

A PARADIGM FOR EVALUATING LYING BEHAVIOR

By

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1973

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
December, 1977



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ACKNOWLEDGMENTS

Appreciation is extended to my major adviser, Bob Helm, and to the other members of the advisory committee, William Rambo and Donald Fromme, for their suggestions during the course of this research. Each member is aware of the degree of his contribution to this work, without my having to detail his efforts.

Sincere thanks are also expressed to the members of my Research Methods class who served as experimental confederates. Their patience and cooperation in both the laboratory and classroom made my job more pleasurable.

Larry Mullins deserves special recognition from me for his assistance in the laboratory and with data compilation and scoring. Cognizant of the fact that while highly important, such activities quickly become tedious, I would like to take this opportunity to thank Larry for his conscientious work.

I am grateful and appreciative to Barbara Stewart for her friendship and guidance during the course of my academic endeavors. Her teaching helped me develop the skills needed to undertake this project.

Finally, I wish to express my love and appreciation to my wife, Cathey, who served as my mentor, lover, and typist during the course of this work.

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CHAPTER I

THE RESEARCH PROBLEM

Introduction

As Richard Maier and Paul Lavrakas (1976) point out in a recent publication, the advent of "Watergate" and other examples of verbal falsehoods by high officials has generated increasing concern with lying behavior. Additionally, growing interest in this area is reinforced by increased applied research in relationship to judicial processes. However, the amount of existing psychological research on lying as an interpersonal behavior is still limited to a relatively few studies.

Two approaches can be taken in the study of lying: namely, detection and control. The bulk of existing literature seeks to establish methods for the successful detection of deceptive communications. The studies encompass a wide variety of detection systems. These systems rely on evaluation of anomalies in overt non-verbal behavior, physiological indices, and verbal speech characteristics exhibited during prevaricating activities. Although much progress has been made, the reliability and accuracy of detection systems has not attained a level whereby one can use them to identify and thus deter lying in either dyadic relationships or in various structured social situations such as testimony given in courtrooms (Maier & Thurber, 1968; Maier & Janzen, 1967; Barland & Raskin, 1975).

The focus of the studies on detection of deceptive communications has been concerned with answering questions of the form: "How can one judge whether a communicator is being truthful or lying?" and "How confident can one be in the accuracy of the attribution of lying behavior?". Given that we have not established systems which are highly accurate in identifying lying behavior, nor can we prevent infringements upon rights to personal privacy that such systems could engender, we might turn our attention to the area of control rather than detection.

From the standpoint of control, the fundamental question is whether or not one can structure social situations in a manner which would make lying behavior more difficult. Can one identify those aspects of the source of the communication, the audience and the environment which engender conditions in which a person feels highly uncomfortable about attempts at lying and deems it unlikely that his lies will be believed? The present study represents a preliminary evaluation of this question.

Since no established research paradigm is readily available in the literature, the study also seeks to evaluate the feasibility of the proposed methods and measures. To this extent, it is a methodological investigation as well as theoretical. Selection of the variates for evaluation is, of course, tempered by the concern for the efficacy of the methodology. Once established, the methods and measures might then be applied to a more sophisticated appraisal of the effects of various communicator, audience, and environmental variables upon the prevaricator's behavior.

An implicit assumption underlying the research on detecting lying

is the hypothesis that deceitful communicators will exhibit fear or avoidance reactions which are manifest in subtle changes in physiological and nonverbal responses (Mehrabian, 1971). Extending upon this assumption, one might propose that the magnitude of the experienced fear or avoidance reaction is directly proportional to the "ease" of prevaricating under a given set of conditions. Assessment of overt expressions of the magnitude of the fear and avoidance reaction provides a schema for evaluating the effects of various source, audience, and environmental variables upon lying behavior. Hence, the question of control through social structuring might be addressed through this type of evaluation.

One measure which could be employed as an index of the fear or avoidance reactions is simply the amount of time that an individual is willing to spend engaged in lying behavior. The greater the magnitude of the avoidance or fear reactions, the shorter the time one would expect an individual to spend, assuming there is an opportunity to escape the situation by physically leaving it. Preliminary support for this contention is found in recent work by Mehrabian (1971). In this study, subjects presented both truthful and deceitful information about their views on abortion to different sets of judges. The design of the experiment was such that subjects could spend as much time as they desired to present the material and they received bonus pay if they successfully deceived the judges in the bogus information condition. The results indicated that speech durations were significantly shorter for deceitful communicators as compared to truthful ones.

A second measure which could be employed as an index of the negative affect associated with lying is the amount of situational

anxiety engendered by the test situation. For obvious reasons, it is important to tap specific rather than generalized feelings of anxiety. Of the existing standardized anxiety scales, the Today Form of the Multiple Affect Adjective Checklist (MAACL) seems an appropriate choice for such an assessment (Zuckerman & Lubin, 1965). This test is a fairly well established clinical tool and has received use in about 250 books and articles (Zuckerman & Schwartz, 1977).

There is no direct empirical support for the use of situational anxiety as an index of the negative affect states associated with lying behavior. However, research on nonverbal and physiological concomitants of lying (Ekman & Friesen, 1974; Cutrow, et al., 1972) has focused on numerous behaviors traditionally associated with anxiety reactions (Sarason, 1972; Freedman, et al., 1972). The success of these responses as predictors of deceptive communications lends credence to the selection of anxiety as an index of the negative affect associated with lying behavior. Additionally, the establishment of anxiety as an index has value for future research where design considerations may preclude the use of speech duration.

Given speech duration and situational anxiety as indices of the negative affect associated with lying, another question of interest is the degree of association between these indices and a prevaricator's subjective rating of the probable success of the lie. Are ratings of probable success highly correlated with anxiety and speech duration or do low correlations between variables imply different underlying processes? Answers to these questions are important to the successful identification of circumstances which effectively deter prevarication.

Summarily, the present study will seek to establish the use of

speech duration and situational anxiety as indices of the negative affect states associated with lying behavior. The selection of independent variables for inclusion in the study will be discussed in the following sections. Since little research exists in this area, the selection of the variables is motivated principally by design concerns and convenience. It is hoped that the present study may provide information useful in the establishment of a paradigm to assess conditions which deter attempts at verbal deception.

Background and Selection of Independent Variables

Value of Lie

Intuitively, it seems unlikely that an individual would attempt to verbally deceive other people without some underlying purpose or value to the lie. However, one would need much more than pure intuition to specify the exact nature of the effects of the value on a prevaricator's behavior. Unfortunately, there is little empirical research to help us in this regard.

Learning theory suggests that the value of a lie may act as a reinforcer and hence serve to motivate behavior. Yet, unlike many other reinforcers the value derived from lying is often at the expense of the listener. Maier and Lavrakas (1976) found that lies which had high utility or value to the source of a communication and which potentially cost the listener time and trouble, such as failure to admit damage to an automobile, were rated significantly more reprehensible than low cost lies such as lies to humor or console. Hence, there are also high potential losses associated with high value lies,

should the listener detect the deception. These high potential losses may serve to inhibit lying behavior in some circumstances.

It would be extremely difficult to predict in an a priori fashion the strengths of the motivating or inhibiting forces in a given situation. This is more appropriately an empirical concern. It is likely that the effects of the value of a lie would be different for speech duration as compared to situational anxiety. For instance, a high value lie may motivate a liar to endure a high anxiety situation for a longer period of time compared to a low value lie, other things being equal. Consequently, the present study includes lies with differing values for the liar and assesses their effects on both speech duration and situational anxiety.

Audience Reactions to Communication

Lying is a social behavior and as such the experiences of the prevaricator are highly dependent upon his interactions with his audience. Because of the nature of our social conventions, it is rare for audiences to directly confront a speaker by calling him a liar. Yet, audiences are not without means for communicating their belief in the deceitfulness or truthfulness of the speaker's words. One way this is accomplished is through the use of speech conventions whose underlying meaning implicitly communicates either confirmation or disconfirmation of the veritableness of communication.

Robert Stebbins (1975) makes a brief reference to these types of audience tactics in a recent article concerned with the social psychology of "putting people on". There are many such speech conventions common in our language. For example, if an individual thinks

he is being lied to, he may say: "You're pulling my leg"; "You have to be kidding"; or "No kidding?". Conversely, if an individual thinks he is being told the truth, he may say: "That's interesting" or "I can imagine that".

Although we all intuitively understand the uses of these statements, no empirical research has indexed their effect on the source of a communication. Hence, this study will also seek to assess the effects of these types of speech conventions on a prevaricator's behavior.

CHAPTER II

RELATED LITERATURE

Introduction

Existing literature dealing with lying is concentrated primarily in two areas. The first of these areas encompasses the study of techniques for detecting lying behavior. These techniques rely on the evaluation of aberrant physiological and nonverbal behaviors exhibited during prevaricating activities. The second area focuses on assessing the effects of lying behavior. These assessments range from studies on the reactions of audiences who have been deceived to ratings of the reprehensibility of different types of lies.

Basically, the literature on lying is highly atheoretical. Hence, it is difficult to form a clear synopsis of findings. The present study which seeks to establish a model to evaluate conditions which deter lying does not follow directly from any existing research. Rather, it proposes an alternative approach. It does, however, rely heavily on the assumptions and role-playing procedures found in numerous studies on detection of lying. Additionally, inclusion of value of the lie and audience reactions to the communication as independent variables derives from recent publications assessing the effects of lying behavior. An attempt will be made to give a brief overview of existing studies which have particular relevance to the present research project. An extended bibliography is also presented

in Appendix G.

Detection of Lying

Early studies which employed latency measures in word association tasks (Marston, 1920) or GSR and blood pressure measures (Chappell, 1929) laid the groundwork for the development of systems to detect lying behaviors. These systems all rest on the underlying assumption that liars exhibit fear and avoidance reactions which are manifest in subtle physiological cues.

A vast number of physiological responses have been identified as useful indicators of deception. Cutrow, et al. (1972) found that breathing amplitude, breathing cycle time, eyeblink rate, eyeblink latency, finger pulse volume, heart rate, palmar galvanic skin response, and voice latency all significantly differentiated between truthful and deceitful subjects. Although many such indices have been identified throughout the literature, few have received much common usage. The most popular are respiration rate, skin resistance response (GSR), and cardiovascular activity, because these measures are common to polygraph equipment.

The accuracy of predicting lying behavior from polygraph examinations varies depending upon a number of factors. One confusing issue in comparisons across studies is that some authors compute accuracy after excluding inconclusive judgments while other authors use only the percentage of correct identifications. For example, Barland and Raskin (1975) in an article evaluating field techniques used to detect deception report an accuracy rate of 81%. However, if one looks closely at the data, one finds 53% correct decisions, 12% incorrect,

and 35% inconclusive. These figures relate a much different picture than the accuracy figure of 81%.

One of the earliest factors shown to effect detection rates is the type of stimulus employed in the methodology. Thackray and Orne (1968) had subjects act in the role of an espionage agent trying to conceal both personal data and certain code words they had learned from detection by a polygraph. The personal data included such things as first name, last name, and date of birth while the code words were names of colors, birds, or trees. Personally relevant material was found to be significantly more detectable than the neutral code words.

Whether or not a subject is required to make verbal responses during a polygraph examination also affects the rate of detection. Gustafson and Orne (1965) instructed subjects to act in one of three ways during a polygraph examination. The first group was told to say nothing as they heard each question; the second group was instructed to say "no" to each question; and the third group was asked to make a word association to each question. The second group was most frequently detected, the first group next, and the third group was detected least frequently. These results are important not only because they emphasize that psychological variables are basic determinants of the alteration in physiological responses during lying, but also because they point out the difficulties encountered in trying to make comparisons across studies with differing methodologies. In some existing studies of detection using physiological indices, subjects were required to make no verbal response to the questions asked during examination. In others, the subjects were required to answer "no" to each question. Hence, seemingly incongruent results may be simply the

product of differing methodologies.

Adding to the confusion raised by differences in how the subject is asked to respond during questioning are differences arising from the method of presentation of questions during examination. Most studies employ one of two methods for stimulus presentation. In the relevant-irrelevant (RI) method, the questions are presented in a random order so that the subject can not predict the time when a critical item will be asked. In the peak-of-tension (PT) method, questions are presented sequentially and subjects can predict the occurrence of critical items. Gustafson and Orne (1964) compared physiological detection rates for these two methods of stimulus presentation and found that the PT method was somewhat better in a laboratory setting.

Mehrabian (1971) has extended the assumption that the fear and avoidance reaction of the liar is manifested in nonverbal behaviors as well as physiological responses. Mehrabian asked subjects to communicate both truthful and bogus presentations of their views on abortion to different sets of judges. The subjects were allowed as much time as they desired to present the material and were offered bonus pay for successful deception. During the subject's presentations, a number of different nonverbal behaviors were recorded as well as the time variable. Results of the study revealed that liars talked significantly shorter times, maintained a greater distance from their audience, showed less forward lean, and maintained less eye contact than did truthful subjects. Additionally, the rate of speaking and number of speech errors increased during lying. It is interesting to note that the direction of these measures indicates that the liar is experiencing some type of negative affect during his presentation.

Not all nonverbal behaviors necessarily betray the liar's emotions. Ekman and Friesen (1969) proposed that the body, more than the face, is a source of leakage to an individual's feelings. In a subsequent publication (Ekman & Friesen, 1974), these authors attempted to test this proposal. To accomplish this, videotapes of the facial or body expressions of naive subjects who had been asked to either lie or be truthful in an interview were constructed. Judges were then asked to ascertain whether the subject in the film was lying or telling the truth. Half the judges used facial cues only while the other half relied on body cues. Results indicated that greater accuracy was obtained from the body cues than from facial ones. Ekman and Friesen reasoned that the greater stress on facial activities in Western cultures promotes the development of the ability to simulate emotions in the facial regions more so than in other body regions.

Although Mehrabian's research indicates that certain aspects of nonverbal behaviors do significantly differentiate liars from truthful subjects, there still remains doubt concerning how useful this information is for detection. The work of Ekman and Friesen points out that it is possible to disguise nonverbal expressions of emotions. Hence, one wonders whether untrained judges gain accuracy when allowed to both see and hear cues from a speaker. The work of Maier and Thurber (1968) seems to indicate that visual cues can act as distractors lowering the accuracy of judgments of deception.

Maier and Thurber had subjects judge the truthfulness of speaker's under one of three conditions. Subjects watched and heard an interview, listened to a tape recording of the interview, or read a transcript of the interview. Results indicated that people who listened to or read

the interview were significantly better judges than those who watched and listened to the interview. Hence, at least with untrained judges, liars can use their nonverbal behaviors to deceive their audiences.

Deterrence of Lying

Most detection systems based on nonverbal or physiological responses show correct decision rates between 50 and 65 percent. These figures do not yield a very optimistic outlook for the use of these systems to deter lying. However, research on detection does support the hypothesis that liars experience fear and avoidance reactions. Increases in heart rate, blood pressure, perspiration as index by GSR, speech rates and speech errors are indicative of these reactions. In addition, these physiological and nonverbal responses identified as useful for detecting lying are quite similar to responses listed as indicators of anxiety reactions in clinical literature (Sarason, 1972; Freedman, et al., 1972). Thus, the research on detection points to the possibility of employing the magnitude of the anxiety experienced by a prevaricator as an index of the ease of the deception.

No paradigm exists in the literature for evaluating factors affecting the rate or ease of prevaricating under a given set of conditions. Hence, past research is not very helpful in guiding the selection of variables which might affect the ease of prevaricating.

Maier and Lavrakas (1976) noted that lies which had high utility for the source of a communication and which potentially cost the listener time and trouble were rated significantly more reprehensible than low cost lies such as those used to console or humor. Given that individuals play both the role of audience and prevaricator at

different times, one would expect a prevaricator to be cognizant of the degree of reprehensibility of his actions. It is likely, therefore, that the purpose or value of the lie effects the ease of prevaricating.

Due to the nature of our social conventions, it is rare for an audience to directly confront a speaker by calling the speaker a liar. It is much more likely that the audience will use some speech conventions such as "You're putting me on" to communicate disbelief (Stebbins, 1975). There are many such speech conventions in our language and one would expect that their usage affects how easy it is for an individual to lie.

The work of Maier, Lavrakas, and Stebbins forms the basis for selection of value of the lie and audience reactions as independent variables for the present study. Situational anxiety and time will be used to index the effects of these independent variables upon the prevaricator's behavior.

CHAPTER III

METHODS AND PROCEDURE

Design

The basic experimental design for the present study was a 3 x 2 randomized block factorial design. The independent variables under consideration were the value of the lie to the source and the reaction of the audience to the communication.

The value of the lie to the source was composed of three levels which were qualitative in nature. The first level was a control condition in which subjects communicated truthful presentations to an audience composed of one male and one female.

In the second level of the value factor, termed self and other gain, subjects were asked to communicate a deceitful presentation to the audience. In this condition, subjects were told that success in deceiving the audience would result in early termination of the experiment, allowing both the subject and the audience to leave early while still receiving the same amount of extra credit for participation. Failure to deceive the audience was linked to further experimental participation for both groups in the form of a short group discussion.

The third level of the value factor, termed self-gain, was similar to the second level. However, a higher value for successful lying was sought by associating it with early termination of the experiment, and avoidance of repeating the bogus presentation in front of a new

audience. It was felt that the task of presenting bogus information to a group was more noxious than a short group discussion. Consequently, the value gained by the speaker in avoiding further presentations (the self-gain condition) was deemed higher than the value gained in the self and other gain condition.

Crossed with the value of the lie to the source was the second factor which was the reaction to the audience to the communication. In the first level of this factor, the audience made periodic statements during the source's presentation which were designed to implicitly confirm what the source was saying. This level was labeled confirmation. In the second level, labeled disconfirmation, the audience made periodic statements designed to implicitly disconfirm what the source was saying.

In order to obtain uniformity in the reactions of the audience to various speakers, experimental confederates were employed as audience members. Nine groups composed of two members each, one male and one female, assisted in the experiment. Each confederate group served as a block for the present design, thus running one subject in each of the six experimental conditions.

Subject Selection

Pre-Testing

The experimental procedure required that some subjects give bogus presentations about the nature of the type of socio-economic backgrounds in which they grew up. These bogus presentations implied that the individual was from a wealthy family background. Hence, a screening device was needed in order to exclude subjects who in actual

fact had this type of family background. A biographical questionnaire was designed for this purpose. A copy of this questionnaire is given in Appendix A.

The information requested on the biographical questionnaire was obtained by introductory psychology instructors prior to the start of the experiment. Their students were told that a graduate student was studying similarities in the backgrounds of people who enroll in introductory psychology and that the information was needed for this purpose. No relationship between the biographical questionnaire and participation in the present study was made.

Subject Recruitment

A total of 54 female subjects who did not come from wealthy family backgrounds were recruited on a voluntary basis from introductory psychology classes. The students were told that the experimenter was concerned with how audiences form impressions of a speaker and that the design of the experiment required a group of three people. It was explained that the other individuals who would participate with the subject would be recruited from separate classes because the experimenter did not want the three people in the group to be close friends. The students received extra credit from their psychology instructors for participating in the experiment.

Experimenter and Confederates

Eighteen advanced (juniors and seniors) undergraduate psychology majors served as confederates in the present study. The confederates were paired into nine groups with one male and one female member in

each group. All confederate groups were trained by the author prior to the start of the experiment. In addition, the author served as the principle experimenter for all subjects.

Experimental Procedure

When the subject and the confederates arrived at the designated place of the experiment, they were met by the experimenter, who ushered them to a laboratory room. The experimenter made a brief comment to the effect that all three people had been recruited to serve in an experiment designed to study audience reactions to various types of speakers. All three people were then asked to fill out experimental participation forms so that the experimenter could see to it that their psychology instructors gave them credit for participation. These procedures were carried out in order to give the impression to the subject that the other two people present with her were also subjects recruited from psychology classes.

Upon completion of the experimental participation forms, the experimenter read a standard set of instructions to the group. These instructions conveyed the general idea that one of the group would serve as a speaker while the other members served as the audience. Further it was stated that the selection of the role that each member would play was to be determined by a random drawing. At this time, a drawing was held to assign speaker or audience roles to each of the individuals. The drawing was rigged so that the experimenter's confederates were assigned to the audience and the naive subject always played the role of the speaker. The experimenter then told the two audience members that he would return in about 10 minutes to give them

further instructions and ushered the subject into a separate experimental room.

Each subject was randomly assigned to one of the three levels of the value of lie to source, and to either the confirmation or disconfirmation condition of the audience reaction variable. The specific instructions given at this point were determined by whether the subject was in the control, self and other gain, or self-gain condition. Copies of the detailed instructions for each of these conditions are given in Appendix B. Each condition will be summarized briefly below. These manipulations represent a modification of the role-playing procedures found in numerous studies on detection of deception (Maier & Lavrakas, 1976; Ekman & Friesen, 1974; Mehrabian, 1971).

Control Condition

Subjects in this condition were told that the experimenter was interested in the manner in which people use information provided by a speaker to form subjective impressions of the individual who is presenting the information. The subject was asked to prepare a talk which would convey to the audience the type of family background in which the subject grew up. The experimenter provided the subject with an outline of topic areas which could be used to convey this information (see Appendix C). Subjects were told that they would have as much time as they desired to make the presentation. They were asked to try and convey a complete and accurate picture of their background.

The experimenter explained that the audience members would be allowed to take notes and make comments during the presentation. Additionally, subjects were told that their presentations would be

observed by the experimenter through a one-way mirror. If the subject had no questions, the experimenter commented that he had to return to the audience members to give them instructions. The subject was then left alone to prepare her talk.

Self and Other Gain Condition

In this condition, subjects were told that the experiment was a pilot study designed to see if a speaker could successfully deceive an audience into believing that the speaker came from a very high status background. Subjects were asked to prepare a talk which would convey to the audience that the subject came from a wealthy family background. As in the control condition, subjects were provided with the topic outline, told that the audience would be allowed to take notes and make comments during the presentation, and that the experimenter would observe the presentation through a one-way mirror.

Subjects were told that they would have as much time as they desired to present the information. They were asked to try to convey a complete picture of this type of background and to use only information which was not true of their own background and life history.

The experimenter explained that if the subject successfully deceived the audience, the experiment would be terminated and both she and the audience members would be allowed to leave early while still obtaining full credit for participation. Conversely, if the audience detected the deception both the speaker and audience would have to stay for a short group discussion designed to evaluate why the deception did not succeed. These statements were made in order to associate effective lying by the speaker with moderate gains both for herself and

for her audience. If the subject had no questions, she was left alone to prepare her talk.

Self-Gain Condition

Subjects in this condition were told the experiment was designed to study the relationship between audience gullibility and speaker effectiveness. The experimenter explained that in order to accomplish this, the subject would be asked to prepare a deceitful presentation that would convey that she came from a high status background. Subjects were again told the audience would be allowed to take notes and make comments and that the experimenter would observe the presentation through a one-way mirror. They were told they would have as much time as they desired to present the information, to try to convey a complete picture of the background, and to use only information which was not true of their own background and life history.

The experimenter explained that the study was designed so that if the speaker was effective in her presentation, she would be allowed to leave early and the audience members would be required to remain and prepare talks similar to her's which they would present to other subjects scheduled to arrive at the experiment in about 30 minutes. Conversely, if the audience detected the deception, she would be asked to stay and give her talk to this second group of subjects and the audience would be allowed to leave early. These statements were made in order to associate effective lying by the speaker with moderately high gains for her.

If the subject had no questions at this point, the experimenter excused himself saying he needed to give instructions to the audience

members. The subject was left alone to prepare her talk.

Audience Reactions to Communication

After a period of approximately 10 minutes, the experimenter returned to the subject and asked whether she was ready to present her talk. If so, she was ushered back to the room where the confederates were seated. The experimenter told the subject that when she was finished with her talk, she should return to the room from which they had just come. The experimenter then left the room.

During the presentation for subjects classified in the confirmation condition, the confederates made one comment during each 45 seconds the speaker talked that was designed to imply acceptance of the truthfulness of her statements. For example, if the speaker was talking about how her father gave her a trip to Europe for a high school graduation present, the confederate might say "I think that is really neat. I always wanted to go there myself." The exact nature of the comment was left up to the discretion of the confederate so that it would be congruent with what the subject was saying.

Conversely, during presentations for subjects classified in the disconfirmation condition, the confederates made one comment during each 45 seconds the speaker talked that was designed to convey doubts about the veridicality of the speaker's statements. If for example, the subject was talking about going on extravagant vacations during her youth, the confederate might say "I can't believe that anyone lives that well". In both the confirmation and disconfirmation conditions, the two confederates alternated in making the comments. A more detailed account of training procedures for the confederates is

presented in Appendix D.

Dependent Measures

Speech Duration

The female confederate in each group concealed an event recorder control switch in her hand during the presentation by the subject. The event recorder was used to record the actual time that a subject talked, excluding pauses. Because the event recorder allowed easy access to the variables of number of pauses per unit of talk time and average pause length, these observations were also recorded. However, since these dependent variables are not directly related to the research problem, summaries of the results of analyses for the variables are reported only in Appendix F.

Situational Anxiety

The Today Form of the Multiple Affect Adjective Checklist (MAACL) designed by Marvin Zuckerman and Bernard Lubin (1965), was administered to each subject immediately upon completion of her presentation. The directions for the MAACL were modified as per suggestions in the test manual (Zuckerman & Lubin, 1965, p. 4) in order to make the test more specific to the experimental task. The modified directions read as follows:

On this sheet you will find words which describe different kinds of moods and feelings. Mark an "X" in the boxes beside the words which describe how you felt during your presentation. Some of the words may sound alike, but we want you to check all the words that describe how you felt during your presentation. Work rapidly.

The Anxiety scale score for each subject was obtained from the

MAACL. This score was converted to a T score by use of the college student norms given in the manual for the test (Zuckerman & Lubin, 1965, p. 7).

Probable Success of Presentation

Upon finishing the MAACL, each subject completed a post-experimental questionnaire designed to assess her ratings of the effectiveness of her presentation (see Appendix E). The responses to each of the questions 2, 4, and 6, were weighted from 1 to 5 such that high scores were associated with ratings indicative of feelings that the audience would rate the subject as an effective and truthful speaker. A summated composite of these three questions was used as the index of the subject's rating of the probable success of her presentation.

Manipulation Check for the Confirmation and Disconfirmation Conditions

The confirmation and disconfirmation conditions of the audience reaction variable had not been used previously in the literature. Consequently, it was felt that some index should be included in the study to assess the effectiveness of these manipulations. Question 1 of the post-experimental questionnaire (see Appendix D) was used for this purpose.

The responses to this question were weighted from 1 to 5 reading from right to left on the questionnaire. Hence, a high score on this item indicated that a subject felt that the audience seemed friendly and relaxed during her presentation.

A simple one-way analysis of variance (ANOVA) was computed comparing the mean response for subjects in the confirmation condition with the mean response for subjects in the disconfirmation condition. It was felt that subjects in the confirmation condition should see their audiences as more friendly and relaxed than subjects in the disconfirmation condition if these manipulations were being properly executed.

CHAPTER IV

RESULTS AND DISCUSSION

A Note on Statistics

One of the primary intentions of this research was to establish the use of speech duration and anxiety as indices of the negative affect states associated with lying. Hence, it was felt that a priori F tests contrasting the mean of the control condition with the mean of the two lie conditions were more appropriate tests than the overall main effects tests for value in the ANOVAs. These tests were used to establish that the measures actually reflected differences between lying and truth-telling behavior. If the a priori F tests were statistically significant, the relationships between the two lie conditions were evaluated by means of two-tailed t tests. These tests indicate whether or not the differential values of the two lie conditions had deterrent effects upon lying.

The main effects for audience reaction and the interaction between value and audience reaction were evaluated by reference to the respective F tests in the overall ANOVAs since no a priori predictions regarding these variables were made. Summary tables for the ANOVAs for speech duration and anxiety are present in the body of the text.

Manipulation Check

Results of the one-way ANOVA for the confirmation-disconfirmation manipulation check indicated a statistically significant difference for ratings by subjects in the two audience reaction conditions, $F(1,52) = 4.09$, $p < .05$. Subjects in the confirmation condition ($M = 4.41$) rated their audience as significantly more friendly and relaxed than did subjects in the disconfirmation condition ($M = 4.00$). The direction of the ratings by these two groups is congruent with what one would expect given the nature of audience responses in the two conditions.

The Results

Speech Duration

The mean speech time in seconds for the control group was 312.89 as compared to a mean of 197.24 for the combined lie conditions. Results of an a priori F test indicated that this difference was highly significant, $F(1,40) = 14.83$, $p < .002$. This clearly indicates that people who were telling the truth talked substantially longer than those who lied.

Differences in values between the two lie conditions did not contribute to any differences in speaking time for subjects in these two groups. Subjects in the self and other gain condition had a mean speech time of 203.76 seconds while subjects in the self-gain condition exhibited a mean of 190.73. This difference was shown to be non-significant, $t(40) = 0.38$, $p > .05$.

The results of the overall ANOVA for speech duration are summarized in Table I. The main effects test for audience reaction

revealed nonsignificant difference in speaking time for subjects in the confirmation condition ($M=227.99$) as compared to subjects in the disconfirmation condition ($M=243.60$), $F(1,40)=0.30$, $p > .05$. Likewise, the interaction between value of the lie and audience reaction was also nonsignificant, $F(2,40)=0.46$, $p > .05$. Thus, the behavior of the audience both alone and in combination with the purpose of the lie had no reliable effect on the length of time that liars persisted in their stories.

TABLE I
ANALYSIS OF VARIANCE FOR SPEECH
DURATION (IN SECONDS)

Source	df	MS	F	p
Group	8	23,338.88	2.16	.06
Value of the Lie (A)	2	81,004.93	7.49	.003*
Audience Reaction (B)	1	3,291.60	0.30	
A x B	2	4,950.42	0.46	
Residual	40	10,819.58		

* $p < .05$ significant

Situational Anxiety

The results of the analyses for the MAACL anxiety T scores were highly similar to those obtained for speech duration. The a priori F test for anxiety scores revealed a significant difference for subjects in the control condition ($\underline{M}=56.11$) as compared to subjects in the two lie conditions ($\underline{M}=65.25$), $\underline{F} (1,40)=4.84$, $\underline{p}<.05$. Thus, the data indicate that in addition to speaking for longer periods of time, people who told the truth also experienced much less anxiety than those who lied.

Differences in values between the two lie conditions did not contribute to any significant differences in anxiety for subjects in these two groups, $\underline{t} (40)=0.13$, $\underline{p}>.05$. Individuals in both groups experienced fairly high degrees of anxiety with self gain subjects ($\underline{M}=65.56$) slightly above the self and other gain subjects ($\underline{M}=64.94$).

Table II summarizes the results of the overall ANOVA for the anxiety scores. The main effects test for audience reaction revealed no significant difference in anxiety scores for subjects in the confirmation condition ($\underline{M}=60.89$) as compared to subjects in the disconfirmation condition ($\underline{M}=64.19$), $\underline{F} (1,40)=0.71$, $\underline{p}>.05$. Again, we find lack of effects of the reactions of the audience on the liar's behavior. Finally, the interaction between value of the lie and audience reaction was nonsignificant, $\underline{F} (2,40)=1.53$, $\underline{p}>.05$.

TABLE II
ANALYSIS OF VARIANCE FOR MAACL
ANXIETY SCORES

Source	df	MS	F	p
Group	8	85.28	0.41	
Value of Lie (A)	2	399.13	1.93	.16
Audience Reaction (B)	1	146.69	0.71	
A x B	2	317.46	1.53	
Residual	40	206.93		

Probable Success of Presentation

Table III summarizes the results of an ANOVA performed on the dependent variable, probable success of the presentation.

The main effects test for value of the lie revealed a significant difference among the means of the three value conditions, $F(2,40)=4.85$, $p < .02$. Post hoc comparison of the mean of the control condition ($M=9.33$) with the mean of the two lie conditions ($M=7.81$) indicated that individuals who told the truth felt they would be viewed as significantly more effective and truthful than those who lied, $t(40)=2.43$, $p < .02$. However, individuals who lied under the constraints of the self and other gain condition ($M=8.22$) did not think their audiences would view them as any more effective and truthful than individuals in the self-gain condition ($M=7.39$), $t(40)=1.46$, $p > .05$.

Again, we note differences between individuals who told the truth and those who lied but see no effect of the purpose of the lie.

TABLE III
ANALYSIS OF VARIANCE FOR PROBABLE
SUCCESS OF PRESENTATION

Source	df	MS	F	p
Group	8	3.98	1.13	
Value of Lie (A)	2	17.13	4.85	.02*
Audience Reation (B)	1	0.17	0.05	
A x B	2	2.06	0.58	
Residual	40	3.53		

* $p < .05$ significant

Speakers who were disconfirmed by their audiences ($M=8.37$) did not rate their probable success significantly different from speakers who were confirmed by their audiences ($M=8.26$), $F(1,40)=0.05$, $p > .05$. Thus, even an individual's subjective feelings about the likelihood of a successful deception remained unaffected by the audiences reactions. Again, for this variable, the interaction of value and audience reaction produced nonsignificant findings, $F(2,40)=0.58$, $p > .05$.

Similar results were indicated by the analyses for speech duration,

situational anxiety and probable success. The data clearly shows that people who told the truth talked longer, experienced less anxiety, and felt their audiences would rate them more effective and truthful than people who lied. Individuals who lied under the constraints of the self and other gain condition talked about the same amount of time, experienced similar anxiety levels, and felt about as successful as individuals who lied in the self-gain condition. The behavior of the audience had no reliable effect on any of the dependent variables. Confirmatory statements by the audience did not produce greater speech lengths, less anxiety, or higher ratings of success than did disconfirmatory statements. The only thing they did produce were higher ratings of friendliness. Finally, no interaction effect between value and audience reaction appeared in any of the analyses.

Inter-Correlations Among Dependent Variables

Probable success correlated highly with both speech duration and anxiety. The Pearson product-moment correlation coefficients for the associations of probable success with these variables were 0.43 and -0.60, respectively. Both of these indices were significantly greater than zero. The association of probable success and speech duration was significant at .002 level while that for probable success and anxiety was at the .0001 level of significance. These correlations indicate that individuals who feel their audiences see them as effective and truthful speakers tend to experience less anxiety and speak longer than people who feel their audiences do not view them as effective and truthful. This seems a quite logical finding.

Since speech duration and situational anxiety were both offered as

indices of the negative affect associated with lying, one would expect the two measures to be significantly correlated. Results of the study confirm this expectation. The association between these two variables ($r = -.28$) was found to be significantly greater than zero, $p < .05$.

Discussion

Findings of the present study clearly indicate that both speech duration and anxiety effectively detect differences between truthful and deceitful communicators. Similar to Mehrabian's (1971) study, liars were shown to be willing to speak for much shorter lengths of time than were truth-tellers. Additionally, the higher anxiety levels of the liars conform to predictions of the present study. Both indices seem to reflect the negative affect state associated with lying.

An argument might be made that the differences in speech duration between liars and truth-tellers simply reflects differential familiarity because of the nature of the experimental task. Presumably, truth-tellers may have more to say because they have a larger informational base to draw upon. It seems unlikely that this argument is tenable for the present results. Preparation time and speech format were well controlled. The amount of written information on the topic outlines did not appear to be appreciably different for the two groups. Rather, the speaking rate of a subject seemed a more important determinant of speech duration than the amount of information. Liars presented their material at an extremely fast pace. Confederates often commented on the difficulty of introjecting confirmatory or disconfirmatory statements during a liar's presentation because of the speech rate. These observations agree with Mehrabian's (1971) findings that

liars talked significantly faster than truth-tellers. Hence, it would seem that shorter speech durations by liars reflect an avoidance response rather than a shortage of information.

Whether or not the magnitudes of speech duration and anxiety reflect on the ease of prevarication remains an open question. Lack of a significant difference between the two lie conditions or the two audience reactions raises some doubts concerning the use of the variables to assess factors which deter lying.

Failure to find any differences between the two lie conditions may be indicative of a number of things other than an insensitivity of these measures. First, it is possible that the instructional sets were ineffective in producing differential values for lying. The use of some tangible reinforcer such as money or bonus points for participation may have provided a more adequate manipulation. Alternately, this lack of a significant relationship may simply reflect the absence of any effect of the value conditions on the prevaricator's behavior. It is apparent that more research is needed before an adequate explanation of the lack of differences between the two lie conditions can be offered. Since speech duration, anxiety and probable success all indicated no difference between the lie conditions, this author is inclined to believe that an explanation in terms of ineffective value manipulations is highly plausible.

Subjects in the confirmation condition viewed their audiences as more friendly and relaxed than did subjects in the disconfirmation condition. The direction of this difference is consonant with what one would expect given the nature of the two treatments. However, the magnitude of the ratings were on the positive end of the scale for both

groups. In other words, both groups rated their audiences as relatively friendly and relaxed. This may have resulted from instructions to the confederates (see Appendix D) to be only mildly confronting to disconfirmation subjects.

As indicated by the data, the behavior of the audience had no reliable effects on either speech duration or anxiety. In debriefing, numerous disconfirmation subjects noted some rudeness of their audiences. Yet, none of these subjects acknowledged the possibility that this rudeness may have resulted because the audience thought that the subject was lying. Apparently, within the social setting of the experiment attempts to deter lying by mild disconfirmation of the communication met with little success. Subjects seemed to respond in terms of the demands placed on them by the procedure and paid little attention to influence attempts by individuals they considered as other subjects.

Moderate support for the use of speech duration and anxiety as indices of the ease of prevaricating was obtained from the correlations of probable success with these variables. Subjects who felt they had been effective in their presentations talked longer and experienced less anxiety than subjects who felt they had been ineffective. If one is willing to agree that success is in part derived from ease, then these results offer hope. The magnitudes of the associational indices were sufficiently high to warrant a rather optimistic outlook.

Although the results of the study do not unequivocally support the use of speech duration and anxiety for assessing factors affecting lying, they do show promise. Before research proceeds much farther, it will have to be established in a more definite manner that the measures

are sufficiently sensitive to detect differences between various lie conditions. This is likely to take time since past research does not readily indicate possible factors affecting the ease of prevaricating. However, it is felt that such a time investment would be well worth the costs if it lead to the development of a useful model. The information gained from such a research paradigm might be helpful to a wide variety of areas such as therapist-client relationships, advertising, and politics.

CHAPTER V

SUMMARY

An implicit assumption underlying the research on detection of deceptive communications is the hypothesis that deceitful communicators can be expected to exhibit fear or avoidance reactions which manifest themselves in subtle changes in physiological and nonverbal responses (Mehrabian, 1971). Extending upon this assumption, one might also propose that the magnitude of the experienced fear or avoidance reactions is directly proportional to the "ease" of prevaricating under a given set of conditions. Consequently, assessment of overt expressions of the magnitude of the fear or avoidance reactions provides a schema for evaluating the effects of various source, audience, and environmental variables upon prevaricating activities.

Two possible criterion were suggested as indices for evaluating the magnitude of the fear or avoidance reactions. The first of these measures was simply the amount of time that an individual was willing to spend engaged in lying behavior. The greater the magnitude of the fear or avoidance reactions, the shorter the time one would expect an individual to spend, assuming the individual could escape the situation by physically leaving it.

A second index of the negative affect associated with lying was the amount of situational anxiety engendered during prevaricating activities. The anxiety scale of the Today Form of the Multiple Affect

Adjective Checklist (Zuckerman & Lubin, 1965) was employed to make this assessment.

A 3 x 2 randomized block design using speech duration and situational anxiety as criteria was employed in the present study. The independent variables under consideration in this design were the value of the lie to the source and the reaction of the audience to the communication.

The value of lie to source was composed of three qualitative levels. One level was a control condition in which subjects were asked to communicate a truthful presentation to an audience composed of one male and female. The other two levels were lie conditions in which subjects were asked to make a deceitful presentation to an audience.

The audience members were experimental confederates and reacted in either a confirmatory or disconfirmatory manner to the communication. These manipulations represent the two levels of the second factor, audience reaction to communication.

Results of the analyses for speech duration and situational anxiety were quite similar to one another. Truthful subjects talked longer and experienced less anxiety than did subjects in the lie conditions. Both of these differences were statistically significant. However, no significant difference was observed between lie conditions for either variable.

Nonsignificant differences were observed when data from the confirmation condition was compared with data from the disconfirmation condition, for both of the dependent variables. Additionally, the audience reaction by value interaction was also nonsignificant.

In addition to the variables of time duration and situational

anxiety, each subject was asked to rate the probable success of her presentation on a Likert-type scale. The correlations between subjective ratings of probable success and the time duration and anxiety scores were highly significant. Subjects who felt they had been successful in their presentation talked longer and experienced less anxiety than subjects who felt they had been ineffective.

The results of the study do not unequivocally support the use of speech duration and situational anxiety for assessing factors which affect lying. However, they do show promise. Lying was distinguished from truth-telling by these measures. If one is willing to agree that success is in part derived from ease, then the correlations of success with speech duration and anxiety support the use of these criteria for assessing lying behavior. In addition, since speech duration, anxiety, and probable success all indicated no difference between the lie conditions, it is likely that none existed. Hence this lack of a significant difference between lie conditions does not necessarily speak negatively in regards to the proposed methodology.

It is apparent that more research is needed before any definite statement can be made regarding the efficacy of the use of speech duration and anxiety as criteria for assessing factors which help deter attempts at verbal deception. The present research lays the groundwork for the establishment of such a paradigm. Time and additional empirical data will ultimately judge its usefulness.

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APPENDIX A

BACKGROUND INFORMATION INVENTORY

BACKGROUND INFORMATION INVENTORY

Name _____

Directions: This inventory is designed to assess some of the similarities in the backgrounds of people who take introductory psychology. Please complete all of the information requested below. For multiple choice items, circle the response which most accurately reflects how you feel.

Personal Information

1. Age: _____
2. Sex: M F
3. Year in School: Fresh Soph Junior Senior
4. Marital Status: Single Married
5. College Major: _____

Family History

6. Number of Brothers: 0 1 2 3 4 5 6 7 8
7. Number of Sisters: 0 1 2 3 4 5 6 7 8
8. Father's Occupation: _____
9. Mother's Occupation: _____
10. Approximate level of family income (Even if married, report your parents approximate household income.):
 - a. Under \$8,000 yearly
 - b. \$8,000 - \$22,000
 - c. \$22,000 - \$36,000
 - d. \$36,000 - \$50,000
 - e. Over \$50,000

Psychology Background

11. Why are you enrolled in introductory psychology?
 - a. Required
 - b. Elective
 - c. Other reason _____

12. Did you take a course in psychology when you were in high school?
 - a. Yes
 - b. No

13. How much do you read books or articles on psychological issues outside the requirements for this course?
 - a. Often
 - b. Sometimes
 - c. Occasionally
 - d. Rarely
 - e. Never

14. Which of the following topic areas in psychology do you find most interesting?
 - a. Developmental Psychology
 - b. Social Psychology
 - c. Sensation & Perception
 - d. Educational Psychology
 - e. Personality & Psychopathology

15. Are you planning to enroll in another psychology course next semester?
 - a. Yes
 - b. No

APPENDIX B

INSTRUCTIONS FOR SUBJECTS IN EACH VALUE CONDITION

INSTRUCTIONS FOR SUBJECTS IN EACH VALUE CONDITION

Control Condition

This experiment is designed to investigate how people use information provided by the speaker to form a subjective impression of the individual who is presenting the material. The audience members will be asked to make judgments about you based on a very limited set of information. This is a situation which is not totally uncommon in our everyday experience. For example, a girlfriend may introduce you to a boy and then ask you to make judgments about him after you have had a brief conversation with him.

For the purpose of this experiment, I would like you to prepare a talk to give to the audience which conveys the type of family background in which you grew up. To aid you in this preparation, I have given you a topic outline suggesting some areas you may wish to use in preparing your talk. These are just a number of suggestions that I thought might be useful to you. Try to think of something appropriate to say under each of these headings. If you wish to rearrange the order of topics or add your own topics, you may do so. Do you have any questions about the task?

The audience members will be allowed to take notes and make comments during your presentation. I will not be present in the room when you give your talk. However, I can observe the presentation through a one-way mirror.

I will allow you about ten minutes to prepare your talk. When you are finished, I will usher you back into the laboratory and then leave during your presentation. You will have as much time as you desire to

present your talk. You simply thank the audience, walk out and return to this room when you are finished. The only thing I ask is that you try to convey a complete and accurate overview of your background. If you have no questions, I will leave you alone to prepare your talk.

Self and Other Gain Condition

This experiment is a pilot study designed to see if an individual can successfully deceive an audience into believing that she is from a high status background. I am interested in looking at the effects of status on competition and this study will allow me to evaluate whether or not it is possible to make an audience believe an individual is from a high status even when the individual is not from this type of background.

For the purpose of this study, I would like you to prepare a talk that seemingly is an introduction of yourself. However, what I would like you to do is to imply to the audience that you are from a wealthy family background. To aid you in this preparation, I have given you a topic outline suggesting some areas you may wish to use in preparing your talk. These are just a number of suggestions that I thought might be useful to you. Try to think of something appropriate to say under each of the headings. If you wish to rearrange the order of topics or add your own topics, you may do so. Do you have any questions about the task?

The audience members will be allowed to take notes and make comments during your presentation. I will not be present in the room when you give your talk. However, I can observe the presentation through a one-way mirror.

I will allow you about ten minutes to prepare your talk. When you are finished, I will usher you back into the laboratory and then leave during your presentation. You will have as much time as you desire to present your talk. You simply thank the audience, walk out and return to this room when you are finished. The only thing I ask is that you try to convey a complete overview of the background of a wealthy individual and that you only use information which is not true of your own background. Are there any questions?

If you successfully convince the group that you are from a wealthy family background, then you and they will get to leave the experiment early while still receiving full credit. If the audience is not convinced, you and I will get together with them for a short group discussion to see if we can ascertain why they were not convinced. If you have no questions, I will leave you alone to prepare your talk.

Self-Gain Condition

This experiment is designed to study the relationship between audience gullibility and speaker effectiveness. For the purpose of this experiment, I would like you to prepare a talk that seemingly is an introduction of yourself. However, what I would like you to do is to imply to the audience that you are from a wealthy family background. To aid you in this preparation, I have given you a topic outline suggesting some areas you may wish to use in preparing your talk. These are just a number of suggestions that I thought might be useful to you. Try to think of something appropriate to say under each of these headings. If you wish to rearrange the order of topics or add your own topics, you may do so. Do you have any questions about the

task?

The audience members will be allowed to take notes and make comments during your presentation. I will not be present in the room when you give your talk. However, I can observe the presentation through a one-way mirror.

I will allow you about ten minutes to prepare your talk. When you are finished, I will usher you back into the laboratory and then leave during your presentation. You will have as much time as you desire to present your talk. You simply thank the audience, walk out and return to this room when you are finished. The only thing I ask is that you try to convey a complete overview of the background of a wealthy individual and that you only use information which is not true of your own background. Are there any questions?

If you do successfully convince the audience that you are from a wealthy background, then the audience members are by my definition gullible. I will then use the audience members to serve as speakers for a new group of subjects that are scheduled to arrive in about 30 minutes and you will be allowed to leave the experiment early. If the audience is not convinced, I will ask you to present your talk again to the new subjects. The reason for this is to check if the first audience was not gullible or whether they were not convinced because of your speaking style. If you have no questions, I will leave you alone to prepare your talk.

APPENDIX C

TOPIC OUTLINE FOR BIOGRAPHICAL PRESENTATION

TOPIC OUTLINE FOR BIOGRAPHICAL PRESENTATION

Please start your presentation by giving your name and telling the audience that you have been asked to give a talk about your life history.

The topics listed below suggest areas you might want to talk about. I would like you to list at least one item about which you plan to talk to the audience under each of these topics.

Please list additional topics which you think will add to your presentation. You may use this topic outline and your notes during your presentation.

- I. Home Town

- II. Father
 - A. Occupation/Income

 - B. Possessions (car, boat, leisure property, etc.)

 - C. Hobbies & Activities

- III. Mother
 - A. Occupation/Income

 - B. Hobbies & Activities

- IV. Living Conditions at Home
 - A. Housing (cost, size, section of city where located, etc.)

 - B. Brothers & Sisters

V. Personal Information

- A. Activities Engaged in With Parents while Growing Up
- B. Types of Schools You Attended
- C. Gifts from Parents (graduation, birthday, Christmas)
- D. Family Vacation Activities
- E. Your Personal Possessions
- F. Your Hobbies, Friends and Leisure Activities

VI. Other Topics

APPENDIX D

TRAINING PROCEDURES FOR EXPERIMENTAL
CONFEDERATES

TRAINING PROCEDURES FOR EXPERIMENTAL CONFEDERATES

Experimental confederates were required to make a confirmatory or disconfirmatory statement during each 45 second interval of a subject's presentation. Of necessity, the statements needed to be made contingent upon the topic matter that a subject was verbalizing. Consequently, the confederates had to use their own discretion in choosing a particular comment and applying it to a verbalization of a subject. Training procedures, of necessity, emphasized understanding the nature of the audience reaction manipulation and practice via pilot subjects.

Approximately two weeks prior to the start of the experiment all confederates attended an organizational meeting designed to explain the nature of the experiment and to acquaint confederates with the experimental procedures. The experimenter explained that the audience reaction manipulation was designed to implicitly confirm or disconfirm the communication of a subject by the use of comments which were essentially conventions of speech in our language. A number of examples of these types of comments were given to the confederates. Each confederate was then asked to think of additional comments of this type which he/she used commonly in their own speech behavior. These additional comments were submitted in writing to the experimenter and a master list was then compiled. The master list was recorded in two notebooks which were available to the confederates during the experimental procedure. Hence, during a subject's presentation confederates had a list in front of them from which they could choose comments depending upon the topic of the subject's verbalizations. Given below are a series of statements and phrases which appeared on

the master list.

Confirmatory:

That's neat! I always wanted to do that.

That's unfortunate.

I see what you mean.

How interesting!

Disconfirmatory:

You've got to be kidding!

Is that so?

Really?

No kidding?

That's hard to imagine.

The experimenter decided that in order to reduce confusion during the experiment, the female member of each confederate group would always be responsible for running the event recorder while the male members would record the time between confederate comments. The apparatus was explained to both groups and each was briefed on individual responsibilities.

One week prior to the start of the experiment each confederate group ran two or three pilot subjects. During sessions with pilot subjects the experimenter stressed the importance of consistency in a confederate group's responses to different subjects. The experimenter explained that the statistical control gained from the use of a block design allowed some variation between confederate groups but necessitated consistency within a particular group. Additionally, time was spent on assuring that the nonverbal behaviors of confederates were consistent with whether the subject was in a confirmatory or disconfirmatory condition. When the experimenter and confederates felt comfortable with the procedures, data gathering for the present research was initiated.

APPENDIX E

POST-EXPERIMENTAL QUESTIONNAIRE

POST-EXPERIMENTAL QUESTIONNAIRE

Name _____

Directions: Given below are a series of questions which will aid the experimenter in evaluating the effectiveness of this experiment. Read each question carefully, and using the key provided below, decide on the extent to which you agree or disagree with each statement. Place an "X" above the response category which most accurately reflects your opinion.

KEY	
SA	- strongly agree
A	- agree
U	- undecided
D	- disagree
SD	- strongly disagree

1. The audience members seemed friendly and relaxed during my presentation.

SA A U D SD

2. The audience will rate me as an effective and truthful speaker.

SA A U D SD

3. The experimental procedure was vague and difficult to understand.

SA A U D SD

4. There were many things that I could have said in my presentation which would have made the audience perceive me as a more effective and truthful speaker.

SA A U D SD

5. It was much more difficult to play the role of the speaker than the role of the audience.

SA A U D SD

KEY

SA - strongly agree
A - agree
U - undecided
D - disagree
SD - strongly disagree

6. I was very nervous during my presentation and feel that the audience will perceive me as an ineffective speaker because of this nervousness.

SA

A

U

D

SD

7. I think that it is fairly common for people to distort facts about their backgrounds in order to make themselves "look good."

SA

A

U

D

SD

APPENDIX F

SYNOPSIS OF RESULTS FOR NUMBER OF PAUSES
AND AVERAGE PAUSE LENGTH

TABLE IV
CELL MEANS FOR NUMBER OF PAUSES PER
MINUTE OF SPEECH TIME

Audience Reaction	Value of Lie			Audience Reaction Mean
	Control	Self & Other Gain	Self-Gain	
Confirmation	1.06	1.12	1.72	1.30
Disconfirmation	1.35	0.70	1.73	1.26
Value Mean	1.20	0.91	1.72	

Note. Only pauses exceeding 1.6 seconds in duration were counted for analysis.

TABLE V
ANALYSIS OF VARIANCE FOR NUMBER OF
PAUSES PER MINUTE OF SPEECH TIME

Source	df	MS	F	p
Group	8	5.04	5.14	.0003*
Value of Lie (A)	2	3.05	3.11	.06
Audience Reaction (B)	1	0.02	0.02	
A x B	2	0.58	0.59	
Residual	40	0.98		

* $p < .05$ significant

TABLE VI
CELL MEANS FOR AVERAGE PAUSE
LENGTH (IN SECONDS)

Audience Reaction	Value of Lie			Audience Reaction Mean
	Control	Self & Other Gain	Self-Gain	
Confirmation	3.44	1.72	2.57	2.58
Disconfirmation	2.96	2.98	3.10	3.01
Value Mean	3.20	2.35	2.84	

Note. Only pauses exceeding 1.6 seconds in duration were counted for analysis.

TABLE VII
ANALYSIS OF VARIANCE FOR AVERAGE
PAUSE LENGTH (IN SECONDS)

Source	df	MS	F	p
Group	8	3.79	0.92	
Value of Lie (A)	2	3.25	0.79	
Audience Reaction (B)	1	2.56	0.62	
A x B	2	3.39	0.82	
Residual	40	4.12		

Note. All $p > .10$.

APPENDIX G

EXTENDED BIBLIOGRAPHY

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