each of the persons appear to act or behave their part or role? Yes ____  No ____
   Why? Please be specific.

2. In this sequence, which doctor appeared to be the more effective communicator? Right ____  Left ____
   Why? Please be specific.

3. In your judgement, in the sequence just viewed, of which were you most aware? Check one only.
   ____ facial expression   ____ gestures
   ____ head direction   ____ overall impression
   ____ posture

4. In your judgement, in the sequence just viewed, of which were you most aware? Check one only.
   ____ pleasant-unpleasant
   ____ involved-uninvolved
   ____ active-inactive
1. Please check which person you think to be the doctor and which person you think to be the patient (in this sequence).
   Doctor: _____left _____right
   Patient: _____left _____right

2. In this sequence, did each of the persons appear to act or behave their part or role? Yes____ No____
   Why? Please be specific.

3. In this sequence, was the doctor or patient the better communicator? Doctor____ Patient____
   Why? Please be specific.

4. In your judgement, in the sequence just viewed, of which were you most aware? Check one only.
   _____facial expression       _____gestures
   _____head direction         _____overall impression
   _____posture

5. In your judgement, in the sequence just viewed, of which were you most aware? Check one only.
   _____pleasant-unpleasant
   _____involved-uninvolved
   _____active-inactive
1. Who are the participants in the communication situation? Why?

Person on left side __________________________

Person on right side __________________________

2. What are they doing?

3. In this sequence, did each of the persons appear to act or behave their part or role? Yes _____ No _____
Why? Please be specific.

4. In this sequence, which person appeared to be the more effective communicator? Left _____ Right _____
Why? Please be specific.

5. In your judgement, in the sequence just viewed, of which were you most aware? Check one only.
   _____ facial expression _____ gestures
   _____ head direction _____ overall impression
   _____ posture

6. In your judgement, in the sequence just viewed, of which were you most aware? Check one only.
   _____ pleasant-unpleasant
   _____ involved-uninvolved
   _____ active-inactive
Books


**Articles and Periodicals**


Unpublished Material

