THE NONVERBAL BETRAYAL OF DECEPTION

BY

Julia Fay Steacker

A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Arts in Communication.

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CHAPTER I

INTRODUCTION
It is only within the last 30 years that researchers in the field of human communication have begun to consider nonverbal communication a viable subject for research.\(^1\) Nonverbal behavior can be briefly defined as expressive, interpretable, non-linguistic behaviors which are indicative of a communicator's attitude and feelings. Efron,\(^2\) Birdwhistell,\(^3\) and Hall\(^4\) have approached nonverbal communication as a code of behaviors which play a prominent role in the communication process. This code can be divided into the following communication modalities: (a) body motion or kinesic behavior (gestures and other body movement including facial expression, eye movement and posture); (b) paralanguage (voice qualities, speech nonfluencies and such non-language sounds as laughing, yawning and grunting); (c) proxemics (use and perception of personal and social space); (d) olfaction; (e) skin sensitivity to touch and temperature, and (f) use of artifacts such as dress and cosmetics.\(^5\)

Although nonverbal communication plays a vital role in decoding and interpreting messages, only a few basic dimensions of human feelings and attitudes are communicated in this manner.\(^6\) According to Albert Mehrabian, nonverbal behaviors influence the reception and interpretation of verbal messages and should be examined on the basis of three dimensions:
(1) evaluation—permits us to make crucial judgments whether to approach or avoid someone or something.

(2) potency—power which interactants in a communication situation may exert over each other.

(3) activity or passivity—how alive and responsive an interactant is.  

Like—dislike, potency or status, and responsiveness thus constitute the basic dimensions communicated nonverbally. 

People are drawn toward things and people they like, evaluate highly and prefer, and conversely, avoid or move away from people or things they dislike or evaluate negatively. Potency or status indicates a controlling as opposed to a dependent or submissive attitude; and responsiveness refers to the extent of awareness of and reaction to another.

According to Mehrabian, nonverbal communication can be easily decoded in relation to these dimensions on the basis of the immediacy principle in which a positive attitude (positive evaluation/liking) is reflected in positive nonverbal behaviors (approach as opposed to avoidance). Conversely, a negative attitude (negative evaluation/dislike) is reflected in negative nonverbal behaviors. Examples of positive immediacy behaviors that occur in our culture are: assuming a position close to someone, leaning toward him, touching, bodily turning toward another,
and looking into his eyes. 11

In general immediacy can be considered a primary index of attitude as communicated via posture and position cues. 12 However, the specific cues indicative of either positive or negative attitude are culturally dictated and vary accordingly. 13 The presence of implicit cultural norms which regulate nonverbal behavior has been one of the primary foci of some communication specialists. In light of the available literature concerning cultural differences regarding behavior, it is interesting to note Mehrabian's contention that nonverbal communication processes possess a transcultural quality. He states that "Consensus among different nationals as to which actions reflect what kind of feelings is far greater than the correspondence of the words they use for the same feelings." 14

In addition to cultural constraints, another important consideration in studying nonverbal behavior concerns the lack of conscious control exercised over it in comparison to verbal behavior. Current research indicates that once the appropriate behavior is learned, it is maintained largely outside of conscious awareness. 15 When the verbal and nonverbal components of a message are inconsistent with each other, the minimal degree of conscious control exerted over the nonverbal component is of particular importance in
decoding the total message impact.

When a message is inconsistent (e.g., when the verbal and nonverbal components contradict each other) the nonverbal component determines the total message impact.\textsuperscript{16} For example, if the verbal component of a message is positive, and the nonverbal negative, the value of the message is negative. In this particular instance, a comment such as, "I really like that...", accompanied by negative nonverbal messages is interpreted as sarcasm and the total message impact is negative. The process can be diagrammed as follows:

\[
\begin{align*}
+N & \quad -N \\
\frac{-} = +m & \quad \frac{-} = -m \\
-v & \quad +v \\
\end{align*}
\]

\[N = \text{nonverbal} \quad v = \text{verbal} \quad m = \text{total message impact}\]

Assessment of attitudes as they are communicated nonverbally and verbally can allow measurement of the degrees of inconsistency in a communicative interaction.\textsuperscript{17} Nonverbal cues can be used as a valuable means of determining attitude in instances in which the communicator is unwilling or unable to express it overtly. It was precisely in instances in which overt expressions of attitude were impossible that the significance of nonverbal cues was delineated.

Mehrabian has experimentally studied situations in which an individual is either unwilling or unable to ex-
press his feelings explicitly. His research in this area was motivated by the hypothesis that a communicator who is either unwilling or unable to express his feelings explicitly can be expected to exhibit avoidance reactions which are reflected in nonverbal cues.\(^{18}\) This is clearly defined by the immediacy principle in which nonverbal behaviors can be grouped into immediacy cues (touching, forward lean, eye contact, etc.) as correlates of positive or negative attitude or feeling.\(^{19}\)

Mehrabian focused on the nonverbal betrayal of feeling in deceptive communications in one study.\(^{20}\) This study was composed of three separate but related experiments. Since these three experiments provide the basis for the hypothesis of this thesis, they will be presented in some detail.

In the first experiment, 56 subjects communicated both truthfully and deceitfully to different judges. Initially, subjects wrote a paragraph explaining their position regarding the legalization of abortion. This was a heavily debated issue at the time and was selected to elicit strong feelings. Those subjects who expressed extreme views, both for and against, were selected to continue the experiment. Instructions to the subjects presented the experiment as a challenge to their ability to always give
the impression of truthfulness, whether actually being truthful or deceptive. Subjects received two lists of statements, one of arguments opposing abortion, and the other of arguments supporting it and some additional information about John B. Watson. They had ten minutes to study the material after which they made three presentations: (1) a practice communication about John B. Watson, (2) a communication advocating abortion, and (3) a communication against abortion. Each communication was presented to a different judge. The practice condition always came first, followed by the other two in random order. Thus, one communication was consistent with the subject's belief on the issue, whereas the other was contrary to his belief as expressed in the initial phase of the experiment. The subject was to present both communications in a manner that would convince the judges that he was giving his true opinion.

The effects of a reward/shock factor were also explored. In the reward condition, subjects were promised and given a bonus pay for lying successfully (provided the judge was unable to detect the deceit), and in the shock condition they were threatened with and given a mild shock if the judge detected their deceit.

Four observers watched each subject's behaviors
during the experimental conditions through a one-way mirror. Three scored various subsets of dependent measures together with speech, gesticulation and head nodding rates; the fourth alternately scored various categories for a reliability check. The subject's speech error rate was scored later from audiorecordings.

The results supported the hypothesis that immediacy would be greater during truthful than deceitful communications, indicating that negative feelings or attitudes are in fact communicated nonverbally when a communicator is being deceitful. No significant relationships between postural relaxation and deceit were indicated. Deceptive communicators exhibited more pleasant facial expressions than truthful communicators, but gesticulated less frequently and exhibited fewer positive head nods. Speech duration was less and speech error rate was higher for deceitful communicators. With a threatening addressee (a judge who could shock the subject) there was a greater degree of eye contact than with a non-threatening addressee. Gesticulation was positively correlated with relaxation. Leg and foot movements, however, were more frequent when a communicator was truthful rather than deceitful.

A second follow-up experiment by Mehrabian explored the effects of the following factors on the nonverbal be-
behavior of a subject: (a) the actual deceitful versus truthful quality of the verbal communication; and (b) role playing of a deceitful communicator versus a truthful communicator. Forty-eight subjects participated in the experiment. They first received instructions for rating each of 24 issues on a 7 point scale ranging from "strongly against" to "strongly in favor".

For each subject, 12 issues were selected to which he had responded in an extremely favorable or unfavorable manner. The subjects were then instructed to present four types of communications: (a) telling the truth in a manner such that the listener is convinced that one is telling the truth; (b) telling the truth in a manner such that the listener is convinced that one is lying; (c) lying in a manner such that the listener is convinced that one is telling the truth; and, (d) lying in a manner such that the listener is convinced that one is lying. The subject presented 12 issues to one judge in a prearranged order, such that the subject presented three issues in each of the four alternative conditions. After each presentation, the addressee - judge recorded his opinion as to whether the subject was lying or telling the truth. The judge did not know which condition a subject was enacting at any time, they knew only that the subjects would be lying 50% of the time.
Four observers located behind a one-way mirror in an adjacent room recorded the behaviors using the categories and criteria of the earlier experiment. Speech error rate was not scored in this experiment but eye shift was scored.

The results of this experiment supported the findings of the earlier experiment. Significant results for immediacy cues were consistent with the first experiment (immediacy being greater during truthful rather than during deceitful communications) and once again indicated that negative feeling is communicated nonverbally in deceptive communication situations. Deceitful communicators again showed more facial pleasantness but gesticulated and exhibited positive head nods less frequently. Speech duration was less and speech error rate higher for deceitful communicators. Both the effects of actual and role-played deceit served to decrease speech rate. Lengthier communications were obtained with truthful rather than deceitful communicators.

The intent of Mehrabian's third experiment was completely disguised from the subjects and the method was designed to maximize the subject's desire to avoid being caught. Forty-one subjects participated in this experiment. Each subject was taken to a room where another sub-
ject (a confederate of the experimenter) was seated and seemed to be studying instructions. The subject was given about five minutes to read the same set of instructions which explained that the experiment was a study of ESP and described the situation in which he and another subject (the confederate) would participate. They would sit at opposite ends of a partitioned table and try to communicate using ESP. Each would have a button to press, and a buzzer would sound only when both buttons were pressed simultaneously. Since they would not see each other over the partition, they were to use ESP to achieve the buzzes.

The confederate subject enacted either a "cheat" or "no cheat" condition on the basis of a prearranged schedule which was unknown to both the experimenters and those who were recording the behaviors. In the "cheat" condition, after about one minute had elapsed, the confederate subject got up from his chair without saying anything and signaled the subject when to press the buzzer. If the subject was willing to accept the signal they continued in this way and achieved the number of buzzes required for them to receive a cash bonus. In the "no cheat" condition the confederate simply held his button down almost continuously during the entire experiment, so that again the required number of buzzing sounds was achieved.
Thus, following both conditions, the subject reported that he and his partner had successfully communicated using ESP; following the "cheat condition, the subject knew he had cheated in order to get the number of buzzing sounds.

Following the experiment, the interviewer, who had no knowledge of which condition had been enacted, led the subject to an adjacent room, seated him and asked the following questions:

1. "Could you tell me how you went about trying to communicate using ESP?"
2. "How did you feel while you were trying to communicate using ESP?"
3. "Do you think the choice of a partner is important in this type of an experiment?"
4. "Did you follow the instructions I gave you?"

At all times during these interactions the interviewer wore a relatively pleasant facial expression and sat leaning forward about ten degrees in his chair, in a moderately relaxed posture, looking at the subject about 90% of the time. During the entire interview period, the subject's behavior, position and verbalizations were video-recorded from an adjacent room through a one-way mirror, without the subject's knowledge.

The findings of the third experiment support the
results of the other two. Significant results for immediacy cues were consistent with the other experiments. Gesticulation and positive head nods were less frequent among deceptive communicators. The more pleasant facial expressions of deceitful communicators in the former experiments was further refined in that introverted or high anxious communicators exhibited less facial pleasantness while they were being deceptive than low anxious communicators.

This experiment elicited much stronger feelings from communicators than prior experiments. The less pleasant facial expressions of high anxious communicators were interpreted as indicating that they were experiencing too much distress to willfully manipulate the situation by smiling more often. Thus Mehrabian's interpretation of smiling (i.e., that it occurs more frequently in deceptive communications) may be applicable, barring extreme communicator discomfort. Speech error rate was higher and speech duration was lower for deceitful communicators. Once again, lengthier communications were obtained from truthful rather than deceitful communicators. Finally, speech volume was higher for less anxious communicators in this experiment. The results of Mehrabian's experiments indicate that the anxiety level experienced by a de-
ceptive communicator significantly affects the nonverbal behaviors he exhibits.

In sum, Mehrabian's results denote that deceitful communicators nodded less, gestured less and had less frequent leg and foot movements; assumed less immediate positions relative to their addressee, talked more slowly and less frequently, had more speech errors, and smiled more.

These experiments have also provided the following additional information: (a) a greater degree of eye contact and less relaxation are expected in situations where the addressee is somewhat threatening; (b) during awkward interactions smiling is associated with a communicator's effort to relieve tension and placate his addressee; (c) while seated, rates of rocking, gesticulation, and leg and foot movement indicate a communicator's comfort and relaxation; and (d) speech volume is a correlate of a self-assured feeling of a communicator.

At this point some question arises concerning the saliency of the cues observed by Mehrabian as betraying deception. Two particular aspects of his study are relevant. First certain inconsistencies were noted in the results of the three studies. Contradictory observations were made in regard to facial expression. Deceptive subjects in the third experiment did not display the pleasant
facial expression that occurred in both of the previous experiments. This may be due to effects inherent in the experimental design.

Second, Mehrabian failed to report the frequency with which the deception was detected by addressees. Consequently, his study did not distinguish between the cues a deceptive communicator might exhibit and the ones that would actually betray the deception. It is uncertain whether the behaviors observed by Mehrabian would be considered indicative of deception by addressees. Mehrabian assumed these two dimensions of behavior were the same whereas current trends in communication research would question that assumption.

The basic premise of Mehrabian's study is that detecting deception occurs as a result of perceiving the negative nonverbal behaviors of a deceitful communicator. The negative value of the nonverbal component subsequently affects the total message impact as indicated by this formula: $\frac{-n}{+v} = -m$ and the deception is detected. According to the formula, one can assume that if the total message impact of an interaction is negative then the nonverbal component of that message was perceived as negative regardless of the verbal content. In other words, in order for deception to be detected, an addressee must first perceive
the nonverbal behaviors omitted by the deceptive communicator and recognize them as indicating a negative attitude; and second, he must interpret the negative attitude as being a result of deception on the part of the communicator and not the result of some other possible explanation.

In light of the complexity of the decoding process, some questions arose concerning the behaviors cited by Mehrabian as betraying deception. Certainly, the deceptive communicators he observed exhibited specific behaviors. However, it would seem important to focus not only on the deceiver but on the "deceived" when studying the behaviors that betray deception. The addressee must perceive the cues, recognize them as important and ultimately interpret them as indicative of deception for the deceit to be detected. Mehrabian assumed that all the behaviors that he observed were salient, recognizable indices of deception. While carefully measuring and discussing the frequency with which the behaviors occurred, Mehrabian failed to mention the frequency with which the deception was detected in any of the three experiments. In this case the saliency of the cues betraying deception remains uncertain. The present study focused primarily on the addressee and the cues that would be relevant to him in detecting deception in an attempt to evaluate the saliency of the cues elicited from deceitful communicators in Mehrabian's study.
Another important consideration unexplored by Mehrabian concerns the effect of cultural constraints on the interpretation of nonverbal behaviors. Mehrabian contends that nonverbal communications possess a transcultural quality and fails to mention racial or ethnic variety or the absence of it in his subject pool. Certainly, the research of intercultural communication specialists presents persuasive evidence that the cultural context is of extreme importance in decoding nonverbal behaviors. This experimenter questioned the validity of Mehrabian's contention and hoped to explore the possibility of subcultural differences in the interpretation of nonverbal communications by employing a racially mixed subject pool so that any significant differences between blacks and whites could be compared.

In addition to cultural constraints, an individual's interest in and knowledge of nonverbal behavior could influence the manner in which nonverbal messages are interpreted. While the studies done so far were primarily concerned with the effect that the absence of conscious control has on the encoding process in nonverbal communications, the experimenter in this case was mainly interested in the effect that conscious awareness, or the lack of it, has on the decoding of these messages. It was hypothesized that addressees with a greater degree of interest in and/or knowledge of nonverbal behavior would be more consciously
aware of inconsistent messages and consequently more accurate in decoding them. Self rating on a five point differential scale from "no knowledge" to "very knowledgeable," and the number of books read or courses taken concerning nonverbal behavior were employed as a subjective measure of interest in and knowledge of the area. Comparisons could then be made between subjects according to degree of interest and/or knowledge of nonverbal communication.

In critically examining the results of Mehrabian's study, the effect of the artificiality of the experimental design on the behavior of the deceptive communicators should also be considered. The simulated circumstances of the first two experiments served to minimize the anxiety experienced by subjects when being deceptive to the extent that these two experiments yielded somewhat different results from those of the third experiment. In the third experiment subjects were not aware of the actual nature of the experiment and consequently experienced a heightened degree of anxiety when being deceptive. The increased anxiety experienced by these subjects appears to have affected their behavior so that the nonverbal cues exhibited were somewhat different from those of subjects in the first two experiments. For example, Mehrabian's interpretation of smiling (i.e., that it occurs more frequently in deceptive communicators) which was supported in the first two experiments,
was not confirmed by the results of the third experiment (in which anxious communicators did not exhibit this cue). The experimenter maintains that the artificiality of the design in the first two experiments alleviated any sense of anxiety in deceptive communicators by relaxing certain relevant cultural constraints which would normally regulate their behavior. The behaviors observed, in this case, would be other than the ones that would occur in less artificial circumstances. Consequently, the saliency of the cues cited by Mehrabian as indices of deception remains uncertain.

These concerns can be summarized in the following questions:

1) Would the behaviors Mehrabian observed in deceptive communicators betray deception to an addressee?

2) Would certain constraints affect the manner in which an addressee decodes nonverbal communication? Specifically, gender, degree of interest in and awareness of nonverbal communication and cultural orientation were considered important.

As a result of the questions mentioned above, a two-part study was conducted in order to test whether the nonverbal cues observed by Mehrabian would actually betray
deception. In part one, specific data was requested from a group of subjects which it was believed might influence the manner in which they decoded nonverbal cues. Such characteristics as sex, degree of interest in and knowledge of nonverbal communication were considered relevant. These subjects then read an account of an interaction with circumstances similar to those in the third of Mehrabian's three experiments, and selected from a list of nonverbal behaviors those that they thought betrayed deception in that situation. Included in this list were the primary nonverbal cues observed by Mehrabian. The cues selected by subjects in this study as betraying deception were then compared with those observed in deceptive communicators by Mehrabian. In part two, the most frequently selected behaviors from part one were incorporated into a staged interaction which was videotaped. This tape was shown to subjects in order to substantiate whether the cues selected in part one, when observed in an interaction, would be interpreted as communicating a negative attitude and consequently betray the deception.
CHAPTER II

PART I OF THE EXPERIMENT
In reviewing Mehrabian's research on the nonverbal betrayal of deception, discussed in detail in the previous chapter, some questions arose concerning the saliency of the cues Mehrabian observed as indices of deception. Mehrabian's basic premise was that detecting deception occurs as a result of perceiving certain nonverbal behaviors emitted by deceptive communicators and interpreting these nonverbal cues as indicators of a negative attitude. However, both of these processes (perceiving/interpreting) occur within the constraints defined by the interaction itself. For example, an individual in an entirely different culture from his own would experience difficulty in perceiving and decoding nonverbal messages accurately since both these processes are subject to cultural constraints as was evidenced by the work of Hall and others. The possibility of subcultural regulation should also be considered in that specific subcultural groups, Blacks in our culture for example, might place different affective values on various nonverbal behaviors, consequently decoding and encoding them differently. The degree of individual interest in and awareness of nonverbal communication might also influence the manner in which an individual perceives and interprets nonverbal communications in that it may imply the selective retention and perception of nonverbal stimuli. While some individuals either do not perceive certain stimuli as they
occur or selectively process them out of conscious awareness so that they are not remembered, others are more consciously aware of these messages as they are received and more accurate in interpreting them.¹

In addition, an individual's interest in and knowledge of nonverbal communication might be considered a subjective measure of the extent to which decoding nonverbal cues is within that individual's control, i.e. will be consciously perceived and accurately interpreted. This is especially relevant in light of Hall's assertion that the value in studying nonverbal behaviors lies primarily in the lack of conscious control exerted over them.²

Another consideration is the sex of the interactants since characteristically males and females exhibit different kinds of nonverbal behaviors from each other in accord with a culturally defined appropriate "masculine" and "feminine" manner. For example, research has indicated that women use fewer gestures³ than men, but engage in a greater degree of eye contact.⁴ Differences in gender could possibly affect not only an individual's own nonverbal behaviors, but also the manner in which he or she perceives and interprets the behavior of others.

Part one of this study deals with the perception and decoding of nonverbal cues and tests the following two
hypotheses:

(1) That the behaviors observed by Mehrabian in deceptive communicators may not indicate deception;

(2) That personal characteristics such as sex, and degree of interest in and knowledge of nonverbal communication influence an individual's interpretation of nonverbal cues;

These two hypotheses were tested by comparing differences between individuals in the behaviors they believed relevant in detecting deception and comparing these selected behaviors with the behaviors elicited from deceptive communicators by Mehrabian.

In part one of this study, presented in this chapter, a group of subjects was asked to read an account of an interaction and indicate the nonverbal behaviors they believed would communicate a deceptive response in that specific situation. Subjects indicated their choices by checking off appropriate cues from a list of twenty-four nonverbal behaviors found to indicate deception. The behaviors observed by Mehrabian were among those included on
Employing a checklist served several purposes. First, it allowed subjects to choose from a number of non-verbal cues those which they believed relevant to detecting deception in that particular situation. In addition, the checklist provided an opportunity to compare the non-verbal cues chosen by subjects in this experiment with those observed by Mehrabian in order to verify whether or not the cues Mehrabian observed were salient indices of deception. Finally, it served as a source from which the experimenter could extract the most frequently chosen behaviors in order to incorporate them into the staged interaction that served as the basis of part two of this research. The experimenter had hoped to employ a racially mixed subject pool in part one in order to compare any differences between the cues selected by blacks and whites. However, it proved impossible for a variety of reasons to secure a substantial number of black responses and consequently this aspect of the study was abandoned.

**METHOD**

Seventy-five University of Delaware undergraduate students volunteered to participate as subjects in the experiment. Initially, twenty of these subjects were used in a pilot study. However, when no major revisions of either
the handout or instructions was necessary, the pilot study data was analyzed with the remaining subject responses.

Brief instructions were provided for the subjects who were then given handouts (see Appendix A), the first page of which asked them to provide some information about themselves (age, sex, race, books read or courses taken on nonverbal communication, degree of knowledge of nonverbal communication) which it was thought might influence their responses.

The second page of the handout contained an account of an interaction in which there was persuasive evidence that one of the interactants was being deceptive. The situation and interview questions were taken from the third of Mehrabian's three experiments and were presented as follows:

You are conducting research in ESP. As part of this project, you have been giving people an ESP test. After explaining how to take the test to two subjects you leave the room and give them sufficient time to complete it. After testing a substantial number of people, you have found that out of a possible perfect score of 20, the highest score so far has been a 5. The last two subjects you score turn in a score of 20. You strongly suspect that they have cheated. Immediately after scoring their test you interview one of the people involved asking the following questions:

1) Could you tell me how you went about trying to communicate using ESP?

2) How did you feel while you were trying to communicate with ESP?
3) Do you think the choice of a partner is important in this type of an experiment?

4) Did you follow the instructions I gave you?

After reading this description, subjects were asked to indicate on the checklist behaviors that would be relevant to their decision whether cheating had occurred or not. The checklist was composed of 24 nonverbal behaviors, five of which Mehrabian observed in deceptive communicators:

1) he smiles frequently

2) when you tell him to pull up a chair and sit down, he sits so far away that you have to ask him to move closer (according to Mehrabian, deceptive communicators assumed less immediate positions relative to the addressee)

3) he answers your questions briefly with no elaboration (shorter speech duration)

4) he produces numerous speech errors

5) as he speaks, he does not make many gestures

Some of the behaviors included were the exact opposite of those observed by Mehrabian. For example:

1) he gestures frequently while speaking

2) he nods his head as you speak

3) he exhibits frequent (nervous) movements

The remainder of the behaviors listed were included by the experimenter as possibly communicating a negative attitude
and were randomly chosen from a variety of articles, books and periodicals on nonverbal communication.

In order to arrange the behaviors on the checklist each behavioral cue was written on a piece of paper. Papers were selected and the behaviors ordered on the checklist in the same order in which they were chosen. Behaviors were ordered so that Mehrabian's cues were distributed throughout the list and contradictory behaviors did not appear in sequence. (See Appendix B for a list of the nonverbal cues in order of their actual checklist appearance.)

Subjects were not limited in the number of choices available to them and could select any number of cues which they thought relevant. After checking their choices on the list, subjects were asked to indicate the minimum number of cues that would be necessary in order for them to decide that cheating had occurred, and to rank order these cues from most to least important. The rank ordering was requested in order to facilitate measurement of the relative importance of each cue. The average minimum number of cues necessary provided a guideline for deciding how many cues to include in the taped interaction. The nonverbal behaviors from the checklist were divided into the following nonverbal dimensions: facial/head, vocal, proximity, body orientation, body movement. These cue groupings
are consistent with general areas of nonverbal study.

RESULTS

Chi square tests were used to analyze differences in subjects' responses. Differences in the selection of types of cues were not found to be significant across the following conditions:

1) males vs. females
2) subjects who indicated that they possessed varying degrees of knowledge about nonverbal communication on a 3 point differential scale
3) subjects who had read/taken less than 2 books/courses and those who had read/taken 2 or more books/courses

(See tables # 1-3 in appendix for chi square analysis.)

Some interesting trends were noted in the manner in which subjects selected general cue groupings. These trends can only be suggestive however, since the sample size was so small. Males tended to select head and vocal cues more frequently than females. Orientation cues were chosen more often by the female subjects (See Graph 1, p. 101). Among subjects who indicated varying degrees of knowledge of nonverbal communication, those subjects with little knowledge chose vocal and movement cues more frequently than subjects who were somewhat or very knowledgeable. Subjects
who were very knowledgeable selected proximity cues with
greater frequency (See Graph 2, p. 102).

Subjects who had read/taken 0-1 books/courses dif-
fered from those who had read/taken 2 or more books/courses
in that the latter selected vocal and orientation cues more
frequently (See Graph 3, p. 103).

Differences between males and females in the selec-
tion of types of cues is reflected in differences in the
selection of individual cues. (See Table 4 for these dif-
ferences) For example, 3% of the females chose cue #4
(slouches in the chair--orientation cue), while this cue
was only chosen by .6% of male subjects. 2.6% of the fe-
male subjects chose cue #13 (leans back in the chair--ori-en-
tation cue) while 1.1% of male subjects selected it. 15%
of male subjects, however, selected cue #6 (avoids eye con-
tact--facial cue) as opposed to 11% of female subjects. 2%
of male subjects selected cue #8 (nods his head--head cue).
No female subjects selected this cue.

The frequency with which the individual cues were
selected across conditions are presented in the following
tables.
<table>
<thead>
<tr>
<th>NONVERBAL CUES</th>
<th>MALES</th>
<th>FEMALES</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) smiles frequently</td>
<td>7</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>2) pauses frequently while speaking</td>
<td>17</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td>3) doesn't show much facial expression</td>
<td>7</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4) slouches in the chair</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>5) puts his hands in his pockets</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>6) avoids eye contact</td>
<td>44</td>
<td>23</td>
<td>67</td>
</tr>
<tr>
<td>7) gestures frequently</td>
<td>8</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>8) nods his head</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>9) speaks in a loud voice</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>10) folds arms</td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>11) mumbles</td>
<td>23</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>12) sits so far away must be asked to move closer</td>
<td>21</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>13) leans back</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>14) frequent nervous movements</td>
<td>37</td>
<td>24</td>
<td>61</td>
</tr>
<tr>
<td>15) sits sideways</td>
<td>20</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>16) holds head to side</td>
<td>3</td>
<td>4</td>
<td>7</td>
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<tr>
<td></td>
<td>MALES</td>
<td></td>
<td>FEMALES</td>
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<td>N</td>
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<tr>
<td>17) crosses legs</td>
<td>3</td>
<td>1.0</td>
<td>4</td>
</tr>
<tr>
<td>18) voice high pitched</td>
<td>2</td>
<td>.6</td>
<td>6</td>
</tr>
<tr>
<td>19) leans forward</td>
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<td>0</td>
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<tr>
<td>20) answers briefly</td>
<td>31</td>
<td>10.5</td>
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<tr>
<td>21) numerous speech errors</td>
<td>16</td>
<td>5.4</td>
<td>10</td>
</tr>
<tr>
<td>22) folds hands</td>
<td>4</td>
<td>1.3</td>
<td>4</td>
</tr>
<tr>
<td>23) speaks rapidly</td>
<td>8</td>
<td>2.7</td>
<td>2</td>
</tr>
<tr>
<td>24) few gestures</td>
<td>12</td>
<td>4.0</td>
<td>9</td>
</tr>
<tr>
<td>CUES</td>
<td>0-LITTLE (N=166)</td>
<td>SOMEWHAT (N=232)</td>
<td>VERY (N=91)</td>
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<tr>
<td>----------------------------------------</td>
<td>------------------</td>
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<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>1) smiles frequently</td>
<td>7</td>
<td>4.8</td>
<td>5</td>
</tr>
<tr>
<td>2) pauses frequently while speaking</td>
<td>9</td>
<td>5.4</td>
<td>14</td>
</tr>
<tr>
<td>3) doesn't show much facial expression</td>
<td>3</td>
<td>1.8</td>
<td>4</td>
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<tr>
<td>4) slouches in chair</td>
<td>1</td>
<td>.6</td>
<td>3</td>
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<tr>
<td>5) puts hands in pockets</td>
<td>5</td>
<td>3.0</td>
<td>4</td>
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<tr>
<td>6) avoids eye contact</td>
<td>16</td>
<td>7.8</td>
<td>35</td>
</tr>
<tr>
<td>7) gestures frequently</td>
<td>4</td>
<td>2.4</td>
<td>7</td>
</tr>
<tr>
<td>8) nods his head</td>
<td>2</td>
<td>1.2</td>
<td>4</td>
</tr>
<tr>
<td>9) speaks in a loud voice</td>
<td>0</td>
<td>.00</td>
<td>4</td>
</tr>
<tr>
<td>10) folds arms</td>
<td>4</td>
<td>2.4</td>
<td>9</td>
</tr>
<tr>
<td>11) mumbles</td>
<td>16</td>
<td>9.6</td>
<td>14</td>
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<tr>
<td></td>
<td>0-LITTLE</td>
<td>SOMEWHAT</td>
<td>VERY</td>
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<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
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<tr>
<td>12) sits so far away must be asked to move closer</td>
<td>13</td>
<td>7.8</td>
<td>15</td>
</tr>
<tr>
<td>13) leans back</td>
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<td>1.2</td>
<td>5</td>
</tr>
<tr>
<td>14) frequent nervous movements</td>
<td>22</td>
<td>13.2</td>
<td>27</td>
</tr>
<tr>
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<td>13</td>
<td>7.8</td>
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</tr>
<tr>
<td>16) holds head to side</td>
<td>3</td>
<td>1.8</td>
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</tr>
<tr>
<td>17) crosses legs</td>
<td>1</td>
<td>0.6</td>
<td>5</td>
</tr>
<tr>
<td>18) voice high pitched</td>
<td>2</td>
<td>1.2</td>
<td>5</td>
</tr>
<tr>
<td>19) leans forward</td>
<td>1</td>
<td>0.6</td>
<td>1</td>
</tr>
<tr>
<td>20) answers briefly</td>
<td>18</td>
<td>10.8</td>
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<tr>
<td>21) numerous speech errors</td>
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<tr>
<td>23) speaks rapidly</td>
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<td>2.4</td>
<td>5</td>
</tr>
<tr>
<td>24) few gestures</td>
<td>9</td>
<td>5.4</td>
<td>8</td>
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<tr>
<td></td>
<td>0-1</td>
<td></td>
<td>2 OR MORE</td>
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<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>16) holds head to side</td>
<td>4</td>
<td>1.3</td>
<td>3</td>
</tr>
<tr>
<td>17) crosses legs</td>
<td>3</td>
<td>.98</td>
<td>4</td>
</tr>
<tr>
<td>18) voice high pitched</td>
<td>2</td>
<td>.65</td>
<td>6</td>
</tr>
<tr>
<td>19) leans forward</td>
<td>1</td>
<td>.32</td>
<td>1</td>
</tr>
<tr>
<td>20) answers briefly</td>
<td>35</td>
<td>11.5</td>
<td>12</td>
</tr>
<tr>
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<td>2</td>
</tr>
<tr>
<td>24) few gestures</td>
<td>11</td>
<td>3.6</td>
<td>10</td>
</tr>
</tbody>
</table>
The average number of cues chosen across conditions was 5.8 and the average minimum number needed to decide if cheating had occurred was 4. Consequently, the four most frequently selected behaviors were chosen to be incorporated into the staged interaction in part two of this study. The most frequently selected behaviors were:

1) cue #6, he avoids looking at you during the interview (selected by 13.8% of all subjects)
2) cue #14, he exhibits frequent nervous movements (selected by 12.4% of all subjects)
3) cue #20, he answers your questions briefly with no elaboration (selected by 9.6% of all subjects)
4) cue #11, he mumbles and is difficult to understand (selected by 7.5% of all subjects).

The frequency with which these four behavioral cues appear among the top four rank ordered cues across all conditions is presented in Table 7 of the Appendix.

With one exception, cue #20 (he answers your questions briefly with no elaboration), none of the cues elicited from deceitful communicators by Mehrabian was among the four most frequently selected behaviors. The behaviors observed in deceptive communicators by Mehrabian were chosen with the following frequency:

1) cue #1, he smiles frequently (selected by 2.8%
of all subjects)

2) cue #12, he sits so far away you must ask him to move closer (selected by 7.1% of all subjects)

3) cue #20, he answers your questions briefly with no elaboration (selected by 9.6% of all subjects)

4) cue #21, he produces numerous speech errors (selected by 5.3% of all subjects).

**DISCUSSION**

The four behavioral cues most frequently selected from the checklist were: (1) cue #6, he avoids looking at you during the interview; (2) cue #14, he exhibits frequent nervous movements; (3) cue #20, he answers your questions briefly with no elaboration; (4) cue #11, he mumbles and is difficult to understand. With the exception of cue #20 (he answers your questions briefly with no elaboration), none of the behaviors observed by Mehrabian are among the four most frequently chosen cues. This supports the hypothesis that the behaviors observed by Mehrabian would not be selected by subjects in this experiment as betraying deception. The different results of the two studies could be a consequence of the distinction between the cues a deceptive communicator might exhibit and the ones that would actually give him away. For example, deceptive communicators might exhibit any number of nonverbal behaviors unrelated
to the deceitful nature of their communication or, conversely, relevant behavioral cues could be dismissed by addressees as insignificant. Mehrabian's primary concern was the deceptive communicator per se and the behavior he exhibited, whereas the present study focuses directly on the addressee and the cues he would consider significant in detecting the deception. Mehrabian assumed these two dimensions of behavior were the same whereas part one of the present experiment does not support this assumption.

While the specific cues themselves were different, an interesting similarity between the results of the two studies should be noted. Although the cues chosen by subjects in this study are not the same behaviors as those observed by Mehrabian, they are similar types of cues.

The nonverbal behaviors included in the checklist were divided into the following categories or types:

1) facial or head cues: #1, #3, #6, #8, #16
2) vocal cues: #20, #2, #9, #11, #21, #23, #18
3) body orientation cues: #4, #10, #15, #17, #22
4) proximity cues: #13, #19, #12
5) body movement cues: #5, #7, #14, #24

The relative importance of different types of nonverbal cues in deciding if cheating had occurred can be observed in the rank ordering of the four most frequently
chosen behaviors: these behaviors were in order of decreasing importance:

1) #6, he avoids looking at you (facial cue)
2) #14, he exhibits frequent (nervous) movements (body movement)
3) #20, he answers your questions briefly with no elaboration (vocal cue)
4) #11, he mumbles and is difficult to understand (vocal cue)

The cues Mehrabian observed in deceptive communicators are the same types of cues as the above:

1) #1, he smiles frequently (facial cue)
2) #20, he answers your questions briefly with no elaboration (vocal cue)
3) #21, he produces numerous speech errors (vocal cue)
4) #24, he does not make many gestures (body movement cue)

The results of both studies indicate the significance of facial, vocal and body movement cues in studying deceptive communicators. This suggests that of the nonverbal communication modalities, kinesics and paralanguage are of primary importance in decoding deceptive messages.

The primary importance of the facial component in the rank ordering in this experiment supports the findings
of Mehrabian and Ferris that in the communication of inconsistent messages, the facial component contributes the most to the overall message inferred, followed by the vocal component. Ekman and Friesen have also indicated the importance of facial cues in maximizing the amount of external feedback in an interaction.

Subjects were consistent in the selection and rank ordering of cues, regardless of gender, self-perception of the degree of knowledge of nonverbal communication, or the number of books read or courses taken in this area. The lack of significant differences between samples could be explained in several ways. For example, the degree of homogeneity in the subject pool might have resulted in the lack of variety in the selection of cues. Subjects who participated in this experiment had a number of characteristics in common: they were all university students of similar ages (19-22), racial type (Caucasian), educational background and socio-economic status. It may be inferred that shared characteristics such as these exerted a greater influence over subjects' choices than did gender or self-perception of degree of knowledge of nonverbal behavior. The lack of distinction in selection of cues between individuals who indicated they possessed varying degrees of knowledge of nonverbal communication may offer support for Hall's contention that once the appropriate nonverbal
behavior is learned, it is maintained largely outside of conscious awareness.\(^8\)

In addition, the nature of the task as it was presented might have influenced subjects' responses in that when choosing behavior that would betray deception, particularly in an individual unknown to them, subjects tended to consistently select fairly obvious cues (i.e. subject to few if any other interpretations). In this case it is possible that subjects employed implicit cultural norms as guidelines in choosing the appropriate behaviors. This would explain not only the uniformity of selections across samples but also the parallel between the cues chosen by subjects in this study and those observed by Mehrabian in deceptive communicators. While Mehrabian observed the behavior of specific individuals in a particular situation, subjects in this experiment chose the behaviors that would communicate negative attitudes to an addressee in this culture.

The difficulty inherent in interpreting nonverbal communication independent of the situation in which they occur is evidenced by the problem some subjects encountered in selecting the appropriate cues. Sixteen subjects who participated in the experiment wrote paragraphs on their own initiative indicating that the nonverbal behavior they
selected might not be indicative of deception in every instance. Many indicated that without knowing the individual it would be impossible to accurately decode the nonverbal messages he sends. The following comments are quoted directly from some of these papers:

"... all of the cues do not necessarily mean he's lying."

"I think it depends on how well you know the person."

"... a lot of behaviors could be nervousness from testing."

"... any of the cues I checked might also indicate mere nervousness or shyness."

"... it would depend on the race and culture of the subject. My cues are based on judging another person like me."

"This completely depends on the person who performs these cues."

Subjects encountered difficulty in interpreting the 24 behaviors listed and in choosing between them when deprived of either knowledge of the interactants and/or the constraints exerted by the environment in which the communication occurred. Obviously there is information available in an actual interaction which can modify the interpretation of specific behaviors. Nevertheless, although some
subjects expressed reluctance in interpreting the behaviors without increased information about the interaction, the cues chosen remained consistent across conditions.

CONCLUSION

The data from the checklist condition indicates that certain characteristics of the subjects (sex, and an individual's perception of his own degree of awareness of nonverbal communication, books read and/or courses taken) did not exert a significant influence over their choice of behaviors indicating deception. The experimenter postulated that consistency of selections across these samples could be due in part to certain cultural similarities shared by members of the subject pool as well as the nature of the task as it was presented to subjects. The most frequently chosen cues across conditions were: 1) cue #6 (avoids eye contact), 2) cue #11 (mumbles), 3) cue #14 (frequent nervous movements) and 4) cue #20 (answers briefly). With the exception of #20 (answers briefly), these were not the cues elicited from deceitful communicators in the Mehrabian experiments: therefore, the accuracy and adequacy of Mehrabian's cues in betraying deception were not confirmed by this study.

Although all subjects chose the same cues fairly consistently, a number of subjects experienced difficulty
in selecting cues without knowing the individual who was exhibiting the behaviors and without being aware of the environment and conditions in which the interaction took place.
CHAPTER III

PART II OF THE EXPERIMENT
When asked to read an account of an interaction and select from a checklist the behaviors that would betray deception in that situation, subjects in part one of this study did not choose the same behaviors (with the exception of cue #20 (answers briefly), that Mehrabian found characterized deception. It was suggested that these differences might be due to the fact that Mehrabian observed the behavior exhibited by deceptive communicators per se, while in the present experiment the focus was on the nonverbal cues that would be significant to an addressee in detecting deception.

The most frequently chosen behaviors from part one were incorporated into an interaction and videotaped. This videotape was shown to a group of subjects in order to ascertain whether these behavioral cues would be considered important indices of deception when viewed within the context of an "actual" interaction. Major features of the interaction (the circumstances, the relationship between the interactants and interview questions) remained the same as those described to subjects in part one. In this manner, subjects in part two were provided with the same cognitive input as subjects in part one, but could actually observe the nonverbal behaviors as they occurred.

Since the average number of nonverbal cues indicated by subjects in part one as necessary to decide whe-
ther a communicator was being deceptive was four, the four most frequently selected cues were incorporated into the interaction. They are:

1) he avoids eye contact with the interviewer
2) he mumbles and is difficult to understand
3) he exhibits frequent nervous movements
4) he answers questions briefly with no elaboration

To maintain consistency between parts one and two of this study, the same checklist was used in both parts (i.e., the cues were listed in the same order). (See Appendix C for a copy of the handout and checklist used in part two.)

It was hypothesized that subjects in part two would perceive the four incorporated nonverbal behaviors as they occurred in the interaction and interpret them as indicative of deception.

**METHOD**

Fifty-five University of Delaware students participated in part two of this study. They were given initial instructions in which they were told that they were going to see a tape of an actual interview in which the interviewer suspected the other interactant of cheating on an
experiment. They were informed that the deceptive communicator was not aware that he was being taped since the videotape was filmed through a one way mirror.

Actually, the videotape was of a staged interaction incorporating the four most frequently chosen behaviors from part one. The interview questions remained the same as those used by Mehrabian and consequently the same as those indicated in the handout used in part one of this study.

The first videotape was made with the assistance of a man who had a considerable amount of acting experience. He was asked to incorporate the four nonverbal cues while answering the interview questions as though he did not cheat. According to the formula presented in the introduction to this thesis, \( \frac{\text{n}}{\text{TV}} = -m \), the total message impact would be negative and the deception detected if the nonverbal component was perceived as negative, regardless of the positive value of the verbal component.

A number of interactions were taped and one was chosen to show subjects by the experimenter on the basis of the clarity with which the nonverbal cues were expressed. This tape was shown to a pilot group of subjects (n=20). In a discussion afterwards, these students expressed their belief that the interaction was staged because of the over-
emphasis on certain nonverbal behaviors which consequently appeared exaggerated when viewed on the tape.

Another videotape was made of the interaction using an individual who had no acting experience. It was believed that someone lacking in stage experience might communicate the cues somewhat less emphatically than a stage actor would and thus the interaction would appear more natural.

Once again a series of interactions was filmed and one videotape was chosen by the experimenter to be shown to subjects on the basis of the clarity with which the nonverbal behaviors were expressed. The tape was shown to a pilot group (n=12). These subjects indicated that the interaction seemed credible and natural and that the nonverbal behaviors, although easily recognizable, did not appear staged. In addition this tape was shown to several faculty members from the Communication Department at the University of Delaware who found it acceptable and credible. This tape was selected by the experimenter to be shown to subjects as the stimulus material in part two of this research.

The videotaped interaction was introduced to subjects in the following manner:

You are about to watch a tape of an interview with a subject who has taken part in an ESP experiment. In this experiment I was trying to ascertain what
variables people use in order to conceptualize or describe ESP communication. I was not really interested in whether people could communicate with ESP or not but rather if they conceptualized it as being made up of source, message, channel and receiver, in a manner similar to other forms of communication. In order to do this, I interviewed all of the subjects one at a time immediately after the test and kept a record of those interviews on tape so that I could go over them later and see how often terms such as source, message, channel and so on were mentioned. To keep the interview as relaxed and natural as possible, the camera was hidden behind a one-way mirror so that the subjects would not be aware of it. Naturally most subjects did not do very well on the ESP part of the test and so I was surprised to find two subjects who scored significantly higher than anyone else on the test. I was extremely curious about why they had scored higher. In fact, I suspected that cheating might have occurred. Although the subject answered the questions as though he did not cheat, I found myself closely watching him, trying to decide if he had cheated or not. I'm going to show you a videotape of that interview and ask you if you think he cheated or not.

After viewing the interaction, each subject was given a handout (see Appendix C) on which they were asked to indicate whether they believed the person had cheated or not, and to write a paragraph explaining the basis for their decision. They were asked to write the paragraph before seeing the checklist so that it would be possible to ascertain whether the four incorporated behaviors were perceived as important cues independent of their presence on the checklist.

After writing the paragraph, subjects were asked to choose from a checklist of 24 behaviors any cues which were
relevant to their decision. The checklist was the same as
the one employed in part one of this study. (See Appendix
C). After listing any additional important cues that were
not on the checklist, subjects rank-ordered their choices
from most to least important in order to facilitate mea-

urement of the relative importance of each cue.

RESULTS

Of all subjects who participated in part two (n=55),
80% detected deception (n=44), and 20% did not (n=11).

Chi square tests did not indicate significance in
the differences between subjects who detected deception
and those who did not in the selection of types of nonver-
dal cues from the checklist (See Table 8 in Appendix.)

Some interesting trends were noted in the manner in
which subjects selected general cue groupings. A larger
subject pool resulting in a larger data base would allow
more complete and refined analysis of these trends. Sub-
jects who detected deception selected vocal and body ori-
entation cues more frequently than subjects who did not de-
tect deception. Proximity and movement cues were chosen
more often by subjects who did not detect deception. (See
Graph #4, p. 104).

Differences between subjects who detected deception
and those who did not detect deception in the selection of types of cues were reflected in the selection of individual cues. 9% of the subjects who detected deception selected cue #2 (pauses frequently while speaking--body orientation cue), while only 2.9% of those who did not detect deception chose it. 8.8% of those who detected deception selected cue #11 (mumbles--vocal cue) from the checklist. This cue was chosen by 5.9% of those who did not detect deception. Previous research has clearly indicated that speech hesitancy is indicative of lack of confidence. Evidently some subjects interpreted this lack of confidence to be an indication of deception.

17.6% of the subjects who did not detect deception selected cue #14 (frequent nervous movements--movement cue) as opposed to 15.1% of those who did not detect deception. 9.8% of those who did not detect chose cue #7 (gestures frequently--movement cue). 5.2% of the subjects who did detect deception selected this cue. These are general trends which would require a larger data base for further evaluation and analysis. The frequency with which the individual cues were selected by subjects who did or did not detect deception are presented in Table 9.
## TABLE 9

FREQUENCY OF SELECTION OF INDIVIDUAL NONVERBAL CUES
ACCORDING TO DETECTION OF DECEPTION

<table>
<thead>
<tr>
<th>CUES</th>
<th>DETECTED (N=251)</th>
<th>DID NOT DETECT (N=34)</th>
<th>TOTAL (N=285)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) smiles frequently</td>
<td>N 4 1.6</td>
<td>N 1 2.9</td>
<td>N 5 1.7</td>
</tr>
<tr>
<td>2) pauses frequently while speaking</td>
<td>18 9.1</td>
<td>1 2.9</td>
<td>19 6.6</td>
</tr>
<tr>
<td>3) doesn't show much facial expression</td>
<td>17 6.8</td>
<td>5 14.7</td>
<td>22 7.7</td>
</tr>
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<td>4) slouches in chair</td>
<td>14 5.6</td>
<td>1 2.9</td>
<td>15 5.2</td>
</tr>
<tr>
<td>5) puts hands in pockets</td>
<td>4 1.6</td>
<td>0 0.0</td>
<td>4 1.4</td>
</tr>
<tr>
<td>6) avoids eye contact</td>
<td>29 11.5</td>
<td>1 2.9</td>
<td>30 10.5</td>
</tr>
<tr>
<td>7) gestures frequently</td>
<td>13 5.2</td>
<td>3 8.8</td>
<td>16 5.6</td>
</tr>
<tr>
<td>8) nods his head</td>
<td>2 .79</td>
<td>0 0.0</td>
<td>2 .7</td>
</tr>
<tr>
<td>9) speaks in a loud voice</td>
<td>0 0.0</td>
<td>1 2.9</td>
<td>1 .3</td>
</tr>
<tr>
<td>10) folds arms</td>
<td>6 2.4</td>
<td>0 0.0</td>
<td>6 2.1</td>
</tr>
<tr>
<td>11) mumbles</td>
<td>22 8.8</td>
<td>2 5.9</td>
<td>24 8.4</td>
</tr>
<tr>
<td>12) sits so far away must be asked to move closer</td>
<td>7 2.7</td>
<td>0 0.0</td>
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<td>13) leans back</td>
<td>3 1.2</td>
<td>3 8.8</td>
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<td>14) frequent nervous movements</td>
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<td>6 17.6</td>
<td>44 15.4</td>
</tr>
<tr>
<td>15) sits sideways</td>
<td>3 1.2</td>
<td>0 0.0</td>
<td>3 1.0</td>
</tr>
<tr>
<td></td>
<td>DETECTED</td>
<td></td>
<td>DID NOT DETECT</td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
<td>---</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>16) holds head to side</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>17) crosses legs</td>
<td>18</td>
<td>7.1</td>
<td>3</td>
</tr>
<tr>
<td>18) voice high pitched</td>
<td>1</td>
<td>.39</td>
<td>0</td>
</tr>
<tr>
<td>19) leans forward</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>20) answers briefly</td>
<td>35</td>
<td>13.9</td>
<td>7</td>
</tr>
<tr>
<td>21) numerous speech errors</td>
<td>7</td>
<td>2.7</td>
<td>0</td>
</tr>
<tr>
<td>22) folds hands</td>
<td>1</td>
<td>.39</td>
<td>0</td>
</tr>
<tr>
<td>23) speaks rapidly</td>
<td>2</td>
<td>.79</td>
<td>0</td>
</tr>
<tr>
<td>24) few gestures</td>
<td>7</td>
<td>2.7</td>
<td>0</td>
</tr>
</tbody>
</table>
The paragraphs written by subjects were read and analyzed according to the percentage of total number of responses for the frequency with which the four incorporated cues were mentioned.

Approximately 38% of those who detected deception referred to the incorporated behavioral cues in the paragraphs they wrote indicating that these cues were perceived as relevant independent of their presence on the checklist. Two percent of those who did not detect deception made mention of the cues in their paragraphs. Among those who detected deception the top four rank ordered cues were the four incorporated behavioral cues:

1) cue #14 (15.8%) - frequent nervous movements
2) cue #6 (11.5%) - avoids eye contact
3) cue #20 (13.9%) - answers briefly
4) cue #11 (8.8%) - mumbles

Those who did not detect deception included two of the four incorporated cues in the top four rank ordered:

1) cue #14 (17.6%) - frequent nervous movements
2) cue #20 (14.7%) - answers briefly
3) cue #3 (14.7%) - shows little facial movement
4) cue #13 (8.8%) - leans back

Subjects who indicated that cheating had occurred chose an average of 5.7 cues from the checklist as opposed to an
average of 3 for those who did not detect deception.

DISCUSSION

The results of part two of this study indicate that the behavioral cues selected by subjects in part one are considered important indices of deception when viewed within the context of an "actual" interaction. Eighty percent of the subjects who participated in this part of the study detected deception. In addition to consistently selecting the four incorporated behaviors from the checklist, subjects who detected deception rank ordered these cues as the four most relevant to their decision that cheating had occurred. Of the subjects who detected deception, thirty-six percent mentioned lack of eye contact as an important cue in the paragraphs they wrote explaining how they made their decision; 20% indicated that the individual mumbled and was difficult to understand; 61% referred to the deceptive communicator's frequent nervous movements; and 34% indicated that he answered questions briefly with no elaboration. These percentages are especially interesting in comparison with the percent of subjects who selected these cues from the checklist. A greater percentage of the subjects who detected deception mentioned the incorporated cues in the paragraphs they wrote than selected them from the checklist. These differences can be briefly outlined
as follows:

<table>
<thead>
<tr>
<th>mentioned in paragraph</th>
<th>nonverbal cue</th>
<th>selected from checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>36%</td>
<td>#6 (lack of eye contact)</td>
<td>11.5%</td>
</tr>
<tr>
<td>20%</td>
<td>#11 (mumbled)</td>
<td>8.8%</td>
</tr>
<tr>
<td>61%</td>
<td>#14 (frequent nervous movements)</td>
<td>17.6%</td>
</tr>
<tr>
<td>34%</td>
<td>#20 (answers briefly with no elaboration)</td>
<td>13.9%</td>
</tr>
</tbody>
</table>

This clearly indicates that these incorporated behaviors were considered important indices of deception by these subjects independent of their presence on the checklist since these paragraphs were written by subjects before they selected cues from the list. The results support the experimenter's contention concerning the primary importance of the addressee in any discussion of the betrayal of deception and suggest some reasons why some subjects (n=11) failed to detect deception. It will be recalled that in order for deception to be detected (\( \frac{\text{m}}{n} = -\text{m} \)), the addressee must perceive the nonverbal behaviors as they occur and then interpret them as communicating a negative attitude. If a breakdown occurs in either of these processes (perception/interpretation) the negative impact of the total message will remain unnoticed. The deception was not detected by some subjects as a result of either their failure to perceive the nonverbal cues or to interpret
them as relevant.

The paragraphs written by subjects who did not detect deception were extremely brief in comparison to those written by subjects who detected deception. In addition to being succinct, these statements rarely referred to specific behaviors as relevant to the subject's decision. It is interesting to note, however, that there were no significant differences between subjects who detected deception and those who did not in the selection of cues from the checklist, or, in particular, in the selection of the incorporated behaviors. In other words, subjects who did not detect deception differed from those who did detect deception in the frequency with which they mention the incorporated cues in the paragraphs they wrote but not in the selection of these cues from the checklist. This suggests that subjects who did not detect deception perceived the cues as having occurred in the interaction (i.e., selected them from the checklist) but did not interpret them as relevant to the total message impact (i.e., failed to mention them in the paragraph they wrote explaining their decision). The presence of two of the four incorporated cues among the top four rank ordered behaviors of subjects who did not detect deception indicates that some of these subjects believed the cues to be relevant to their decision, but did not decode them as indicating a
negative attitude. The total message impact was not interpreted as negative by these subjects as a result of their failure to either perceive the cues or to decode them accurately. Consequently, the deception remained undetected.

The experimenter also postulates that personal characteristics unexplored by this study affect an individual's interpretation of nonverbal stimuli. For example, one subject perceived the cues, selected them from the checklist and interpreted them as communicating negative attitude. However, she believed this negative attitude to be a reaction to the experimenter's "aggressiveness" and not a result of the communicator's deception.

In sum, the results demonstrated that the four cues extracted from the responses of subjects in part one of this study were easily recognized and interpreted as betraying deception by 80% of all subjects when viewed in a videotaped interaction.

CONCLUSION

Eighty percent of the subjects who participated in this study detected the deception. These subjects made frequent reference to the four incorporated behavioral cues in the paragraphs they wrote explaining their decision. In addition, subjects who detected deception selected the in-
corporated behaviors from the checklist with greater frequency than any other cues and rank ordered them as the four most important cues in their decision that cheating had occurred.

The experimenter postulated that some subjects failed to detect deception as a result of either not perceiving the nonverbal cues, not recognizing them as relevant, or misinterpreting them. The lack of reference to specific behaviors indicated that some subjects did not perceive the cues independent of their presence on the checklist. Other subjects who did not detect deception consistently selected the incorporated cues from the checklist suggesting that they recognized the behaviors as having occurred but did not interpret them as indicative of deception. Additional support for this is found in the rank ordering of cues by this sample (did not detect) in which two of the four incorporated behavioral cues were listed as relevant to the subject's decision that cheating had not occurred.

In summary, the evidence supports the hypothesis that the cues would be perceived and interpreted as indicative of deception by a majority of subjects.
CHAPTER IV

DIRECTIONS FOR FUTURE RESEARCH

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This study was conducted in order to answer some basic questions concerning the detection of deception. Deception is a type of inconsistent message: that is, one in which the verbal and nonverbal components are of different affective value. In a message such as this, the nonverbal portion, if perceived, determines the total message impact. The process involved can be diagrammed as follows:
\[ \frac{\text{in}}{+v} = \text{im} \].
In studying the detection of deception, one must examine not only the deceptive communicator and the behavioral cues he exhibits but also the addressee's ability to perceive these cues and recognize their relevance to the total inferred message. A communicator who is unwilling or unable to express his feelings explicitly can be expected to exhibit avoidance reactions which are reflected in nonverbal cues.

Certain constraints are influential in determining an addressee's ability to decode these nonverbal cues. Such aspects as the relationship between the interactants (perceived degree of mutual liking, power, status, etc.), the environment in which the interaction occurs, and cultural and group norms concerning appropriate behavior should be considered. In addition, certain personal characteristics of the interactants could influence either the encoding or decoding process. For example, inability to accurately interpret nonverbal cues is considered sympto-
matic of certain types of paranoid personalities.

Albert Mehrabian has extensively researched nonverbal messages and in one study delineated specific behavioral cues that he believed betrayed deception. The present study was conducted as a result of questions which arose concerning certain assumptions inherent in the theoretical framework within which Mehrabian operates. First is the assumption that in researching human behavior certain "variables" can be "separated out" in order to be examined. The experimenter postulates that in as much as human behavior always occurs within cultural and contextual constraints, it cannot be accurately decoded without knowledge of these constraints, especially when examining communicative behavior. For example, in Mehrabian's study entitled "Nonverbal Betrayal of Feeling"¹, initiating an increased degree of eye contact with a threatening addressee was a behavioral cue that indicated a communicator was being deceptive. However, in his book entitled Silent Messages², degree of eye contact was observed by Mehrabian to be directly related to an individual's perception of his degree of power in an interaction. Other researchers in nonverbal communication have offered any number of additional possible interpretations of the degree of eye contact in an interaction. In short, in order to accurately decode nonverbal behaviors, knowledge of the context in
which they occur is essential. Increased eye contact, in
the abstract, has no meaning; it is only within the context
of the relationship in which it occurs that it can be said
to have "meaning". Obviously, there are no cues that can
be said to be "indicative of deception" since it is only
within certain contextual constraints that they may be de-
fining as such. This is exemplified by the contradictory
observations in regard to facial expression in Mehrabian's
own study of deceptive behavior. As opposed to deceptive
communicators in the previous conditions, deceptive sub-
jects in the third experiment did not display the pleasant
facial expression that occurred in both of the previous ex-
periments. Mehrabian discusses the lack of facial pleas-
antness in this condition as being due to the increased
anxiety of subjects who experienced too much distress to
willfully manipulate the situation by smiling more often.
In other words, as the constraints were modified and the an-
xxiety increased, the behavior exhibited by deceptive commu-
nicators changed. At this point, some questions arose con-
cerning the constraints set up by Mehrabian in the first
two experiments.

Certain effects inherent in the artificiality of
experimental design might be related to the behaviors Meh-
rabian observed. The experimenter believes that the arti-
ficiality of the experimentally created environment influ-
enced the nonverbal behavior exhibited by deceptive communicators. For example, the first of the three experiments Mehrabian conducted was presented as a challenge to subjects' ability to always give an impression of truthfulness. In short, the experiment was presented as a game. Certainly, deceptive behavior in an experimental setting, in which the situation is presented as a game would differ from deceptive behavior in which the anxiety level is higher and the consequences are somewhat more serious. Also, certain cultural norms discourage deceptive behavior, so that even in instances in which the consequences of being discovered are not serious, most individuals involved in deception would prefer to remain undetected. However, in Mehrabian's study, subjects were "allowed" to lie (in fact judges or interviewers knew they were being lied to a certain percentage of the time) without the cultural stigma ordinarily attached to such behavior. In effect, the first two of Mehrabian's three experiments created an "extraordinary" environment in which cultural norms regulating certain behaviors were temporarily set aside and subjects encouraged to be deceptive and rewarded for doing so if undetected.

In addition to ignoring contextual implications, Mehrabian overlooked the vital role of the addressee in the detection of deception, failing to even mention the fre-
quency with which the deception was detected. Since this point has been argued at length elsewhere in this study, suffice it to say that the experimenter focused primarily on the addressee and the behaviors most important to him in detecting deception. However, some of the criticisms of Mehrabian's methodology can also be extended to the present study. For example, to some extent the present study also tended to sort out variables in asking subjects to select from a list of specific cues those that would betray deception. In part one of the experiment, attempting to decode these nonverbal cues without knowledge of the inter- or intrapersonal constraints resulted in homogeneity in subjects' responses. In this case, these results might be explained by the artificiality of the experimental design used in this study.

At this point the experimenter believes it important to clarify certain differences between herself and Mehrabian and to more explicitly define the theoretical framework within which this study was conducted. Communication is approached as a system of interrelated and interdependent elements. The relationship between elements can be defined as the constraints in the communication situation. From a micro to macro level the constraints begin on an intrapersonal level and continue to an intercultural level. This approach might be diagrammed in the
following manner:

<table>
<thead>
<tr>
<th>Total Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>cultural norms</td>
</tr>
<tr>
<td>group norms</td>
</tr>
<tr>
<td>interpersonal aspects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>intrapersonal aspects of interactant A</td>
</tr>
<tr>
<td>messages encoded and decoded</td>
</tr>
<tr>
<td>intrapersonal aspects of interactant B</td>
</tr>
</tbody>
</table>
On the micro level of analysis each interactant possesses certain biological, socio-psychological characteristics that influence his perception of and participation in an interaction. For example, as a result of intrapersonal constraints such aspects as the relative status of the interactants, the distribution of presumed and actual power and mutual liking may be perceived somewhat differently by each interactant. Appropriate behavior, as an expression of each interactant's perceptions, is normally defined by cultural guidelines and becomes further refined and specific according to group norms.

In his study regarding deception, Mehrabian observed only one of the interactants in a deceptive situation. In assuming that the behaviors he observed would betray deception, Mehrabian failed to consider the intrapersonal constraints affecting the addressee as well as the relationship (interpersonal constraints) between addressee/communicator.

The present thesis was primarily conducted in response to Mehrabian's failure to consider these important aspects and posed two questions concerning Mehrabian's study of deceptive behavior:

1) Would the nonverbal behaviors Mehrabian observed in deceptive communication actually
betray deception to an addressee?

2) What cultural/individual constraints affect an addressee's decoding of nonverbal messages?

In keeping with the theoretical framework discussed, the constraints set up by Mehrabian in the third experiment were consistently maintained in order to test whether the cues he observed would betray deception in that situation. In both part one and two the situation, the circumstances, relationships between interactants and interview questions remained the same as those employed by Mehrabian. In addition, data was collected concerning personal, and educational differences among subjects in order to ascertain the degree to which any or all of these elements might influence an addressee's interpretation or perception of nonverbal stimuli. It was found that

1) When asked to select the nonverbal cues that would betray deception in a situation identical to the one created by Mehrabian in the third experiment of his study entitled "Nonverbal Betrayal of Feeling", subjects did not select the behavioral cues listed by Mehrabian as betraying deception.

2) When subjects viewed a videotape of a staged interaction into which the cues chosen by subjects in part I had been incorporated,
80% recognized the incorporated cues as betraying the deception.

The study failed to pinpoint personal characteristics of a subject that would serve to differentiate him in his choice of cues from other subjects. Although the characteristics employed differentiate between subjects to a degree, they were counter-balanced by certain influences that tended to homogenize responses. First, the nature of the task, as was discussed in Chapter II, tended to standardize responses to a degree. In addition, asking subjects to select the behaviors that would betray the deception of an individual unknown to them (i.e., without knowledge of the intrapersonal constraints) resulted in subjects choosing behaviors that have cultural implications of deception. In this case, it appears that subjects employed implicit cultural norms as guidelines in choosing the appropriate behaviors. This might also explain differences between the behaviors chosen by subjects in this experiment and those observed by Mehrabian in deceptive communicators. While Mehrabian observed the behaviors of specific individuals in a particular situation, subjects in this experiment were choosing the behaviors that imply negative attitudes in this culture.

In addition, the method employed in differentiating
between subjects might have resulted in the homogeneity of responses. Subjects were divided into categories according to subjective measures of each subject's self perception and definition of the various categories. Objective criterion were not used in differentiating between groups of subjects with the exception of the male/female division. In this case, the accuracy of the method of dividing subjects into categories remains uncertain. For example, it is unclear what kind of similarities exist among subjects who rated themselves as "very knowledgeable". The uniformity of responses could be indicative of the lack of actual differences between subjects.

Whether the consistency with which the four behaviors were selected was a result of the nature of the task as it was presented to subjects or reliance on cultural norms as guidelines, the validity of the choices was demonstrated by subjects in part two who easily recognized the behaviors and consequently detected deception. However, even cultural norms allow a fairly wide latitude of interpretation as is evidenced by the failure of some subjects in part two to recognize the implications of the cues.

The present study in its failure to distinguish between subjects emphasizes the need for a more accurate and objective means of defining the intrapersonal and
interpersonal constraints that affect the decoding of messages. In addition the need for further research is evident concerning whether or not the effect of interpersonal constraints on both encoding and decoding of messages is similar. In particular such aspects as sex of the interactants, racial background, and psychological orientation need to be researched.

The present study has also demonstrated the importance of analyzing both interactants in the interpretation of behavior. This factor is of special importance when "the experimenter" in research is seen as the "other interactant" who participates in as well as evaluates the interaction. Continued research needs to be done on the effect of the experimenter on the actual behavior of subjects as well as the intrapersonal constraints that affect the experimenter's decoding of that behavior.

The results of this study indicate the importance of studying and analyzing behavior in context (i.e., considering the constraints that may be relevant in determining appropriate behaviors). In this case the means of measurement and analysis used in the natural sciences becomes inappropriate in the study of human behavior since individual variables cannot be sorted out or excluded without altering the constraints and consequently the be-
behavior that is being measured. As an alternative to this approach in research, the experimenter has suggested a systemic model for the interpretation of behavior. Research of this nature is concerned with assessing the significance of behavioral differences, not merely studying their occurrence. Researchers must not infer, as Mehrabian did in his study, that all differences are salient. However, as the present study certainly makes clear, an accurate research methodology that is consistent with a systemic model needs to be more clearly defined and developed. Invariably, in attempting to analyze data, the researcher found herself to be employing a method which made it impossible to avoid some aspects of experimental design for which she had criticized Mehrabian.

The results of the present study indicate potential directions for future research. First the videotape made by Mehrabian in the third experiment could be shown to subjects in order to ascertain whether these cues would actually betray deception. Those results could then be compared with the results of the present experiment in order to analyze similarities and differences.

In addition, the results of the present study concerning differences between males and females in the selection of cues could be further analyzed by replicating the
study with a more substantial subject pool.

Another direction for future research could be the evaluation of cultural differences between subjects in the decoding of nonverbal cues. These differences could be measured by employing a subject pool of foreign students in a replication of the present study and comparing results with those of the present study.

In conclusion, the experimenter believes that this research has demonstrated that all communicative behavior occurs within the context of a relationship and must be studied within those constraints. This emphasizes the complexity of assessing human behavior and the need for more sensitive and sophisticated techniques for doing so.
FOOTNOTES

Chapter I


3 Ray Birdwhistell, *Introduction to Kinesics* (Louisville, Ky.: University of Louisville Press, 1941).


7 Ibid., p. 112.

8 Ibid.

9 Ibid.


11 Mehrabian, *Silent Messages*, p. 3.

12 Ibid.

76
14 Mehrabian, Silent Messages, p. v.
16 Ibid., p. 45.

Chapter II

5 Albert Mehrabian, "Nonverbal betrayal of feeling," Journal of Experimental Research in Personality, 5-6
(1971) p. 64-73.


Chapter III


Chapter IV


2 Albert Mehrabian, Silent Messages (Belmont, Ca.: Wadsworth Publishing Co., 1971) p. 3.
TABLE 1

CHI SQUARE ANALYSIS OF DIFFERENCES BETWEEN
MALES AND FEMALES IN THE SELECTION OF TYPES OF CUES

<table>
<thead>
<tr>
<th>NONVERBAL CUE AREAS</th>
<th>HEAD</th>
<th>VOCAL</th>
<th>BODY ORIENTATION</th>
<th>PROXIMITY</th>
<th>BODY MOVEMENT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALES</td>
<td>67</td>
<td>100</td>
<td>36</td>
<td>28</td>
<td>62</td>
<td>293</td>
</tr>
<tr>
<td>23.0%</td>
<td>24.0%</td>
<td>12.2%</td>
<td>9.5%</td>
<td>21.0%</td>
<td></td>
<td>59.9%</td>
</tr>
<tr>
<td>FEMALES</td>
<td>37</td>
<td>60</td>
<td>38</td>
<td>19</td>
<td>42</td>
<td>196</td>
</tr>
<tr>
<td>18.8%</td>
<td>30.6%</td>
<td>19.3%</td>
<td>9.6%</td>
<td>21.4%</td>
<td></td>
<td>40.0%</td>
</tr>
<tr>
<td>TOTAL # OF RESPONSES</td>
<td>104</td>
<td>160</td>
<td>74</td>
<td>47</td>
<td>104</td>
<td>489</td>
</tr>
<tr>
<td>21.2%</td>
<td>32.7%</td>
<td>15.1%</td>
<td>9.6%</td>
<td>21.2%</td>
<td></td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Chi Square at .05 level of significance with four degrees of freedom = 9.48773

Chi Square = 4.9763
p > 0.25
TABLE 2

CHI SQUARE ANALYSIS OF DIFFERENCES IN THE SELECTION OF TYPES OF CUES ACCORDING TO SUBJECTS SELF-PERCEPTION OF DEGREE OF KNOWLEDGE OF NONVERBAL COMMUNICATION

<table>
<thead>
<tr>
<th>NONVERBAL CUE AREAS</th>
<th>BODY ORIENTATION</th>
<th>PROXIMITY</th>
<th>BODY MOVEMENT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAD</td>
<td>VOCAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEGREE OF KNOWLEDGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-LITTLE</td>
<td>29</td>
<td>58</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>14.4%</td>
<td>34.9%</td>
<td>13.8%</td>
<td>9.6%</td>
</tr>
<tr>
<td>SOMEWHAT</td>
<td>48</td>
<td>77</td>
<td>38</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>20.0%</td>
<td>33.1%</td>
<td>16.3%</td>
<td>9.9%</td>
</tr>
<tr>
<td>VERY</td>
<td>20</td>
<td>26</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>21.9%</td>
<td>28.5%</td>
<td>16.4%</td>
<td>12.0%</td>
</tr>
<tr>
<td>TOTAL # OF RESPONSES</td>
<td>97</td>
<td>161</td>
<td>76</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>19.8%</td>
<td>32.9%</td>
<td>15.5%</td>
<td>10.2%</td>
</tr>
</tbody>
</table>

Chi Square at .05 level of significance with eight degrees of freedom = 15.507

Chi Square = 15.507

p > 0.250
TABLE 3

CHI SQUARE ANALYSIS OF DIFFERENCES BETWEEN SUBJECTS IN THE SELECTION OF TYPES OF CUES ACCORDING TO NUMBER OF BOOKS READ AND/OR COURSES TAKEN BY SUBJECTS

<table>
<thead>
<tr>
<th>NONVERBAL CUE AREAS</th>
<th>BODY</th>
<th>ORIEN-</th>
<th>PROX-</th>
<th>MOVEMENT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAD</td>
<td>VOCAL</td>
<td>TATION</td>
<td>IMITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOOKS READ OR COURSES TAKEN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 1</td>
<td>66</td>
<td>104</td>
<td>40</td>
<td>28</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>21.7%</td>
<td>34.2%</td>
<td>13.1%</td>
<td>9.2%</td>
<td>21.7%</td>
</tr>
<tr>
<td>2 - MORE</td>
<td>36</td>
<td>64</td>
<td>32</td>
<td>17</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>19.0%</td>
<td>36.0%</td>
<td>17.0%</td>
<td>9.0%</td>
<td>19.0%</td>
</tr>
<tr>
<td>TOTAL # OF RESPONSES</td>
<td>102</td>
<td>168</td>
<td>72</td>
<td>45</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>20.8%</td>
<td>34.3%</td>
<td>14.7%</td>
<td>9.2%</td>
<td>20.8%</td>
</tr>
</tbody>
</table>

Chi Square at .05 level of significance with four degrees of freedom = 9.48773

Chi Square = 1.85

p > 0.250
TABLE 7

FREQUENCY WITH WHICH CUES #6, #14, #20, #11 WERE SELECTED BY SUBJECTS (N=75) AS ONE OF THE TOP FOUR RANK ORDERED CUES.

<table>
<thead>
<tr>
<th>CUE</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
<th>TOTAL (n=75)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6 (he avoids looking at you)</td>
<td>45</td>
<td>10</td>
<td>7</td>
<td>1</td>
<td>63</td>
</tr>
<tr>
<td>#11 (he mumbles and is difficult to understand)</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>#14 (he exhibits frequent nervous movements)</td>
<td>6</td>
<td>15</td>
<td>16</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>#20 (he answers questions briefly with no elaboration)</td>
<td>6</td>
<td>9</td>
<td>6</td>
<td>6</td>
<td>27</td>
</tr>
</tbody>
</table>
TABLE 8

CHI SQUARE ANALYSIS OF DIFFERENCES BETWEEN SUBJECTS
IN THE SELECTION OF TYPES OF CUES ACCORDING TO
REPORT OF DETECTION OF DECEPTION

<table>
<thead>
<tr>
<th>NONVERBAL CUE AREAS</th>
<th>BODY</th>
<th>PROX-</th>
<th>BODY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ORIEN-</td>
<td>IMITY</td>
<td>MOVE-</td>
</tr>
<tr>
<td></td>
<td>TATION</td>
<td></td>
<td>MENT</td>
</tr>
<tr>
<td>SUBJECTS</td>
<td>HEAD</td>
<td>VOCAL</td>
<td></td>
</tr>
<tr>
<td>DETECTED</td>
<td>52</td>
<td>85</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>(20.7%)</td>
<td>(33.8%)</td>
<td>(16.7%)</td>
</tr>
<tr>
<td>DID NOT DETECT</td>
<td>7</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(20.5%)</td>
<td>(32.3%)</td>
<td>(11.7%)</td>
</tr>
<tr>
<td>TOTAL % OF RESPONSES</td>
<td>20.7%</td>
<td>33.6%</td>
<td>16.1%</td>
</tr>
</tbody>
</table>

Chi Square at .05 level of significance with four degrees
of freedom = 9.48773

Chi Square = 2.11

p > 0.250
BIBLIOGRAPHY


85

APPENDIX A

INSTRUCTIONS TO SUBJECTS IN PART I
INSTRUCTIONS TO CHECKLIST CONDITION SUBJECTS

First, I'd like to thank you for taking part in this experiment. In a moment I'm going to pass out these handouts. I'd like you to fill in the information on the first page. This information is important since there is some evidence that would suggest that it will affect the manner in which you respond to some of the questions.

After you have filled in the information, turn the page and begin reading the paragraph. It is a description of an interaction in which there is a suspicion of deception. After reading the paragraph, please make sure you answer all the questions.

When you are finished answering the questions put up your hand and I will check to make sure you have completed everything properly. After that, you are free to leave.

Thank you again. You can begin to fill in the information on page one now.
APPENDIX B

HANDOUT USED IN PART I
NAME ____________________________
AGE ___________
SEX ___________
RACE ___________

PLEASE LIST ALL COURSES YOU HAVE HAD OR BOOKS YOU HAVE READ
THAT HAVE DEALT WITH NON-VERBAL COMMUNICATION OR BEHAVIOR.

HOW KNOWLEDGEABLE TO YOU THINK YOU ARE ABOUT NON-VERBAL
COMMUNICATION:

NO ____________________________
Knowledge ____________________________

NOT VERY ____________________________
Knowledgeable ____________________________

SOMewhat ____________________________
Knowledgeable ____________________________

FAIRLY ____________________________
Knowledgeable ____________________________

VERY ____________________________
Knowledgeable ____________________________
You are conducting research in ESP. As part of this project, you have been giving people an ESP test. After explaining how to take the test to two subjects, you leave the room and give them sufficient time to complete it. After testing a substantial number of people, you have found that out of a possible perfect score of 20, the highest score so far has been a 5.

The last two subjects you score turn in a score of 20. You strongly suspect that they have cheated. Immediately after scoring their test, you interview one of the people involved, asking the following questions:

Could you tell me how you went about trying to communicate with ESP? How did you feel while you were trying to communicate with ESP? Do you think the choice of a partner is important in this type of experiment? Did you follow the instructions?

Although the subject answers as though he didn't cheat, what nonverbal behaviors might he exhibit that would possibly indicate deception? Please check off from the following list those behaviors that would be most relevant to your decision whether cheating had taken place or not. Please keep in mind that you don't know this individual and have never interacted with him before.
CHECKLIST

1. ___ he smiles frequently
2. ___ he pauses frequently while speaking
3. ___ he doesn't show much expression on his face
4. ___ he slouches in the chair
5. ___ as soon as he gets up from the chair to go he puts his hands in his pockets
6. ___ he avoids looking at you during the interview
7. ___ he gestures frequently while speaking
8. ___ he nods his head as you speak
9. ___ he speaks in a loud voice
10. ___ he folds his arms when seated
11. ___ he mumbles and is difficult to understand
12. ___ when you tell him to pull up a chair and sit down, he sits so far away that you ask him to move closer
13. ___ he leans back in the chair
14. ___ he exhibits frequent movements (head scratching, shifting in the chair, pulling at his clothes, bouncing one leg up and down throughout the interview)
15. ___ he sits down sideways in the chair so that his body is not facing you
16. ___ he holds his head to one side
17. ___ he crosses his legs when seated
18. ___ he speaks in a very high pitched voice
19. ___ when he talks, he leans forward
20. ___ he answers your questions briefly with no elaboration
21. ___ he produces numerous speech errors
22. ___ his hands remain folded in his lap throughout the interview
23. ___ he speaks rapidly
24. ___ as he speaks he doesn't make many gestures
1. Of the cues you have chosen, what is the minimum number you would need in order to feel justified in confronting the person about the possibility of cheating having taken place?

2. Would any of the cues you have chosen indicate deception by itself or do you feel a combination of cues is necessary to do so? If you feel a combination of cues is necessary, what is the minimal combination that would indicate the possibility of deception? For example, if you checked 5 cues on the checklist, you might decide that a combination of 3 of them in particular would be enough to indicate deception.

3. Please rank order from most to least important all of the cues you checked from the checklist.
APPENDIX C

HANDBOUT USED IN PART II
NAME _______________________
AGE __________
SEX __________
RACE __________

1. Do you think the subject cheated or not?

2. Please write a paragraph indicating how you made your choice whether he cheated or not. In other words, what did the subject do or say that made you feel he cheated or not.

3. Check off from the list on the following page those behaviors that were relevant to your decision whether cheating had taken place or not.
CHECKLIST

1. ___ he smiles frequently
2. ___ he pauses frequently while speaking
3. ___ he doesn't show much expression on his face
4. ___ he slouches in the chair
5. ___ as soon as he gets up from the chair to go he puts
   his hands in his pockets
6. ___ he avoids looking at you during the interview
7. ___ he gestures frequently while speaking
8. ___ he nods his head as you speak
9. ___ he speaks in a loud voice
10. ___ he folds his arms when seated
11. ___ he mumbles and is difficult to understand
12. ___ when you tell him to pull up a chair and sit down,
    he sits so far away that you ask him to move closer
13. ___ he leans back in the chair
14. ___ he exhibits frequent movements (head scratching,
    shifting in the chair, pulling at his clothes,
    bouncing one leg up and down throughout the inter-
    view)
15. ___ he sits down sideways in the chair so that his body
    is not facing you
16. ___ he holds his head to one side
17. ___ he crosses his legs when seated
18. ___ he speaks in a very high pitched voice
19. ___ when he talks, he leans forward
20. ___ he answers your questions briefly with no elaboration
21. ___ he produces numerous speech errors
22. ___ his hands remain folded in his lap throughout the interview
23. ___ as he speaks he doesn't make many gestures
24. ___ he speaks rapidly
4. If there are any behaviors that you feel are important that were not on the list please list them here.

5. Please rank order from most to least important the cues you chose from the checklist. If you listed any additional cues, please include them in the rank ordering.
APPENDIX D

GRAPHS
GRAPH 1. ANALYSIS OF SELECTION OF CUES BY SEX

MALES  -  
FEMALES  -  

<table>
<thead>
<tr>
<th>TYPES OF CUES</th>
<th>HEAD</th>
<th>VOCAL</th>
<th>ORIENTATION</th>
<th>PROXIMITY</th>
<th>MOVEMENT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>23.0%</td>
<td>34.0%</td>
<td>12.2%</td>
<td>9.5%</td>
<td>21.0%</td>
<td>59.9%</td>
</tr>
<tr>
<td>F</td>
<td>18.8%</td>
<td>30.6%</td>
<td>19.3%</td>
<td>9.6%</td>
<td>21.4%</td>
<td>40.0%</td>
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</tbody>
</table>
Graph 2. Analysis of selection of cues according to self perception of degree of knowledge

0-LITTLE -

SOMETHAT --

VERY -------

<table>
<thead>
<tr>
<th>TYPES OF CUES</th>
<th>HEAD</th>
<th>VOCAL</th>
<th>ORIENTATION</th>
<th>PROXIMITY</th>
<th>MOVEMENT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0=17.4%</td>
<td>0=34.9%</td>
<td>0=13.8%</td>
<td>0=9.6%</td>
<td>0=24.0%</td>
<td>0=33.9%</td>
</tr>
<tr>
<td>S</td>
<td>0=20.0%</td>
<td>S=33.1%</td>
<td>S=16.3%</td>
<td>S=9.9%</td>
<td>S=19.8%</td>
<td>S=47.4%</td>
</tr>
<tr>
<td>V</td>
<td>0=21.9%</td>
<td>V=28.5%</td>
<td>V=16.4%</td>
<td>V=12.0%</td>
<td>V=20.0%</td>
<td>V=18.6%</td>
</tr>
</tbody>
</table>
GRAPH 3. ANALYSIS OF SELECTION OF CUES ACCORDING TO NUMBER OF BOOKS READ AND/OR COURSES TAKEN

(1) 0-1 BOOK/COURSE

(2) 2 OR MORE

<table>
<thead>
<tr>
<th>TYPES OF CUES</th>
<th>HEAD</th>
<th>VOCAL</th>
<th>ORIENTATION</th>
<th>PROXIMITY</th>
<th>MOVEMENT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1=21.7%</td>
<td>1=34.2%</td>
<td>1=13.1%</td>
<td>1=9.2%</td>
<td>1=21.7%</td>
<td>1=62.1%</td>
</tr>
<tr>
<td></td>
<td>2=19.0%</td>
<td>2=36.0%</td>
<td>2=17.0%</td>
<td>2=9.0%</td>
<td>2=19.0%</td>
<td>2=37.8%</td>
</tr>
</tbody>
</table>
Graph 4. Analysis of cues selected according to detection of deception

(Y) Did detect - ————
(N) Did not detect - ————

Percentage

Types of cues

Head Vocal Orientation Proximity Movement Total
Y = 20.7% Y = 33.8% Y = 16.7% Y = 3.9% Y = 24.7% Y = 88.0%
N = 20.5% N = 32.3% N = 11.7% N = 8.8% N = 26.4% N = 11.9%