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Effects of Distance and Sex on Verbal Productivity and Anxiety

Peter Lindsay Rogers
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Effects of Distance and Sex on Verbal Productivity and Anxiety

BY

Peter Lindsay Rogers
B.A. in Psy., Ohio University, 1974

THESIS

Submitted in Partial Fulfillment of the Requirements
For the Degree of

Master of Arts, Psychology

In the Graduate School, Eastern Illinois University
Charleston, Illinois

1977

I Hereby Recommend This Thesis Be Accepted As Fulfilling
This Part Of The Graduate Degree Cited Above

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ABSTRACT OF A THESIS

Submitted in partial fulfillment of the requirements

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Abstract

The present study was designed to determine whether physical distance between male and female interviewees and a female interviewer affected verbal productivity and anxiety level when interviewees discussed academic, social, and personal topics. The interview was conceptualized as an information-gathering interview. Crucial variables in such interviews are client participation and information flow. Client verbal productivity appears to be directly related to these variables, and was used as one dependent variable to measure the impact of distance on interviewee verbal behavior. A self-report measure of anxiety, the Fear Thermometer was used as a second dependent variable.

The experimental distances used in this investigation were, 2 feet (.6m), 5 feet (1.5m), and 9 feet (2.7m). For purposes of this study, these distances were labeled close, intermediate, and far, respectively. It was hypothesized that an intermediate distance would result in decreased interviewee anxiety and increased verbal productivity when interviewees discussed personal topics.

Results indicated that an intermediate distance did not result in increased verbal productivity, but did result in decreased interviewee anxiety level. Other significant effects were found for Fear Thermometer: (a) female interviewees reported higher anxiety levels than males across all condition, (b) interviewees reported less discomfort in the

social-academic-personal topic sequence condition than they did in both the other two topic sequence conditions, (c) interviewees reported higher anxiety levels when discussing personal topics than when discussing academic topics, (d) female interviewees reported higher anxiety levels than males when discussing personal and academic topics. Significant effects for verbal productivity revealed were: (e) male interviewees talked longer than females across all conditions, (f) interviewees talked longer about academic topics than they did about both personal and social topics, and (g) interviewees talked longer as the interview progressed, regardless of topic order. Anxiety as measured by the Fear Thermometer was correlated with verbal productivity, $r = -.49$.

Discussion includes possible theoretical explanations and limitations of the study, with implications for the initial interview.

Acknowledgements

I would like to extend my sincere gratitude to my thesis committee members, Drs. William Kirk and William Hillner, for their invaluable feedback and support. I would also like to thank my two assistants, Judy Brown and Linda Meliza, for their excellent job of interviewing and perseverance with regard to "no-show" subjects. Lastly, and foremost, I would like to thank my committee chairman, Dr. John Rearden, without whose invaluable help, time, and patience, this thesis may not have had a result section.

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Introduction

The present study was designed to determine whether physical distance between male and female interviewees and a female interviewer affected verbal productivity and anxiety level when interviewees discussed academic, social, and personal topics. The interview was conceptualized as an information-gathering interview. Crucial variables in such interviews are client participation and information flow. Client verbal productivity appears to be directly related to these variables (Siegman & Pope, 1972), and was used as one dependent variable to measure the impact of distance on interviewee verbal behavior. A self-report measure of anxiety, the Fear Thermometer (Walk, 1956) was used as the second dependent variable.

The distances used were determined by Hall's (1966) schema. His categories provided the experimental distances of 2 feet (.6m), 5 feet (1.5m), and 9 feet (2.7m). For purposes of this study, these distances were labeled close, intermediate, and far, respectively. It was hypothesized that an intermediate distance would result in decreased interviewee anxiety and increased verbal productivity when interviewees discussed personal topics.

Literature Review

There has been growing interest in proxemics, the study of spatial environment and its effects on human behavior (Hall, 1966). One aspect of proxemics receiving increasing attention is the relationship of physical distance to interpersonal communication.

Personal space can be defined as the area surrounding a person's body into which intruders may not come (Sommer, 1969). There have been numerous studies relating a person's spatial behavior to various psychological variables. However, the literature contains many inconsistent findings due to a lack of experimental control (Evans & Howard, 1973). In addition, little attempt has been made to examine the role of distance within a counseling context (Stone & Morden, 1976). With the exception of preferred seating arrangements (Broekmann & Moller, 1973; Haase & DiMattia, 1970),little has been reported about interview behavior for specific, predetermined, interactional distances (Stone & Morden, 1976).

Studies have shown interpersonal distance to be influenced by sex, eye contact, threat, affiliation, approval seeking, age, culture, seating arrangement, and status (Evans & Howard, 1973). Broekmann and Moller (1973) found that an intermediate distance was most preferred for a counseling situation. In an initial interview, Lassen (1973) found that psychiatric patients talked more about their fears and anxieties at a middle distance.

The following literature review includes a number of major findings in the personal-space research. Research on interviewer behaviors found to affect interviewee verbal productivity will also be reviewed. For a comprehensive review of the major findings of personal-space research (with detailed references) in the fields of clinical psychology, personality, demographic studies (including sex, age, cross-cultural studies) and studies of the effects of familiarity and affinity, the reader is referred to Evans and Howard (1973).

Personal Space

There are a number of major findings in the area of personality and clinical psychology. Numerous studies suggest that subjects with personality abnormalities need more personal space. This has been reported for adults as well as for children. Still other researchers have concluded that personal space bears no particular relationship to subjects' mental health. Thus, the relationship between personal space and personality abnormalities is unclear (Evans & Howard, 1973).

There have also been several attempts to examine the relationships between personal space and personality types. Extroverts have been found to have smaller personal-space zones than introverts by some researchers, but others have found no relationships. Persons who saw their friends as conservatives, and had lower self-acceptance scores have been found to require significantly greater personal-space when approached by a decoy. Still other researchers have concluded that such personality factors were not related to interpersonal distance. Finally,

it has been suggested that preferred interaction distances with socially stigmatized individuals such as the physically disabled or epileptic are larger than the preferred interaction distances with normal persons (Evans & Howard, 1973).

Broekmann and Moller (1973) investigated possible relationships between preferred seating positions and interpersonal distance on the one hand and personality and adjustment on the other hand. In terms of preferred distance between chairs, although the middle distance was preferred most often, irrespective of the seating position, subjects who were submissive and dependent and displayed socially correct behavior, self-control, and consideration of others tended to prefer the greater distance between chairs. On the other hand, subjects who were dominant, self-assured, and independent minded and showed less social correctness, self-control, and consideration tended to prefer the middle and near distances.

The majority of the research on sex differences (Evans & Howard, 1973) has suggested that females have smaller personal-space zones than males and that, in general, heterosexual pairs have smaller zones than same-sexed pairs. Females interacting with females have also been found to exhibit smaller personal-space zones than males interacting with males. Male subjects who scored high on heterosexuality had smaller personal-space zones with female decoys than with heterosexual male subjects. Subjects' galvanic skin responses when approached by an experimenter were found to be greater to an experimenter of the opposite sex. Haase (1970) on the other hand, found no differences between males and females in terms of differential responses to distance.

With regard to age, very little research has been reported which explores the developmental aspects of personal space (Evans & Howard, 1973). When three age groups were studied (older, younger, and peer), peer approached on another more closely than they approached those who were older. There is also some suggestion that 8-10 years of age children develop the capacity to elicit personal-space invasion behavior in others. Children have been found to generally use more space as they grow older. Same-sexed pairs which initially required less personal space than hetero-sexual pairs required more in later grades (six or seven), particularly the males. It has also been found that by third grade the amount of personal space and degree of liking and acquaintance were negatively correlated.

Hall's work on proxemics has provided a major impetus for research in the general area of human spatial behavior, particularly as it is affected by cultural variables (Hall, 1966). Germans, for example, were observed to have a larger area of personal space and were much less flexible in their spatial behavior than Americans. Latin American, French, and especially Arab people, on the other hand were found to be much more tolerant of close quarters and have smaller personal space than Americans. Hall also theorized that peoples of various subcultures such as blacks or Puerto Ricans within the United States may also have different personal-space constraints than other groups.

The proxemic behavior of Arabs and Americans have also been compared (Evans & Howard, 1973), and it was found that Arabs confronted each other more directly, moved closer together, were more apt to touch, maintain

eye contact, and talked louder. It was also shown that the interaction distances for North Americans and Northern Europeans (United States, Sweden, Switzerland) were greater than the interaction distances of people from the Mediterranean cultures (Greece, Southern Italy).

With respect to subcultural studies (Evans & Howard, 1973), it has been reported that pairs of Chicanos stand closer together than whites who in turn stand closer than blacks. It has been reported that pairs of middle-class white children stand farther apart than their black and Puerto Rican playmates. It has been found that the spatial distance between white subjects was less than for black subjects. On the other hand, other investigators have found no significant difference between Latin Americans and North Americans, or subcultural differences within the United States.

The degree to which people are familiar with one another or the attitudes they have towards others may also affect the way in which they spatially relate to one another (Evans & Howard, 1973). In general, studies support the hypothesis that external sources of threat lead to increased interpersonal distance. In addition, it has been found that attitude change decreased in direct proportion to distance from a hostile speaker, with increasing negative change at close interpersonal distances. On the other hand, it has been reported that self-report and palmar sweat indicated that subjects were more attuned to arguing in a small room than a larger one. Also, that under certain conditions angry subjects assume small interpersonal distances.

Evans and Howard (1973) also review studies that show that persons who are more friendly with each other exhibit smaller personal-space zones

than those who are strangers or not viewed as friends. Correspondingly, those who wish to convey a friendly impression or a positive attitude, choose smaller interpersonal distances than neutral or unfriendly communicators. Another study, however, reported no significant relationship between interpersonal distance and subjects' impressions of a communicator.

Finally, Stone and Morden (1976) designed a study to determine whether physical distance between female interviewees and a female interviewer affected verbal productivity when interviewees discussed academic, social, and personal topics. Based on Hall's categories (Hall, 1966) for interpersonal distance and social interaction, interviews were conducted at 2 feet, 5 feet, and 9 feet. Results indicated a Topic X Distance interaction. That is, subjects talked more at the middle distance in the personal topic condition than they did when seated close to or far away from the interviewer.

Stone and Morden (1976) suggest that order effects (for topic) cannot be ruled out since only a partial counter-balancing procedure was used. Since only female subjects and one female interviewer was used, the generalization of these findings is not extended to males or to other interviewers.

Despite conflicting data and frequent lack of experimental control in much of the personal-space research, several conclusions can be made because of the preponderance of evidence in their favor.

> "(1) Personal space is influenced by sex. Male-female pairs require less personal space than female-female pairs who in turn require less personal space than male-male pairs.

(2) Cross-cultural data suggest that individuals from North America and Northern Europe have larger zones of personal space than those from the Mediterranean.

(3) The small amount of research on developmental aspects of personal space suggests that children develop spatial norms which have a regular sequence, with the onset of normal personal-space behavior at about age 12.

(4) The preponderance of data suggest that persons who are friendly with each other or wish to communicate a positive effect will tend to interact at smaller interpersonal distances than those who are not friendly (Evans & Howard, 1973, P. 337.)."

Interviewer Ambiguity-Specificity

According to Lennard and Bernstein (1960), the crucial variable of the therapist's informational input is the ambiguity-specificity level of his message. The crucial variable of the patient's informational input is his productivity. Lennard and Bernstein were able to demonstrate that specific interviewer remarks, in contrast to ambiguous ones, are indeed followed by relatively less productive patient responses. They were also able to show that relatively unproductive patient responses tend to be followed by specific therapist statements, and relatively productive patient replies by ambiguous therapist remarks.

Siegman and Pope (1972) similarly obtained significant positive correlations between interviewer ambiguity level and subsequent interviewee productivity in eight out of twelve naturalistic initial psychiatric interviews. The results of Siegman and Pope's study indicated that ambiguous interviewer remarks, in contrast to specific ones, were associated with significantly greater interviewee productivity. However,

it became apparent after completing their study, that they had failed to control for the duration of the interviewer's remarks. This was a serious defect in the study because, according to Matarazzo, Wiens, and Saslow (1965) longer duration of interviewer remarks elicit more productive interviewee responses than short ones. It is clear, therefore, that interviewer duration of utterance must be controlled in any study in which interviewee productivity is the dependent variable. Siegman and Pope (1972) submitted their data to an analysis of covariance in which the effect of interviewer duration was partialed, and were able to show a significant relationship between interviewer ambiguity-specificity level and interviewee productivity, even with the duration of interviewer remarks held constant.

To summarize Siegman and Pope's (1972) investigations of the effects of ambiguity on interviewee verbal behavior, they have repeatedly demonstrated that ambiguous interviewer remarks, in contrast to specific ones, are associated with more productive (i.e., longer) interviewee responses. This relationship appears to be independent of the sequence of the interviewer's ambiguity-specificity; i.e., it occurs when the interviewer begins the interview with ambiguous remarks and proceeds to specific ones, as well as when he reverses the procedure. Moreover, this relationship is not restricted to the first series of interviews, but persists in the second as well.

Interviewer Duration of Utterance

In a control group study, Matarazzo, Wiens, and Saslow (1965) concluded that if an interviewer confines himself to identical interviewing

behavior (standardized duration and broad content areas) in each of three 15-minute segments of a 45-minute interview, interviewee speech durations (utterances) will remain unchanged from period to period. Likewise, the range of values of the means for individual subjects, from approximately 15 seconds for average single utterances, remains the same for all 3 periods with this control group.

The influence of increases in interviewer utterance durations on interviewee duration has also been investigated (Matarazzo, Weitman, Saslow, & Wiens, 1963). Three studies in particular have been conducted on this variable. Each of the three studies utilized 20 Civil Service subjects, and in each of the three studies the method involved a 45-minute clinical employment interview. The interview was divided into three 15-minute periods, during each of which the interviewer controlled only the duration of his own speaking times.

In the first study (Matarazzo, Weitman, Saslow, & Wiens, 1963), during the first and third 15-minutes (periods 1 and 3), the interviewer confined each of his comments to a 5-second utterance, plus or minus slight error variance. However, during the experimental period (period 2) of this study, the interviewer increased the durations of each of his own utterances to 10 seconds. Thus, as the experimenter doubled his individual speech unit durations from period 2 to period 3, the effect on the interviewee speech durations was marked in the same direction. As the experimenter doubled or halved his utterance lengths, so did the subject.

To control for a possible artifact in these results due merely to the sequence used by the experimenter in periods 1, 2, and 3,

Matarazzo, et. al. (1963) replicated this study, now utilizing a 10-5-10 second interviewer utterance sequence. Again the range of interviewee means were comparable, and shifted in the direction of the change in the experimenter's mean.

To test the limits of this interviewer influence, one additional step, Matarazzo, Weitman, Saslow, & Wiens (1963) designed a third study utilizing a 5-15-5 second interviewer sequence. The obtained interviewee data indicated that 20 out of 20 subjects increased their own mean in period 2; with 15 out of 20 increasing the mean enough to reach statistical significance in the individual case.

Based on the findings of the three studies (Matarazzo, Weitman, Saslow, & Wiens, 1963) it is clear that as the interviewer doubles, triples, or halves his own durations of utterance, the effect is an approximate 100 percent change in the duration of single units of interviewee speech duration, independent of the magnitude of change in the experimenter's own durations (that is, 2 to 1 or 3 to 1).

Interviewer Head-nodding

Another variable known to affect interviewee speech durations is interviewer head-nodding (Matarazzo, Saslow, Wiens, Weitman, & Allen, 1964). Again, the design utilized a 45-minute nondirective interview divided into three 15-minute periods. The interviewer confined himself to 5-second utterances in periods 1, 2, and 3. Only in period 2 did he introduce the experimental variable; that is, each time the interviewee began an utterance, the interviewer nodded his head repeatedly throughout that whole utterance. Throughout the whole 45-minute interview, each interviewer took care not to introduce such additional social reinforcing

stimuli as smiling, saying "mm-hmm," etc., and thereby contaminate the variable under study.

The effect of interviewer head-nodding on interviewee speech duration was highly significant (Matarazzo, Saslow, Wiens, Weitman, & Allen, 1964). The mean increase of verbal duration was 50% higher than when the head nodding was withheld.

Interviewer Saying "Mm-hmm"

Interviewer saying "mm-hmm" and interviewee speech durations has also been investigated (Matarazzo, Wiens, Saslow, Allen, & Weitman, 1964). The head-nod study was followed up with one identical in all respects except that only one interviewer was used in both the original and cross-validation studies, and a second commonly employed interviewer tactic, saying "mm-hmm" throughout each of the subject's period 2 utterances, was used as the verbal social reinforcing stimuli. Again the effect was a significant and dramatic increase in verbal duration of interviewee response of 31% and 84% for the 2 interviewers.

To summarize the research on interviewer ambiguity-specificity level, speech duration, head-nodding, and saying "mm-hmm" as it affects interviewee speech duration, the studies have shown: (a) unusually high reliability for interviewee (and interviewer) speech and silence durations, and (b) the striking degree to which these highly reliable interviewee speech durations can be modified by such interviewer tactics as increasing or decreasing his own speech durations, ambiguity-specificity level, nead-nodding, and saying "mm-hmm" (Matarazzo, Wiens, & Saslow, 1965).

Verbal Productivity

Of primary concern here is the reliability and validity of single dimensions of the more formal, structural, or content-free aspects of the interview; namely, frequency and duration of single units of speech and silence.

Matarazzo, Hess, and Saslow (1962) investigated the normative characteristics of single units of interview action (speech) and silence behavior which occur in nondirective interviewing. The results of their studies suggest that (a) most interviewees speak in utterances which average well under one minute, and (b) most subjects respond to an interviewer with an average latency interval of 1 to 2 seconds. While some individual latencies in a 45-minute interview will reach an upper range of many seconds, the majority are clearly under 3 or 4 seconds (Matarazzo, Hess, & Saslow, 1962).

Before 1955, very little had been published on the reliability of interviewee speech behavior, particularly consistency of interviewee speech or silence characteristics from one interview to a second interview with the same subject. Since then, Matarazzo, Wiens, and Saslow (1965) have conducted and published five such reliability studies. In these studies of the reliability of interviewee speech behavior, they concerned themselves with the reliability across two different interviews (or one interviewer doing both the test and retest interviews) of such speech variables as the average duration of each subject's speech (and silence). The interval between the test and retest interview in the five studies was (1) 5 minutes; (2) 5 minutes (replication); (3) 7 days; (4) 5 weeks; and (5) 8 months. Each interviewer was asked to limit all of his own interview comments to approximately 5 seconds.

The results with all 5 studies showed unusually high reliability for interviewee speech behavior from one interview to the next. The results of the first study mentioned above provides clear and striking evidence that interviewee speech duration is a highly reliable variable (Pearson r of .90). The reliabilities were similarly high in each of the four other studies conducted by Matarazzo, Wiens, and Saslow (1965).

In terms of interviewee behavior and differential diagnosis, Matarazzo and Saslow (1961) compared the interview speech behavior of five different groups of interviewees who were independently interviewed by four different interviewers. The five groups consisted of (a) 19 state hospital back ward chronic psychotics (schizophrenics); (b) 40 neurotic and acutely psychotic patients from the inpatient and outpatient clinic neurotics; (d) 40 normals (applicants for sales positions at a Chicago department store); and (3) 17 normals (applicants for sales positions at a Chicago department store).

The results revealed differences among these five groups on a variety of interviewee variables. There were wide differences in the medians among the groups. The analysis revealed that the two normal groups did not differ statistically significantly from each of the three patient groups. The mean interviewee speech duration for each of the subjects represented in the five groups revealed considerable intragroup individual differences in each group precluding the use of speech durations, alone as adequate for differential diagnosis in the individual case (Matarazzo, Wiens, & Saslow, 1965).

Fear Thermometer

Analogous to the behavioral measures obtained during actual confrontation with anxiety stimuli, specific fear ratings are routinely obtained just prior to, during, and/or just after test exposures and are designed to measure the cognitive anxiety component in direct response to the stimulus. These self-report measures may be divided arbitrarily into two types: (1) obtrusive rating scales that include items directly related to the feared stimulus and that ask the subject to indicate the amount of fear experienced during the exposure, and (2) less obtrusive scales that attempt to measure the subject's current discomfort with less explicit reference to the feared stimuli and/or their descriptors (Borkovec, Weerts, & Bernstein, 1977). Typical of the former is the Fear Thermometer (Walk, 1956), a 10-point scale on which the subject estimates the degree of his anxiety during exposure tasks. Common examples of the latter type include the Affect Adjective Checklist and the Anxiety Differential (Borkovec, Weerts, & Bernstein, 1977).

According to Borkovec, Weerts, and Bernstein (1977), by far the most frequent method of assessing momentary anxiety level in response to a feared stimulus is Walk's (1956) Fear Thermometer (FT) or derivitives thereof (e.g., Subjective Units of Discomfort - SUDS). Walk conducted two studies to validate this very direct method of anxiety assessment. Parachutist trainees were given the FT just prior to each of several mock tower jumps in the first study and after a series of jumps in the second study. Subjects scoring high and low on the FT scale were compared on behavioral performance ratings and success in completing

the training program. In both studies FT scores discriminated quality of performance. Scores on the FT were significantly related to other self-report measures of fear. Analysis of prequestionaire data indicated that the FT ratings were specific to the testing situation itself and did not reflect a general tendency among high scores to admit fear (Walk, 1956).

The majority of behaviorally oriented therapy outcome studies have employed some form of the FT as one of their self-report instruments. The FT is the quickest test to administer and is applicable to any fear situation. Immediate test-retest correlations (rs = 0.94 to 0.98) and reliability over several weeks (r = 0.75 to 0.94) have been generally quite high in studies of both snake phobia and speech anxiety (Borkovec, Weerts & Bernstein, 1977).

In addition to ratings of anxiety level, numerous clinical investigations have collected client-recorded data on anxiety-motivated behavior. Examples include daily frequency counts on self-mutilating behavior, frequency and duration of body washing, and frequency of ruminations, but Borkovec, Weerts, & Bernstein (1977) caution that although relatively easy to obtain, the FT and self-recorded anxiety data are the most direct request for reports of anxiety level and are thus the most susceptible to demand effects and faking.

Method

Subjects and Interviewers

Thirty-six undergraduates (18 males and 18 females) enrolled in upper division undergraduate psychology courses at Eastern Illinois University volunteered to participate in an interview "concerned with attitudes toward university life."

The two female interviewers were seniors majoring in psychology, and were given course credit for their participation in the study. The interviewers received didactic training in nondirective (i.e., ambiguous) interviewing, which was carefully monitored before the study began. The interviewers were provided with identical open-ended interview questions. (See Appendix) The purpose of using open-ended questions was to provide the interviewee latitude and alternative ways of responding.

The interviewers in this investigation were instructed and trained to standardize their interviewing behavior across and within interviews. After the subject responded to the opening topic question, the interviewer cued in on the subject's opening statement with a probe response. Probing is defined here, as an open-ended attempt to obtain more information about something and is most effective when used in that form of statement such as "Tell me more," "Let's talk about that," "I'm wondering about..." rather than "How," "What," When," "Where," or "Who" questions (Hackney & Nye, 1973, p. 60).

The interviewers were also instructed and trained to standardize other interviewing behaviors which have been found to significantly influence interviewee speech duration behavior (e.g., duration of utterance limited to 5 seconds, head-nodding, and saying "mm-hmm"). Frequency counts of these variables for both interviewers were made during training sessions (approximately 4 hours, total) by two independent raters until counts on these variables were equivalent for both interviewers.

Procedure

The Interview

When the subject arrived at the interview room, he or she was welcomed by the author of this investigation, who reminded the subject of the purpose of the study. The subject was told that the interview would be audiotaped for research purposes (there were no objectors), that the interview concerned attitudes toward university life, and that the subject would be asked to discuss academic, social, and personal attitudes for 5 minutes each. The subject was given a brief explication of the Fear Thermometer. He was told that he would be asked four times throughout the interview to indicate to the interviewer on a scale of one to ten how anxious he felt; one being the least anxious, and ten being the most anxious.

The subject was then introduced to the interviewer who indicated the interviewee's chair to the subject, and requested a pre-treatment anxiety reading. Having recorded the interviewee's anxiety level, the interviewer proceeded with the first topic segment of the predetermined condition. At the end of each topic segment, the interviewer requested another anxiety level reading. A large clock, out of view of the interviewee, cued the interviewer when it was time to change topics.

Interviewing Room and Manipulation of Distance

The interviewing room measured 12 feet by 14 feet. The interviewer's chair was a medium weight, sturdy, wood, desk chair. The interviewee's chair was a heavy, hard-to-move couch-like chair used in relaxation studies. The subject's chair was placed near the wall and next to the door (see Figure 1). A table was placed along the wall on the same side of the room as the interviewing chairs. A couch was placed two feet away from the wall on the opposite side of the room from the interviewing chairs and table. At the 2 feet distance (as measured from the center of each chair) the chairs were at immediate right angles to one another. The angle between them at 5 feet was about 135^{o}, and at 9 feet, the angle of the chairs was about 150^{o}.

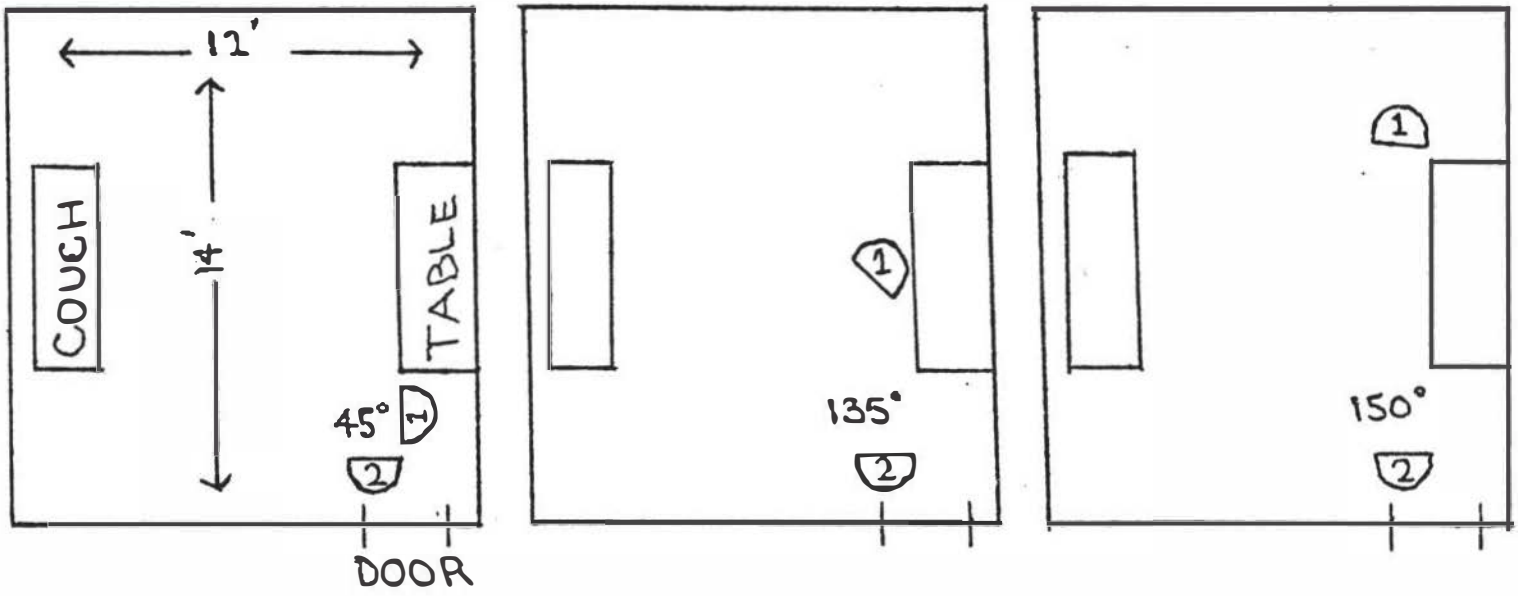
Experimental Design

The experimental design utilized in this study was a 3 X 2 on distance and sex with a Latin Square on the topic crossing treatment conditions (see Table 1). Subjects were randomly assigned to one of the following distances from the interviewer: 2 feet (.6m), 5 feet (1.5m), or 9 feet (2.7m), and one of 3 topic sequences predetermined variations in topic order. The random assignment of subjects to experimental conditions was done with the restriction that an equal number (n = 12; 6 males and 6 females) appeared in each of the three distance conditions.

The 15-minute interview was divided into three 5-minutes segments in which the subjects were asked to discuss personal (T1), social (T2), and academic (T3) topics (see Table 1). For purposes of minimizing "order

FIGURE 1

The interviewing room and the manipulation of distance.



2 ft. 5 ft. 9 ft.

Interviewer - Chair 1

Interviewee - Chair 2

TABLE 1

Experimental Design

3 x 2 with a Latin Square on the topic in treatment combinations

A1	
B1	B2
S1, S2; T1, T2, T3	S7, S8; T1, T2, T3
S3, S4; T3, T1, T2	S9, S10; T3, T1, T2
S5, S6; T2, T3, T1	S11, S12; T2, T3, T1
A2	
B1	B2
S13, S14; T1, T2, T3	S19, S20; T1, T2, T3
S15, S16; T3, T1, T2	S21, S22; T3, T1, T2
S17, S18; T2, T3, T1	S23, S24, T2, T3, T1
A3	
B1	B2
S25, S26; T1, T2, T3	S31, S32; T1, T2, T3
S27, S28; T3, T1, T2	S33, S34; T3, T1, T2
S29, S30; T2, T3, T1	S35, S36; T2, T3, T1

A = Distance (A1 = 2 ft., A2 = 5 ft., A3 = 9 ft.)

B = Sex (B1 = females; B2 = males)

S = Subject

T = Topic (T1 = Personal; T2 = Social, T3 = Academic)

effect" for topic, an equal number of subjects (n = 12; 6 males and 6 females) were randomly assigned to each of the three following topic order combinations: T1-T2-T3, or T3-T1-T2, or T2-T3-T1. Two males and two females were assigned to identical conditions in terms of distance from the interviewer and topic order.

Interviewer I interviewed the even-numbered subjects while Interviewer II interviewed the odd-numbered subjects. Interviewer differences contributed to error variance.

Results

A between-subject analysis of variance for Fear Thermometer (see Tables 2 and 3) indicated a significant effect for distance, F (2, 18) = 6.225, $p < .01$. Means for close, intermediate, and far distances were 4.44, 2.55, and 3.74, respectively. These means, if plotted, would form a U-shape, which suggests that interviewees reported significantly lower anxiety levels when at the intermediate distance than at the close or far distances. Evidence for this effect was supported by the existence of a significant quadratic effect for distance, F (1, 18) = 10.734, $p < .01$. There was also a signficant effect for sex, F (1, 18) = 6.436, $p < .025$. Means for females and males were 4.14 and 3.02, respectively, which indicates that females reported higher anxiety levels than males across all conditions. Finally, there was a significant effect for topic sequence ("order effect"), F (2, 18) = 5.547, $p < .025$. Means for topic sequences (see Table 1) T1-T2-T3, T3-T1-T2, and T2-T3-T1 were 4.021, 4.166, and 2.542, respectively. A multiple comparison for topic sequence indicated that interviewees reported significantly less discomfort in the T2-T3-T1 topic sequence condition than in the T1-T2-T3, or T3-T1-T2 condition.

A within-subject analysis of variance for Fear Thermometer (See Table 2) indicated a significant effect for topic, F (2, 36) = 22.2116, $p < .001$. Means for personal, social, and academic topics were 4.26, 3.33,

TABLE 2

Mean Fear Thermometer Readings and Verbal Productivity for Three Distances from Interviewer, Sex of Subject and Topics Discussed

	Distance					
	2 ft.		5 ft.		9 ft.	
	Fear Therm.	Verb. Prod.	Fear Therm.	Verb. Prod.	Fear Therm.	Verb. Prod.
Females						
Personal	6.50	18.68	3.67	24.77	5.30	26.56
Social	5.00	18.45	1.83	26.86	3.83	24.40
Academic	4.83	24.37	2.58	30.16	3.67	34.57
Males						
Personal	4.00	28.33	2.33	38.51	3.75	44.92
Social	3.33	33.87	2.50	34.15	3.50	28.21
Academic	3.00	42.87	2.41	43.88	2.33	37.46

TABLE 3

Analysis of Variance for Fear Thermometer Readings for 36 Interviews

Source	df	MS	F	p
Total	107			
Between Subject	(35)			
Distance (A)	2	32.7801	6.225	.01
Sex (B)	1	33.8912	6.436	.025
A X B	2	6.6829	1.269	
Topic Sequence (R)	2	29.212	5.547	.025
A X R	4	12.636	2.400	
B X R	2	3.224		
A X B X R	4	2.264		
S/A B R	18	5.2661		
Within Subject	(72)			
Topic (T)	2	13.016	22.2116	.001
Interview Period (C)	2	.837	1.428	
A X T	4	1.148	1.959	
B X T	2	4.169	7.114	.01
A X B X T	4	.377	.6437	
A X C	4	.717	1.2223	
B X C	2	.419	.715	
A X B X C	4	.406	.692	
B Cells	2	2.48	4.232	.025
B Cells X Treatment	10	1.394	2.3788	
Residual	36			

and 3.14, respectively. An orthogonal multiple comparison indicated that the only significant difference for discomfort was between personal and academic topics, F (1, 36) = 4.325, $p < .05$. This suggests that interviewees reported higher anxiety levels when discussing personal topics than when discussing academic topics. There was also a significant interaction between sex and topic, F (2, 36) = 7.114, $p < .01$. The means for females for personal, social, and academic topics were 5.17, 3.55, and 3.69, respectively. The means for males were 3.36, 3.11, and 2.58, respectively. A simple main effects comparison between males and females in the personal topic segment was significant, F (1, 36) = 50.07, $p < .001$, which indicates that females reported higher anxiety levels than males when discussing personal topics. In addition, females reported significantly higher anxiety levels than males also when discussing academic topics, F (1, 36) = 18.9, $p < .001$.

A between-subject analysis of variance for Verbal Productivity (see Table 3) indicated a significant effect for sex, F (1, 18) = 8.944, $p < .01$. Means for females and males were 25.43 and 36.89, respectively. The indication is that males talked more (i.e., longer) than females across all conditions. Verbal productivity was measured by seconds per utterance.

A within-subject analysis of variance for Verbal Productivity indicated a significant effect for topic, F (2, 36) = 7.111, $p < .01$. The means for personal, social, and academic topics were 30.30, 27.66, and 35.52, respectively. A multiple comparison indicated that there was a significant difference between personal and academic topics, F (1, 36) = 6.00, $p < .05$.

The difference was also significant between social and academic topics F (1, 36) = 13.729, $p < .01$, but there was no significant difference in verbal prodictivity between personal and social topics; interviewees talked significantly longer about academic topics than they did about both personal and social topics. There was a significant effect for verbal productivity over time (duration of interview), F (2, 36) = 23.400, $p < .001$. A linear contrast of the means over the three time periods was found to be significant, F (2, 36) = 46.000; $p < .001$. This indicates increased verbal productivity as the interview progressed.

Finally, there was found an inverse relationship between verbal productivity and anxiety level. The Pearson Product Moment Correlation Coeficient was -.49 ($df = 35$, $p < .01$). This indicates that as anxiety increased, verbal productivity decreased.

Discussion

The following is a summary of all significant effects as revealed by between and within-subject analyses of variance and multiple comparisons for Fear Thermometer: (a) interviewees reported significantly lower anxiety levels when in the intermediate distance condition than in the close or far distance conditions, (b) female interviewees reported significantly higher anxiety levels than males across all conditions, (c) interviewees reported significantly less discomfort in the social-academic-personal topic sequence condition than they did in both the other two sequence conditions (see Table 2), (d) interviewees reported significantly higher anxiety levels when discussing personal topics than when discussing academic topics, (e) female interviewees reported significantly higher anxiety levels than males when discussing personal and academic topics.

Significant effects for Verbal Productivity were as follows: (f) male interviewees talked longer than females across all conditions, (g) interviewees talked significantly longer about academic topics than they did about both personal and social topics, and (h) interviewees talked significantly longer as the interview progressed, regardless of topic order.

It was hypothesized that the intermediate distance would provide the optimum condition for verbal productivity and anxiety level. That is, it was hypothesized that interviewees would concurrently talk longer and experience less anxiety at the intermediate distance than at the close or far

distances. Only the latter was supported (i.e., interviewees did report significantly lower anxiety levels when in the intermediate distance conditions, but verbal productivity did not significantly increase). This finding permits some interpretation from Hall's theory of proxemic behavior. Hall (1955) has suggested that when distance expectations are violated, defensive reactions are elicited. In terms of Hall's theory, perhaps the close (2 ft.) and far (9 ft.) distances were not the culturally expected conditions for communication and therefore elicited reactions in the form of heightened anxiety level. In terms of anxiety, this finding may offer support for unfulfilled distance expectations.

The finding that female interviewees reported significantly higher anxiety levels than males across all conditions may have been related to the fact that the interviewers were also both female. The specific nature of that relationship is open to speculation. Although Lett, Clark and Altman (1969) found that heterosexual pairs have smaller personal-space zones than same-sexed pairs, no difference was found in the present study for a Distance X Sex Interaction (see Table 4).

One interpretation for the result that interviewees reported significantly lower anxiety levels in the social-academic-personal topic sequence condition is that interviewees were found to have reported significantly higher anxiety levels when discussing personal topics than when discussing academic topics. Interviewees discussing personal topics in the last 5-minute period of the interview may have experienced a "warm-up" effect, thus reducing anxiety as a function of that effect.

The significant sex difference in both measures are difficult to interpret because of the limitation of only having female interviewers. Men

TABLE 4

Analysis of Variance for Verbal Productivity Readings for 36 Interviews

Source	df	MS	F	p
Total	107			
Between Subject	(35)			
Distance (A)	2	319.715	.80	
Sex (B)	1	3546.87	8.944	.01
A X B	2	83.613	.21	
Topic Sequence (R)	2	922.694	2.326	
A X R	4	91.891	.231	
B X R	2	909.136	2.29	
A X B X R	4	314.026	.79	
S/A X B X R	18	396.551		
Within Subject	(72)			
Topic	2	575.61	7.111	.01
Interview Period	2	1894.00	23.400	.001
A X T	4	129.31	1.597	
B X T	2	58.1777	.718	
A X B X T	4	133.661	1.65	
A X C	4	19.841	.245	
B X C	2	134.068	1.65	
A X B X C	4	78.321	.967	
B Cells	2	105.419	1.302	
B Cells X Treatment	10	162.36	2.005	
Residual	36	80.945		

were less anxious and more talkative when being interviewed by the female interviewers. Inclusion of male interviewers would have helped sort out effects due to treatment from those due to sex of interviewer. Moreover, female interviewees reported significantly higher anxiety levels than males when discussing personal topics. Females may experience more discomfort than males in general when discussing personal topics, but since both interviewers were the same sex, it may reflect female reluctance to discuss personal matters with other females in a taped interview.

Consistent with the foregoing discussion, there was an inverse relationship between anxiety level and verbal productivity over subjects. That is, as interviewee anxiety decreased, verbal productivity increased. There have been a considerable number of inconsistent findings concerning this relationship. Murray (1971) suggested that, based on the data, "as stress is increased from minimal or mild to moderate, situational (as opposed to dispositional) anxiety increases and so does verbal productivity, reaching asymptote on the inverted-U curve somewhere in the moderate range. As stress increases beyond moderate toward severe, situational anxiety continues to rise, and verbal productivity declines down the right shoulder of the inverted-U curve (Murray, 1971, p. 256)." That is, in a mild to moderate anxiety evoking situation, verbal productivity can be expected to increase, but in a moderate to severe anxiety evoking situation, verbal productivity can be expected to decrease. If, in the present investigation, the interview or any of its variables were experienced as moderate to severely anxiety evoking, the results were consistent with the data reported by Murray (1971). There was indeed an inverse relationship between anxiety and verbal productivity.

The finding that interviewees talked significantly longer as the interview progressed, can be regarded as a warm-up effect, in that as the interviewees began to experience more familiarity with the task and interviewer, verbal productivity increased.

In summary, the results of the present investigation are consistent with the major findings in the personal-space research (Evans & Howard, 1973) as far as anxiety is concerned, but in terms of verbal productivity, the findings are inconsistent with the results of Stone and Morden (1976) who found that subjects talked more about personal topics at an intermediate distance than they did when seated close to or far from the interviewer. This inverted-U curve was also consistent with the conclusion drawn by Murray (1971).

The interviewing room used in this study was slightly larger than the rooms used in the Stone and Morden (1976) and Lassen (1973) studies, and was also not carpeted. Some advantages of the present study over the Stone and Morden (1976) study include: the generalization of these results can be extended to a second interviewer, Stone and Morden used only one female interviewer; the generalization of these findings can also be extended to a male population, Stone and Morden used all female subjects; finally, Stone and Morden used only a partial counterbalancing procedure, and consequently could not entirely rule out order effects. Order effect was balanced by use of a Latin Square design in the present investigation. It is suggested that future investigators consider the possible effects of order, particularly when measuring anxiety.

With these advantages and disadvantages in mind, one can consider some tentative implications for the initial interview: (a) interviewees may feel more anxious when seated too close to or too far away from the interviewer, (b) interviewees may experience less anxiety when seated at an intermediate (5 feet) distance from the interviewer, (c) when interviewees are in a moderate to severely anxiety eliciting situation, they may talk less, (d) conditions being the same, male interviewees may feel more comfortable and talk more when being interviewed by a female interviewer, and (e) a "warm-up" effect may be facilitated by discussion of a neutral topic before discussing personal topics, which may result in anxiety reduction and increased verbal productivity.

Appendix

Interview Questions

I. Personal Topic

1) What do you consider your major personal weaknesses to be?
2) In what kinds of situations are your feelings most easily hurt?
3) What do you think the relationships between sex and love are?
4) In what ways are your moral values dictated by society and in what ways are they self-determined?
5) I'd like you to tell me about your religious beliefs.

II. Social Topic

1) What do you think about the belief that man is essentially good and can be trusted?
2) Do you think that students around campus are generally friendly and easy to meet?
3) What kinds of activities are you involved with here at the university?
4) What kinds of things would you suggest that might enhance the social life around campus?
5) What are your feelings about fraternity and sorority organizations?

III. Academic Topic

1) In your opinion, what is the value of a liberal arts education?
2) What do you think of the academic quality of Eastern?
3) What kinds of changes would you like to see here at Eastern?
4) Which student services have been most helpful to you here at school?
5) Tell me a little bit about the courses you're taking this semester.

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