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THE RELATIONSHIPS BETWEEN SOCIAL PSYCHOLOGICAL STUDIES OF NON-VERBAL BEHAVIOUR AND TWO-WAY AUDIOVISUAL TELECOMMUNICATION

by: Prof. W. Libby, Jr.

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1.1 Study No. 1, Acceptance of Technology

A search of a variety of sources of items concerning people's attitudes toward and acceptance of technology, in general, as well as communication technology, specifically including Mumford (1970), Reiff (1966), Roszak (1969) and Michael (1973) yielded a pool of over 350 items. Through processes of categorization and re-categorization by two different teams of researchers twenty-nine *a priori* categories of items were identified, as follows:

1. responsibility for unintended consequences of innovations
2. destructive effects of science and technology
3. the unimpedable march of science and technology
4. science and technology are turning man into robots
5. the modification of traditional belief systems by science and technology.
6. change and growth through science and technology
7. changeability versus stability of life
8. requirements for more participation in governmental decisions due to technological change.
9. facilitation of awareness by science and technology
10. removal by technology of the challenge of living
11. alienation as a consequence of science and technology
12. the Protestant Ethic and related beliefs
13. freedom
14. materialism
15. impersonality of science
16. openness to innovation
17. complexity of science

18. regulation of technology
19. belief in authority
20. the inadequacy of science
21. the nature of man (individual versus society)
22. the objectivity and potential relevance of science
23. the nature of work
24. the handling of power and control issues
25. the constructive effects of science and technology
26. the evil and the good scientist
27. the goals of science
28. miscellaneous

Items specific to communication technology were included, as appropriate, under the above categories. The items were inspected for apparent redundancies, lack of ambiguity and other criteria for good items and divided into two final sets of tentative items, each set to be administered as a separate questionnaire, as follows: (1) Attitudes Toward Technology and Science, consisting of 150 items and (2) General Opinion Scale, consisting of 71 items.

The Attitudes Toward Technology and Science questionnaire and the General Opinion Scale were administered to 370 and 300 introductory psychology students, respectively. Of the students who completed the Attitudes Toward Technology and Science questionnaire, 150 also completed the Goldman Mechanization Scale, which is being developed by another investigator to measure several dimensions related to the acceptance of technology. All responses have been transferred to IBM cards and further analyses are beginning.

The further analyses have two main objectives: (1) through factor analysis and item selection to identify empirically the dimensions measured by the two Libby scales and to reduce the number of items for measuring each dimension to an optimal number. Re-administration of the scales and composition of new items, as well as rewording of old items, is contemplated as necessary in this process. (2) to compare scores on the Libby dimensions with those yielded by the Goldman questionnaire, thus identifying areas in which the different measures are similar and unique. It is expected that by the time of the final report for this year's work tentative final versions of the Libby questionnaire will be ready for use in studies designed to identify which dimensions of attitudes toward technology discriminate between acceptors and rejectors of communications technologies as determined by actual behaviour.

1.2 Study No. 2, Ocular and other nonverbal behaviour in face-to-face and auditory-channel-only interviews.

This study was intended to discriminate nonverbal behaviour of an interviewee in a face-to-face interview from behaviour in an electronically mediated interview in which visual cues to the interviewee regarding the interviewer are absent. There are two theoretical bases for this research. First, recent evidence suggests that the direction of an interviewee's eye movements may be directly related to, and thus reveal (1) his cognitive processes (whether he is reasoning verbally or forming pictorial images), (2) his impression of the difficulty of the question or topic to which he is responding, and (3) the extent to which the topic influences him to feel psychologically close or distant to the interviewer. Second, further evidence suggests that such ocular behaviour

is more likely to occur in a mediated, than in a face-to-face interview (Gur, Gur, and Harris, unpublished manuscript). The study is also designed to yield data which can be combined with that of Study 3, Proxemics of Electronic Copresence below to permit analysis of the relative anxiety provoked by the three communication modes utilized in the two studies, face-to-face, interactive TV, and audio only.

Relevant background literature for the study has been searched, the study has been designed and has been carried out. One hundred twenty subjects were seen individually--60 in each of the two conditions of the present study, face-to-face and audio only. The dependent variables measured on each subject were as follows:

Nonverbal: 1) whether or not eye contact with the interviewer was maintained; if not what was the first direction of gaze aversion. For rake-off form see Appendix B.

2) time to onset and offset of verbal response and thus response duration. For rake-off form see Appendix B.

Questionnaire: 3) rating of each of 48 questions asked during the interview on each of three dimensions:

a. extent to which the question involved verbal or spatial reasoning.

b. extent to which it was easy or difficult.

c. extent to which it provoked interpersonal emotion (embarrassment) or not. For copy of form used see Appendix.

4) Semantic differential rating of "My Feelings about Myself during the Interview" (Appendix B).

5) Semantic differential rating of "My Behaviour during the Experiment" (Appendix B).

6) Nowlis Mood Questionnaire (Appendix B).

7) Semantic Differential rating of "My Feelings about the Mode of Communication in This Study" (Appendix B).

All data has been transferred from videotapes and questionnaires to IBM cards and the full study is now being analyzed. In addition, the face-to-face condition of the study, insofar as it dealt with ocular behaviour and question content served as the M.A. thesis of Dianne Ramey. This data has been fully analyzed and written up in M.A. thesis format, for which Dianne received a high pass and the M.A. degree. The completed thesis is included as Appendix B.

As will be noted from the thesis, the results of the face-to-face condition alone have made an important contribution to our knowledge of the interaction between situational and intrapersonal determinants of eye behaviour. The main finding was that difficulty of a question is an important, and previously overlooked, mediator of direction of ocular response. When questions were easy, interviewees who broke eye contact looked away to the left in response to emotional questions more frequently than they looked to the right, as shown in a previous study (Libby and Yaklevich, 1973); when questions were difficult interviewees who broke eye contact looked up rather than down, but did not, on the average, look more often to the left in response to emotional questions. In addition the ratings of the questions by the subjects on the three content dimensions proved invaluable in interpreting the data and suggest an important source of ambiguity in previous findings when ratings were

not made.

The analyses of the complete experiment promise to reveal important differences between nonverbal behaviour in the face-to-face situation, when the interviewee knew his responses may have communicative meaning to the interviewer, and in the audio-only situation, when there was no video link between interviewer and interviewee. This information is not only of important theoretical interest in itself, it also will serve as a guide to analyses of studies of ocular behaviour in telecommunication interactions which are visually as well as aurally mediated. In addition the semantic differential data, especially the self ratings and the mood ratings, promise to expand our knowledge of differential channel effects. In particular they will provide information on the hypothesis that the less information-rich (and hence more ambiguous) the channel, the more anxiety it will provoke in the communicator.

Final analyses will be completed by January and will be reported in this year's final report.

1.3 Study No. 3, Proxemics of Electronic Copresence.

This study was designed to explore the extent to which proxemic behaviour (nonverbal expression of physical and psychological distance) in an interactive TV interview (two persons spontaneously interacting over electronically mediated video and audio channels) approximates face-to-face behaviour. A secondary aim was to investigate how attitudes toward technology affect readiness to utilize and appreciate communications technology. Finally, the study is designed to yield data which can be combined with that of Study 2, Ocular and other nonverbal behaviour in face-to-face and auditory-channel-only interviews, above, to permit

analysis of the relative anxiety provoked by the three communication modes utilized in the two studies, face-to-face, interactive TV, and audio only.

Relevant background literature for the study has been searched, the study has been designed and has been carried out. Ninety-six subjects participated individually; 48 in each of two sub-studies. In each sub-study, the apparent distance of an interviewer from the interviewee (the subject) was varied by altering the interviewer's image size. In one sub-study the psychological distance of the interviewer was varied by having her ask a series of 24 intimate questions followed by 24 neutral questions or vice versa; in the other the intimacy of the questions was alternated for each of four blocks of 12 questions each. Each sub-study included conditions in which the subject saw his own image (1) on a monitor placed to the left of the monitor showing the image of the interviewer; (2) on a monitor placed to the right of th monitor showing the image of the interviewer and (3) on the same monitor that presented the image of the interviewee (before the interviewer's image appeared). The dependent variables measured on each subject were as follows:

Nonverbal: (1) actual distance of interviewee's chair (on casters) from the TV screen after every six questions.

(2) interviewee's use of "zoom" controls to change his image size after every six questions.

(3) whether or not interviewee maintained eye contact and, if not, what was the first direction of gaze aversion. (For rake-off form see Appendix B, same as in Study 2).

(4) amount of time interviewee looked at his own image and the interviewer's image in the two experimental conditions where his own image was available. (For rake-off form see Appendix C).

(5) time to onset and offset of verbal response and thus response duration. (For rake-off form see Appendix B, same as in Study 2).

Questionnaire: (6) Semantic differential rating of interviewer after each of four blocks of 12 questions each (Appendix C).

(7) Semantic differential rating of self after each of four blocks of 12 questions each (Appendix C).

(8) Nowlis Mood Questionnaire (Appendix B, same as in Study 2).

(9) Semantic Differential rating of "My Feelings about the Mode of Communication in this Study (Appendix C).

(10) Semantic differential rating of "My Feelings about the Interview Situation"(Appendix C)

(11) Semantic differential rating of "My Behaviour During the Experiment (See Appendix B, same as in Study 2).

(12) Thing-Person Interest Questionnaire (Appendix C).

(13) Goldman Mechanization Scale (Appendix C).

(14) Description of own ocular behaviour (Appendix C).

All data has been transferred from videotapes and questionnaires to IBM cards and the full study is now being analyzed. Preliminary graphs of the data indicate that during the course of the interview subjects moved physically closer to the monitor on which the image of the interviewer appeared and used zoom controls to make their own picture larger. The data also suggest that a significant number of subjects responded, both with physical movement and zoom controls, to the interviewer's changes in picture size and intimacy of question content. Further analyses are needed to confirm the pattern of making one's own picture larger as the interviewer's picture became larger and moving away as the interview content became more intimate. Separate analyses of each of the two sub-studies are necessary, as well as overall analyses. Analysis of sub-study 1 has been completed and written up in the form of the M.A. thesis of Tom Schleich (See Appendix C).

2.0 Studies proposed for continuance of the contract for a second year.

For the second year of the contract it is proposed to carry out further studies outlined in the original proposal as well as to build upon the results of the first year studies. Since the results are still incomplete it is not desirable to specify all the second year studies in complete detail. However, the following proposals can be made at this time. (Reference numbers are to studies outlined in the original proposal).

Original 1.1 The regulation of psychological distance during face-to-face and two-way audiovisual telecommunication by means of physical movement and other nonverbal variables.

During the first year only part of the original study was conducted.

The investigation of proxemic relationships in interactive telecommunications was limited to two-way TV. No direct comparisons of two-way TV and face-to-face communication were made. For the present year it is proposed to conduct two studies, building on this year's study 3 as described above but including both face-to-face and telecommunication conditions. In each study the basis for interaction will be meeting a potential dating partner of the opposite sex for the first time. The study will be presented as an attempt to improve upon computer dating. Although the personal interview basis of this year's studies seemed to involve subjects, the computer dating basis is more realistic and likely to be even more involving in terms of relevance to nonverbal behaviour.

The first study will include, as an additional variable, degree of acquaintance of interactants. This variable is of great potential importance for the study of both face-to-face and telecommunications since anecdotal evidence suggests that nonverbal behaviour among the well acquainted differs markedly from that among strangers.

The second study will incorporate some of the major issues of Study 2.1 of the original proposal, by exploring the effect of actual distance between telecommunicators upon their behaviour. There will be three conditions: face-to-face, telecommunication with a partner whom one is highly likely to meet face-to-face and telecommunication with a partner one is highly unlikely to ever meet unless one seeks him out.

Original 5.2 Validation of the Acceptance of Technology Scale.

By completion of the first year a usable Acceptance of Technology scale will be developed. During the second year, as part of its validation, it will be used to select subjects to participate in one

or both of the two preceding studies. Thus each study will have a telecommunication condition in which subjects have been selected as acceptors of technology and a condition in which they have been selected as rejectors. Of interest will be their behaviour in, and expressed preference for, the telecommunications condition as compared to the face-to-face condition.

Additional Studies. An apparently crucial proxemic variable for satisfying interactive TV communication is the communicators control over the camera transmitting his partner's image--whether he can aim it where he pleases to inspect the environment of his partner's station and whether he can zoom in and out on his partner. To conduct research on this variable a remote control camera is essential. If the contract can be augmented to include costs of such a camera, studies of the variable will be begun during the proposed second year of the contract.

Costs for second year. Costs will be about the same as in Year I and comparably distributed for a total of $15,000.00. However, this does not include studies utilizing a remote control camera, the additional cost of which is about $2,000.00 (see Appendix R). It should also be noted that standard wages for research assistants in Ontario have been increased, partly due to inflation. Thus it would be desirable to continue to attract top notch students, to increase the contract amount by $2,000.00 for a total of $17,000.00 without remote control camera or $19.000.00 with such a camera.

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APPENDIX A

THE EFFECTS OF COGNITIVE AND EMOTIONAL QUESTION CONTENT AND ENVIRONMENTAL COMPLEXITY ON DIRECTION OF GAZE AVERSION DURING INTERVIEWS

by

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ABSTRACT

The effects of cognitive and emotional question content, and environmental complexity upon ocular behaviour were studied.

Although the findings did not support previous research concerning lateral gaze aversion, one interesting result suggests that emotionality and difficulty of questions may have a curvilinear effect upon lateral eye movements analogous to the classic Yerkes-Dodson anxiety curve.

The findings do seem to support previous research which found that people tend to look up more for difficult questions, and suggest that difficulty is an important dimension to consider when studying ocular behaviour.

PREFACE

The author wishes to express her sincere gratitude to the Chairman of her thesis committee, Dr. William L. Libby, Jr., for his valuable assistance throughout the course of this study. Thanks are also due to the other members of her committee, Dr. J.A. Malone, Dr. David Reynolds, and Dr. Muhammed Shuraydi, for their constructive criticisms and suggestions. In addition, the author is indebted to Thomas Schleich, Judy Macero, and Elizabeth Havelock for their help and support, and especially to Murna Holsey who unselfishly devoted a tremendous amount of her time and energy towards the completion of this study.

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CHAPTER I

INTRODUCTION

Although the eyes have long been recognized as an essential part of human interaction, most studies of ocular behaviour have been concerned with only one aspect, whether or not a person maintained a glance directly at the eyes of another. These studies suggest that the extent to which a person looks another in the eyes reflects his personality (Duke, 1968; Bakan, 1971), his moment-to-moment feelings (Kinsbourne, 1972; Libby, 1971), and his ongoing intentions or expectations (Kendon, 1967). More recently, however, another aspect of ocular behaviour has received attention, the direction in which one's gaze is averted when one looks away from the eyes of another. Two major planes of directional responses have been studied; lateral gaze aversions, that is, look-aways to the right or the left, and vertical gaze aversions, or look-aways in an up or down direction.

Lateral Gaze Aversions

Two major possible determinants of direction of lateral gaze aversion have been identified: internal factors which may function independently of the looker's physical environment, and external or environmental factors. The major hypothesized internal determinant of direction of lateral gaze aversion is the relative dominance of the left or right cerebral hemisphere; the major external determinant is the location of physical objects in one's surroundings. Studies of each of the two determinants are reviewed in the following sections.

The Cerebral Dominance Hypothesis

Traditionally, the concept of cerebral dominance has implied a single dominant hemisphere, that being the left hemisphere because of its leading role played in language and analytic processes in the right-handed person. However, Bakan (1971) discusses the "double dominance" model of the brain, in which each hemisphere is dominant with respect to different functions.

In fact, studies by Sperry and Gazzaniga, who were the first to study the split brain in man, suggest that the right hemisphere is not only capable, but sophisticated in some specialized functions. For example, Gazzaniga (1967) reports that right-handed patients, in whom the corpus callosum was cut, were able to arrange blocks to match a picture design and draw a cube in three dimensions with the left hand, while the right hand, deprived of information from the right hemisphere, could not perform these tasks.

According to the double dominance model of the brain that Bakan proposes, it is believed that the left hemisphere dominates in such functions as verbal and analytic processing, abstract, rational and objective thinking; while the right hemisphere dominates in preverbal and concrete thinking, and spatial patterning. Studies of split brain patients, in whom the corpus callosum connecting the right and left hemisphere of the brain were severed, generally support the double dominance hypothesis, but not for all functions suggested by Bakan.

Gazzaniga (1971) provides anectodal evidence that in generating emotional reaction, the right hemisphere is at least on par with the left. One patient in whom the corpus callosum was cut reacted with smiles and laughter to a nude picture whether the picture was presented to the right or left hemisphere; although when it was presented

to the right hemisphere she could not verbally describe what she had seen, as she could when it was presented to the left.

There are two possible ways in which hemispheric dominance may manifest itself:

1. In any person's total psychological functioning, one hemisphere may be relatively more dominant than the other. (Bakan, 1971)

If, for example, the left hemishpere is more dominant, the particular individual is likely to be consistently more competent at verbal, analytical tasks than at tasks involving spatial patterning and musical abilities. Presumably such individuals may also be relatively less emotional than those in whom the right hemisphere is more dominant. Persons in whom the right hemisphere is dominant should be relatively better in spatial patterning and musical abilities than left-hemispheric persons.

It has been customary to identify a given individual's dominant hemisphere by determining handedness, footedness, eye dominance, and so on. This is because each hemisphere receives input predominantly from the opposite side of the body, or in the case of vision, from the opposite visual field. However, Day (1967) and Duke (1968) report that during face-to-face interviews, individuals have a tendency to turn their eyes consistently in one horizontal direction rather than the other, making it possible to classify most people as left-movers or right-movers. Bakan (1971) proposes that direction of lateral eye movement is an individual characteristic, in that it reveals the relatively more dominant hemisphere in any person's total psychological functioning. In support of this reasoning he finds that in comparing right-movers and left-movers, right-movers tend to have higher mathematical scores on the scholastic aptitude test, are more likely to choose "hard" college majors, make career choices earlier, and prefer "cooler" colors; while left-movers tend to have

more vivid imaginations, major in "soft" areas, and be more musical and more religious.

2. Some stimuli may activate the left hemisphere more than the right, while other stimuli may activate the right hemisphere more than the left.

Ongoing cognitive activity of a hemisphere may be reflected both by the electrical activity as detected by EEG (Doyle, Ornstien, Galin, 1973), and by lateral gaze aversions in the opposite direction. Thus, Kocel, Galin, Ornstein, and Merrin (1972) found verbal and mathematical questions to elicit more eye movement to the right than spatial and musical questions. Kinsbourne (1972) found similar results. Kocel and her associates concluded that any tendency of an individual to move his eyes consistently in one direction, that is, to be a left-mover or a right-mover, is strongly modified by moment-to-moment cognitive activity demanded by the question. Emotional questions also seem to activate the right hemisphere more than the left, resulting in lateral gaze aversions to the left, (Schwartz, Davidson, Maer, and Bromfield, 1973).

The Environmental Hypothesis

The idea that the external environment of an individual will effect his behaviour has been employed repeatedly in psychological studies. The association between lateral gaze aversion and physical environment may also be manifested in two ways:

1. Different personalities may react differently to the same environmental setting.

For example, a person having low self-esteem may search for ways to leave an embarrassing situation, while a high self-esteem person may not. Libby and Yaklevich (1973) found direction of lateral gaze aversion to reflect individual differences. Subjects who rated high on abasement looked more often to the left and less often to the

right than subjects low on abasement. They suggested that since a door was on the subject's left, the low self-esteem person might have been attracted to it as an escape route; or it may have attracted eye gaze simply because it was a complex object useful for drawing the subject's attention away from an uncomfortable situation.

2. The physical environment may be the main determinant of a response to particular stimuli, regardless of personality.

Libby (1971) found that gaze aversions in the right-left direction were related to the affective content of interview questions. Embarrassing questions elicited more eye movements to the left than nonembarrassing questions. Again, the door on the subject's left may have symbolized escape, or may have been the only object in the subject's visual field, thus attracting attention. The presence of an escape route or door on one side or the other has been further investigated by Myszka (personal communication, 1974).

Vertical Gaze Aversions

Although vertical gaze aversions have received much less attention in studies of direction of look-aways than lateral gaze aversions, there is no reason to assume that they are less important. There is evidence that vertical gaze aversions are related to cognitive demands. Libby (1971) reported that subjects tended to look up more when asked difficult questions as opposed to medium or easy questions. In an attempt to replicate previous findings involving lateral gaze aversions, Ehrlichman, Weiner and Baker (unpublished) found that their data revealed significant differences only in the vertical direction of eye movement. However, they did not take difficulty of the questions into consideration, a dimension, which, according to Libby's findings, may have affected their results.

These studies suggest the importance of employing the variables of difficulty and up-down look-aways in any study in which a clear and accurate model of ocular behaviour is desired.

Objectives of Present Study

The major aim of the present research was to further study the hemispheric dominance hypothesis and the environmental hypothesis.

Investigation of the hemispheric dominance hypothesis was undertaken by assessing the relative effects of questions representing three different dimensions upon ocular behaviour. These dimensions were:

a) emotionality - embarrassing vs. nonembarrassing,

b) cognition type - verbally oriented vs. spatially oriented, and

c) cognition intensity - difficult vs. easy.

The environmental hypothesis was approached by introducing "environmental complexity", in the form of object location in the experimental setting, as a between subjects variable. This made it possible to investigate the possibility that complexity in the visual field serves to draw an individual's attention away from an uncomfortable situation.

If eye movement reflects the differential demands made upon the two halves of the brain, and if emotion is largely a right hemisphere function, then embarrassing questions were expected to lead to more left gaze aversions than nonembarrassing questions. If effects of emotion are situationally dependent, direction of gaze aversion was expected to change with the relative complexity of the subject's environment on her right or left side.

According to the view that gaze aversions reflect cognitive demands, eye movement should be more leftward for spatially oriented questions and more rightward for

verbally oriented questions, regardless of the situation. Of course, in view of the hemispheric dominance model which states that eye movement reveals an individual's more dominant hemisphere, it might be expected that subjects emerge as right-movers and left-movers, regardless of the specific cognitive demands of the questions.

Cognition intensity was also expected to have an effect; more upward gaze aversions were expected in response to difficult questions, as opposed to lateral gaze aversions in response to easy questions.

Complexity in the environmental setting was varied across conditions. According to the environmental hypothesis, more left gaze aversions were expected when the environment to the subject's left was more complex, and more right gaze aversions when the environment to the subject's right was more complex; and an equal number of left-right gaze aversions or more gazes directed straight ahead when both sides were bare. Of course, the environmental situation would have no effect on gaze aversion if a strict hemispheric dominance hypothesis prevailed.

CHAPTER II

METHOD

Subjects

The subjects were sixty female University of Windsor summer students, ranging in age from the late teens to the fifties. Six of these sixty subjects were left-handed, with the following distribution of left-handed subjects across conditions: one in the first condition, in which a bookcase and wall picture were to the subject's right; two in the second condition, in which the objects were on the subject's left; and three in the third condition in which the objects were absent.

Questions

Forty-eight questions, designed to tap the dimensions of emotion, cognition type, and cognition intensity, were selected to be experimental questions. Specifically, half the questions were embarrassing, and half nonembarrassing; half were verbally or language oriented, and half were spatially oriented; and half were difficult and half easy. Therefore, there were eight different types of questions, with six questions of each type.

The search for questions to represent the various dimensions began with a review of questions used by previous investigators. Although this did provide a useful supply of questions and also of examples of questions, it seems that many of those used in other studies simply did not represent the required dimensions as well as they might have. For example, Ehrlichman, Weiner, and Baker (unpublished) labelled the following questions as verbal:

"Briefly, what is the meaning of this common proverb: A rolling stone gathers no moss", and

"What word is this the best definition of: A yellow elongated fruit".

Although these questions do have a verbal aspect, it seemed possible that they might also have a spatial aspect, equally strong.

To avoid such ambiguities, an imagery scale (Paivio, Yuille, and Madigan, 1968) was consulted to determine the imagery of the words used in the questions that were being considered for the present study. Careful thought and selection resulted in a list of 128 questions from which forty-eight experimental questions could be chosen.

The final choice of these forty-eight experimental questions was based on pilot tests and ratings. The initial 128 questions were presented to ten pilot subjects and their responses were timed. These subjects were then asked to rate each of the questions on three semantic differential scales, (see Appendix A). These ratings indicated each pilot subject's perception of the emotionality, cognition type and cognition intensity of each question. For the question to be retained as an experimental question, it had to be rated within two scale points of the extreme it was intended to represent by seven out of ten pilot subjects. For example, for a question to be considered embarrassing, it had to obtain a one or a two on a seven point scale with "embarrassing" at the low end of the scale, at least seven times.

An additional criterion was employed in choosing questions to represent the dimension of cognition intensity. Here it was also required that the response time of seven out of ten of the pilot subjects exceeded seven seconds.

The forty-eight experimental questions are listed in Appendix B.

Apparatus

The experiment took place in a simple 10' 11" x 19' 10" room in which plain curtains hung on the two walls that were to the subject's right and left. Two doors led into the room, one on each side at the back. The subject entered through the door that was to the left of the chair in which she sat; she was also aware that the experimenters entered through the door on the right.

However, the subject was seated so that both doors were behind her and out of her field of vision. Further, in case she turned her head, she was prevented from seeing either door by a screen that stood in back of the chair in which she sat.

Three experimental conditions were set up. In the first condition, the physical environment of the experimental setting included a book-case and a rather complex picture, "Hallucinogenic Toreador", by Salvador Dali, on the subjects' right, with no such objects on the subject's left; in the second condition, these objects were on the subject's left only. In the third condition, these objects were removed from the room, so that the subjects' physical environment was plain and balanced on the right and left.

Directly in front of the subject's chair was the chair in which the interviewer sat. Behind the interviewer's chair was a table which held a Sony Videocorder camera, Model AVC-34000, concealed behind the grill of a 26" x 10" loudspeaker cabinet. A video-recorder Sony Videocorder, Model AV-3650, which was just outside the room, recorded the ocular behaviour of the subject. A Sony transister Video Monitor, Model CMV-110U,

connected to the camera was also in the room, but was placed out of sight of the subject behind the speaker cabinet, with the one exception noted below.

Procedure

The experiment was in the form of a structured interview with each subject. Each subject was asked fifty-four questions, the first six of which were presented in a fixed order and were intended to accustom the subject to the interview procedure. The forty-eight experimental questions were presented in a different, randomized order to each subject, with the restriction that not more than three questions of one kind appeared together.

The experiment was carried out by two graduate student experimenters, a twenty-five year old male, and a twenty-four year old female. The male experimenter met the subject and introduced her to the experimental procedure. He explained that he was helping the second experimenter carry out her research, which involved testing different interview techniques. The subject was told that she was not personally being evaluated in any way; rather, that she was being asked to evaluate a particular type of interview, which in her case was a face-to-face interview situation.

The subject was then informed that the camera was inside the loudspeaker cabinet and that the interview would be recorded. To inform her as to exactly what information the experimenters were receiving from the camera, she was shown her picture on the monitor, which was brought out from behind the loudspeaker cabinet for a moment for that purpose. The subject was assured that the tape would be erased once it was reviewed for any information that might be useful in studying the interview

situation. She was informed that the camera was not in full view so that it would not be too distracting for her, especially since she was to look at the interviewer rather than the camera during the questioning.

The male experimenter then went on to explain the interview procedure. The subject was told that she would be asked questions, some of which would seem personal and possibly embarrassing, and some of which would be difficult. She was informed that she did not have to answer any question that she did not wish to answer. She was also told that many of the questions had no one correct answer. Just before leaving the room, the male experimenter told the subject that she would be asked to fill out a rating scale after the interview.

At this point, the female experimenter, (the interviewer) entered the room and introduced herself to the subject. She then gave the subject the following, more detailed instructions for the interview procedure:

> "First of all, I would like you to make yourself as comfortable as possible and then remain in that position throughout the interview. That's just so that your head doesn't move too much to the left and right so that you stay in view of the camera.
>
> "Secondly, I'd like you to speak loudly and clearly, and I'll try to do the same thing because I can ask each question only once. I cannot repeat any question. Perhaps it would be helpful to think of me as a machine that says the question once and cannot say it again.
>
> "Although there is no time limit, please try to answer each question as soon as you can and as briefly as you can. Again, if you feel you cannot or should not answer a particular question - just say so - that will be allright."

"If there is more than one part to an answer, for instance, if I should ask you to list a number of things, I would like you to try and think of the whole answer first before you speak, rather than pausing and speaking and pausing and speaking. In general, though, just listen to the question, think it over and then answer to the best of your ability.

"There is one more thing that is rather important. I want you to look at me while I am asking a question. I don't care where you look during your answer, that's up to you. But during the question, that's all during the time I'm speaking, I'd like you to be looking directly at me. And once you finish your answer, I won't begin a new question until you look at me again.

"Okay. That's all I have to say before we begin. Do you have any questions about the procedure? Well, then we will begin. There are six warm-up questions first and if they go smoothly, we'll just continue with the other questions without a break."

If there were any questions the experimenter answered them, keeping as close as possible to the preceding script, but satisfying herself that the subject understood the procedure.

During the interview, the interviewer followed a consistent procedure for her own eye movements. The questions were written on index cards, which the interviewer used to identify the question to be asked next. Each question was memorized by the interviewer, so that after looking down at the cards to identify it, she made eye contact with the subject, and continued eye contact throughout the question and through the subject's response.

After the interview, the subject was taken into another room where she was carefully debriefed by the female experimenter (the interviewer). The debriefing involved telling the subject more about the research and why it was being conducted, and responding to questions

and comments by the subject. After the debriefing, the subject was asked to rate each of the forty-eight questions on a semantic differential scale, assessing the subject's perception of the relative emotionality, cognition type, and cognition intensity of the questions. (See Appendix A). This provided three dependent variables which will be referred to as emotionality rating, cognition type rating, and cognition intensity rating.

From the videotape, trained observers recorded each subject's ocular response to each question, by tracing the direction of her first eye movement after the initial eye contact made with the interviewer at the beginning of the question. The observers traced the eye movement in a one inch circle divided into eight sections. (See Appendix C).

These ocular response scores were classified into the following categories:

1. Maintains: Score 1 if the subject maintained eye contact throughout the duration of the question and her response; score 0 if she did not;

2. Directional response in vertical plane: Score 1 if subject's first eye movement after initial contact is up; -1 if down; 0 if neither occured;

3. Directional response in horizontal plane; Score 1 if first eye movement after initial contact is to the right; -1 if to the left; 0 if neither occured;

4. Closed: Score 1 if subject's first ocular behavior after initial contact was to close her eyes; score 0 if not.

Note that scores in the vertical plane were not mutually exclusive of those in the horizontal plane.

Rather a directional response was coded as either up or down, unless it was directly in the right or left plane, and as right or left unless it was directly up or down.

Scores for the dependent variables were summed over the six questions within each of the eight blocks of questions, providing each subject with eight sets of scores. There were seven dependent variables in each of the eight sets, formed as follows:

1. Maintains: Sum of the maintains scores. Possible score range: 0-6, where 0 indicates no maintains at all, and 6 indicates that eye contact was maintained on each question;

2. Ups-Downs: Sum of the up and down scores. Possible score range: -6 to 6, where -6 indicates all downs, and 6 indicates all ups;

3. Right-Left: Sum of the right and left scores. Possible score range, -6 to 6, where -6 indicates all lefts, and 6 indicates all rights;

4. Closed: Sum of the closed scores. Possible score range: 0-6, where 0 indicates no eye closures and 6 indicates closure on each question;

5. Emotional Rating: Possible score range: 6-42 where 6 indicates all questions were extremely embarrassing and 42 indicates all questions were extremely nonembarrassing;

6. Cognition Type Rating: Possible score range: 6-42, where 6 indicates all questions were extremely verbal and 42 indicates all questions were extremely spatial;

7. Cognition Intensity Rating: Possible score range; 6-42, where 6 indicates all questions were extremely easy and 42 indicates all questions were extremely difficult.

Four observers were used to record the ocular responses for all sixty subjects. The first two observers scored together until they had scored at least ten subjects, and until they agreed on at least forty-three out of forty-eight scores on five consecutive scoring attempts. These trained observers then repeated the same procedure with the other two observers. Checks were made regularly to insure continued agreement.

CHAPTER III

RESULTS

The effects of questions and object location upon subjects' behaviour was analysed by means of analyses of variance, with three levels of picture location (right, left, and no picture) as a between-subject factor; and two levels each of the three within subjects factors, all of which concerned classifications of the questions. These within subjects factors were:

1. emotionality - embarrassing vs. nonembarrassing questions;
2. cognition type - verbal vs. spatial questions, and
3. cognition intensity - easy vs. difficult questions.

The dependent variables were of two kinds:

1. Ratings of semantic qualities of questions to assess validity of question type, (three variables); and
2. Ocular behaviour, (four variables).

Table I gives the results for the seven separate analyses of variance conducted upon the seven dependent variables. Table 2 gives the means corresponding to each significant analysis of variance component for the same seven variables. Each table is divided into two sections corresponding to the two different kinds of dependent variables. Each kind of dependent variable will be discussed in turn.

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TABLE 1

Effects of Object Location, Emotionality, Cognition Type and Cognition Intensity on Three Semantic Differentials: Emotionality Ratings. Cognition Type Ratings, and Cognition Intensity Ratings; and on Four Ocular Responses: Maintains, Ups-Downs, Rights-Lefts, and Closed.

		SEMANTIC DIFFERENTIAL RATINGS						OCULAR RESPONSES							
		EMOTIONALITY		COGNITION TYPE		COGNITION INTENSITY		MAINTAINS		UPS-DOWNS		RIGHTS-LEFTS		CLOSED	
	df	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F
OBJECT LOCATION (L)	2	137.16	<1	384.26	3.75**	91.46	<1	21.01	<1	15.08	<1	107.44	<1	.86	<1
EMOTIONALITY (E)	1	9100.21	93.71*******	49.41	<1	561.17	17.14******	14.01	12.12******	24.75	5.66***	1.01	<1	.13	3.71**
COGNITION TYPE (V)	1	240.83	14.41******	26700.83	469.40*******	708.10	28.78*******	10.80	5.67***	1.75	<1	1.88	<1	.21	2.46*
COGNITION INTENSITY (D)	1	63.08	3.39*	1732.80	101.44*******	5380.10	149.04*******	122.01	103.04*******	269.85	75.99*******	.33	<1	.83	<1
SUBJECTS (S) (WITHIN L)	57	200.78		102.57		126.72		8.97		51.80		50.62		.25	
LE	2	450.51	4.64***	98.04	2.71*	155.29	4.74***	1.19	<1	10.91	2.49*	2.40	<1	.33	<1
LV	2	35.36	<1	13.78	<1	23.19	<1	2.71	<1	24.85	4.56***	8.79	<1	.11	<1
EV	1	2.13	<1	3575.21	179.39*******	33.60	<1	3.67	4.44**	.47	<1	2.41	<1	.33	<1
LD	2	46.80	2.51*	26.23	<1	.91	<1	5.88	4.96***	6.40	<1	9.78	2.39*	.16	3.09*
ED	1	14.01	<1	10.21	<1	994.75	39.64*******	43.20	58.22*******	101.75	29.49*******	40.83	12.60******	.33	<1
VD	1	294.53	23.79*******	30.00	<1	277.55	14.79******	.75	<1	.20	<1	.30	<1	.83	<1
SE (L)	57	97.11		36.21		32.73		1.16		4.38		3.45		.36	
SV (L)	57	16.71		56.88		24.61		1.90		5.45		3.65		.85	
SD (L)	57	18.63		17.08		39.10		1.18		3.81		4.09		.51	
LEV	2	34.06	2.43*	31.05	<1	16.13	<1	.68	<1	3.68	<1	.48	<1	.83	<1
LED	2	6.93	<1	20.81	<1	51.72	<1	1.62	<1	.31	<1	.77	<1	.33	<1
LVD	2	5.73	<1	7.49	<1	34.26	<1	.19	<1	1.40	<1	9.49	2.92*	.83	<1
EVD	1	300.84	20.74*******	23.41	<1	52.67	<1	.00	<1	3.85	<1	1.63	<1	.33	<1
SEV (L)	57	14.02		19.93		13.70		.83		4.60		3.41		.56	
SED (L)	57	20.91		13.18		25.09		.74		3.45		3.24		.38	
SVD (L)	57	12.38		15.24		18.77		1.19		5.55		3.25		.57	
LEVD	2	34.23	<1	17.28	<1	18.02	<1	1.74	2.47*	.60	<1	2.65	<1	.83	<1
SEVD (L)	57	14.51		16.74		20.71		.71		4.61		4.01		.11	

Note: * p<.10 ***** p<.005
** p<.05 ****** p<.001
*** p<.025 ******* p<.0001
**** p<.01

TABLE 2

Mean Ocular Responses and Ratings Corresponding to Each Significant Analysis of Variance Component

	DIFFERENTIAL RATINGS			OCULAR RESPONSES			
	EMOT*	COG* TYPE	COG* INT*	MAIN-TAINS	EYE-COUNTS	RIGHT-LEFT	BLOG-D*
Picture Location-Right	29.13	24.53	18.83	1.95	-1.33	-.87	.0
-Left	29.60	23.97	18.19	1.46	-.79	-.75	.14
-None	29.81	26.80	19.69	1.24	-.81	.61	.03
Emotionality-Nonembarrassing	33.20	24.61	17.82	1.72	-1.20	-.29	.04
-Embarrassing	24.42	25.45	20.09	1.38	-.75	-.38	.07
Cognition Type-Verbal	26.14	17.67	20.11	1.40	-1.04	-.40	.03
-Spatial	29.55	32.59	17.64	1.70	-.92	-.27	.08
Cognition Intensity-Easy	28.48	27.03	15.35	2.05	-1.75	-.33	.06
-Difficult	29.21	23.23	22.25	1.05	-.20	-.35	.05
LE: Right-Nonembarrassing	33.02	24.65	18.33	2.03	-1.85	-.84	.0
-Embarrassing	25.22	24.21	19.33	1.81	-1.21	-.90	.0
Left-Nonembarrassing	32.55	23.89	17.66	1.73	-1.31	-.58	.11
Embarrassing	25.65	24.06	18.71	1.19	-.26	-.93	.16
None-Nonembarrassing	34.02	25.70	17.47	1.35	-.65	.54	.0
-Embarrassing	23.60	26.09	21.91	1.14	-.78	.68	.01
LV: Right-Verbal	26.24	17.59	19.60	1.65	-.94	-.94	.0
-Spatial	30.01	31.67	16.05	2.25	-1.73	-.80	.0
Left-Verbal	28.53	16.25	19.63	1.38	-1.05	-.58	.09
-Spatial	30.66	31.70	16.75	1.54	-.53	-.93	.19
None-Verbal	27.64	19.39	21.13	1.18	-1.13	.31	.01
-Spatial	27.99	34.40	18.24	1.31	-.50	.30	.04
EV: Nonemotional-Verbal	32.56	14.63	19.30	1.48	-1.23	-.26	.03
-Spatial	33.64	35.00	16.34	1.96	-1.18	-.30	.05
Emotional-Verbal	23.72	20.72	20.93	1.32	-.84	-.52	.04
-Spatial	25.27	30.18	19.07	1.44	-.66	-.25	.10
LD: Right-Easy	28.61	26.05	15.43	2.50	-2.11	-.88	.0
-Difficult	29.64	23.01	22.20	1.40	-.55	-.86	.0
Left-Easy	29.84	26.30	14.93	1.75	-1.36	-.49	.18
-Difficult	29.36	21.65	21.45	1.16	-.21	-1.01	.10
None-Easy	27.00	28.75	16.20	1.91	-1.79	.38	.0
-Difficult	28.63	25.04	23.10	.56	-.16	.84	.01
ED: Nonemotional-Easy	32.67	26.57	13.03	2.53	-2.44	.01	.05
-Difficult	33.73	23.06	22.61	.92	-.03	-.59	.03
Emotional-Easy	24.30	27.50	18.08	1.58	-1.07	-.67	.07
-Difficult	24.68	23.41	21.89	1.18	-.43	-.10	.08
VD: Verbal-Easy	26.99	19.83	16.01	1.92	-1.82	-.42	.04
-Difficult	29.28	15.53	24.22	.88	-.26	-.38	.03
Spatial-Easy	29.97	34.24	15.10	2.19	-1.69	-.24	.06
-Difficult	29.13	30.94	20.27	1.21	-.14	-.31	.08
EVD: Nonembarrassing							
Verbal-Easy	32.03	16.85	14.08	2.30	-2.38	-.07	.03
-Difficult	33.08	12.40	24.52	.67	-.06	-.50	.02
Spatial-Easy	33.30	36.25	11.98	2.75	-2.50	-.08	.07
-Difficult	34.38	33.72	20.70	1.17	-.15	-.68	.03
Embarrassing							
Verbal-Easy	21.95	22.80	17.93	1.53	-1.25	-.77	.05
-Difficult	25.48	18.65	23.93	1.10	-.43	-.27	.03
Spatial-Easy	26.65	32.20	18.22	1.63	-.68	-.57	.08
-Difficult	23.80	28.17	19.85	1.25	-.43	.07	.12

Ratings of Semantic Qualities of Questions

The major purpose of the ratings was to determine whether or not the experimental questions successfully represented the intended dimensions of emotion, cognition type, and cognition intensity. That is, were the questions classified as embarrassing, actually perceived as more embarrassing by the subjects? Were the questions defined as verbal and as spatial so distinguished by the subjects? Similarly, were the questions labelled as easy rather than difficult actually perceived in that manner by the subjects?

As the first section of Table I shows, the results confirm the accuracy of the classification of the questions. More detailed information on these effects is found in Table 2. For emotionality ratings, the effect of emotionality is significant at well beyond the .0001 level. When average emotionality ratings for each question were computed and ranked, twenty of the twenty-four questions ranked by subjects as more embarrassing were among the questions originally classified as more embarrassing.

For ratings of cognition type, the effect of cognition type is also significant beyond the .0001 level. When average verbal-spatial ratings for each question were computed and ranked, twenty-two of the twenty-four questions ranked by the subjects as more spatial than verbal were among the questions originally classified as more spatial.

For ratings of cognition intensity, the difficulty effect is again significant beyond the .0001 level. When average ratings for this dimension were computed and ranked, seventeen out of the twenty-four questions ranked by the subjects as more difficult were among the ones originally classified as more difficult. It will be recalled that for this dimension only, in addition to the pilot subjects' ratings, average response times were used as a criterion in choosing the questions.

Although the questions were classified successfully, the ratings of the questions yielded some important surprises. Questions classified as different in terms of one of the three dimensions often differed significantly, though not as strongly, in terms of one or more of the other two dimensions. There were also some significant interactions. In view of the careful selection of questions for this study, taking particular pains to avoid apparent ambiguities in the work of other investigators, these effects will be taken into account in the interpretation of significant affects upon ocular variables, which are of primary interest in the study.

Ocular Behaviour

The second section of Table I reveals a number of interesting main and interaction effects of the independent variables upon ocular behavior. Once again, these effects are detailed in Table 2.

The location of the bookcase and wall picture had no main effect on the subjects' ocular behaviour. Contrary to the environmental hypothesis, complexity in the environment, then, did not directly account for any significant differences in ocular behaviour.

Emotionality of the questions affected three of the variables; maintains, up-downs, and closures. Subjects maintained eye contact significantly less when the questions were embarrassing than when they were non-embarrassing ($p<.001$). Although subjects tended to close their eyes very infrequently, they did close their eyes significantly more during the embarrassing questions than during the nonembarrassing questions ($p<.05$). These results do not seem surprising in view of what embarrassed behaviour is thought to involve in our culture. It does seem surprising that subjects tended to look down more

during the nonembarrassing questions ($p<.025$). This seems reasonable, however, when the cognitive intensity ratings are examined -- subjects rated the embarrassing questions as more difficult than the nonembarrassing questions. ($p<.001$).

Contrary to the hemispheric dominance view held by such investigators as Kocel and her associates (1972) and Kinsbourne (1972), emotionality of the questions had no main effect on horizontal gaze aversions. That is, the present data does not support the view that the right hemisphere is dominant for emotionality and will be activated by emotional questions thus producing leftward movements of the eye.

Cognitive type affected only one of the four ocular variables, maintains. Contrary to the hemispheric dominance hypothesis, it failed to affect lateral gaze aversions, nor did it affect vertical gazes or closures.

Subjects maintained eye contact more during the spatial questions than during the verbal questions ($p<.025$). Perhaps this result may be at least partially explained by the fact that spatial questions were rated as significantly more easy than verbal questions ($p<.001$).

The failure to find verbal-spatial effects in right minus left scores seemed to require further analysis since some investigators (eg. Gur, Gur, and Harris, unpublished) have suggested that under the conditions of the present experiment, in which the interviewer was face-to-face with the subject, subjects would consistantly look to the right or to the left about seventy-five per cent of the time.

If this left-mover or right-mover dichotomy were to hold for the present subjects, it might help to clarify the absence of question cognition type upon right-left scores. When the right-left scores are summed over all questions for each subject and arranged in a frequency

distribution, the distribution is similar to a normal curve. (See Table 3). Thus, it is clear that the subjects in this study cannot be classified into right and left movers.

Cognitive intensity affected two of the ocular variables, maintains, and vertical gaze aversions.

Although over all the questions there were significantly more downward looks than upward looks ($p<.005$), there were more upward looks for difficult questions than for easy questions ($p<.0001$). This is consistant with Libby (1971). Also subjects maintained eye contact more when the questions were easy ($p<.0001$). Since, when subjects looked away, they looked more frequently down than up, one might expect more downward looks to result from difficult questions, for which there were more gaze aversions (less maintains). Obviously, such was not the case. Thus the data strongly supports the notion that question difficulty leads to upward looks.

The above main effects must, of course, be considered in light of the interaction effects on ocular behaviour. There were significant interactions for all six two-way interactions:

1. Location of objects with emotionality (LE),
2. Location of objects with cognition type (LV),
3. Emotionality with cognition type (EV),
4. Location of objects with cognition intensity (LD),
5. Emotionality with cognition intensity (ED),
6. Cognition type with cognition intensity (VD).

There was one three-way interaction involving emotionality, cognition type and cognition intensity (EVD).

Although location of objects in the subjects' environment did not directly affect ocular behaviour, it did interact with each of the other independent variables,

TABLE 3

Frequency Distribution of Right-Left Scores Summed Over All Questions for Each Subject

Class Interval	Frequency
16 — 17	1
14 — 15	0
12 — 13	0
10 — 11	0
8 — 9	2
6 — 7	2
4 — 5	4
2 — 3	9
0 — 1	15
- 2 — - 1	18
- 4 — - 3	4
- 6 — - 5	1
- 8 — - 7	2
-10 — - 9	1
-12 — -11	0
-14 — -13	1
Total	60

emotionality, cognition type and cognition intensity to produce significant effects. When object location interacts with cognition type, the results show that when the objects are on their right, subjects look down more during the spatial questions, but when the objects are on the left or absent, there are more downward looks during verbal questions. This effect, significant at the .025 level, was not expected.

The interaction involving object location and cognition intensity was also unexpected. It too was significant at the .025 level. Although subjects maintained eye contact more during the easy questions than during the difficult questions, this difference was significantly greater when the objects were on the right.

The third interaction involving object location was with emotionality. It did not affect any of the four ocular variables; but rather two of the rating variables, emotionality ratings and the cognition intensity ratings. When there are no objects on either right or left, the embarrassing questions were rated more difficult and embarrassing than in any other condition; and the nonembarrassing questions were rated less difficult and embarrassing then in any other condition. These effects were significant at the .025 level.

Emotionality interacted with two factors, cognition type and cognition intensity to produce significant effects. When emotionality interacted with cognition type, the results show that subjects maintained eye contact significantly more during the spatial question primarily when the questions were nonembarrassing ($p<.05$). This interaction effect between emotionality and cognition type is consistent with the fact that nonembarrassing spatial questions were rated by the subjects as more spatial than embarrassing spatial questions; and the main

effects show that subjects maintained eye contact more during spatial questions.

Emotionality interacted with cognition intensity to produce highly significant effects on three of the four ocular dependent variables. They were maintains, up-downs, and rights-lefts. The interaction between emotionality and cognition intensity on maintains produced an effect similar to that of emotionality and cognition type. That is, the subjects maintained eye contact more during the easy questions than during the difficult questions mainly when the questions were nonembarrassing ($p<.0001$). Here again the significant difference seems to be within the nonembarrassing questions. The ratings of the questions again support this effect - there was a significantly greater difference in the difficulty ratings of the easy and difficult questions when the questions were nonembarrassing than when they were embarrassing. Thus, the main effect of cognition intensity on maintains--that subjects maintain eye contact more during easy questions - must be qualified. The effect is particularly strong when the questions are not emotional.

These same two independent variables, emotionality and cognition intensity, interacted to produce an effect on dependent variable, ups-downs, at the .0001 level. Once again the main effect of cognition type on the vertical gaze aversions seems to take place within the nonembarrassing questions. That is, subjects look down more during easy questions and up more during difficult questions if the questions are nonembarrassing. This is consistent with the previously noted fact that the easy questions were rated more difficult when the questions were nonembarrassing - taken together with the main effect that people look up relatively more for difficult questions.

The effects of the interaction between emotionality

and cognition intensity upon lateral gaze aversions did not follow the same pattern as it did with the two previously mentioned dependent variables. It is especially intriguing as it is the only effect in the whole study upon lateral gaze aversions, the main focus of the entire study. Here, it appears that when the questions were nonembarrassing, subjects looked to the left more when the questions were difficult; but when the questions were embarrassing, they looked to the left more when the questions were easy ($p<.005$). This highly significant finding does not support either viewpoint of the hemispheric dominance hypothesis. Instead, it draws our attention clearly to the fact that question difficulty is a crucial mediator of the effects of question emotionality upon lateral gaze aversion. It suggests that emotionality and difficulty may combine to produce anxiety, and that lateral eye movements may reflect the classic Yerkes-Dodson (1908) curvilinear relationship between problem involvement and anxiety. That is, easy nonembarrassing questions are insufficiently motivating; difficult embarrassing questions are overwhelmingly debilitating; but either easy embarrassing or difficult nonembarrassing questions produce active involvement and maximal problem solving. Could it be that left-looking during an interview reflects that moderate degree of anxiety associated with efficient problem solving?

The final significant interaction was a three way interaction between emotionality, cognition type and cognition intensity ($p<.0001$). It affects only one of the seven dependent variables, the emotionality ratings. Embarrassing questions are rated as especially embarrassing when they are also verbal and easy. This finding again points to the importance of controlling questions for relevant dimensions in studies of this kind.

CHAPTER IV

DISCUSSION

The study casts a fresh light on research concerning the effects of different kinds of questions upon ocular behaviour. Its most important finding concerns the pervasive effects of question difficulty. More difficult questions clearly produce more upward looking than easy questions - a finding that appears independently of the equally important finding that people simply maintain less eye contact in response to difficult questions. Both these findings strongly support earlier results reported by Libby (1971).

The results for cognitive intensity appear singularily important in view of the fact that other investigators (Ehrlichman, Weiner and Baker, unpublished; Gur Gur and Harris, unpublished; Kinsbourne, 1972; Kocel, Galin, Ornstein and Merrin, 1972) have not secured cognitive intensity ratings from their subjects and report effects due to a priori judgement of question dimension. In fact, as the ratings in this study show, difficulty interacts with other dimensions - such interactions could account for much of the interactive effects of question dimension upon the ocular variables reported in their studies. Specifically, cognitive intensity interacted with emotionality and with cognitive type to affect maintainance of eye contact, and other variables. These effects would be difficult to explain without knowledge of the relationships among ratings.

The results for question emotionality are also of interest, supporting earlier findings by Exline, Gottheil, Paredes, and Winklemeier (1968), and Libby (1971), that embarrasing questions, too intimate for the quality of a

relationship, lead to less eye contact. Moreover, the results raise the interesting issue that subjects may respond to the situation in a cognitive, as well as emotional way, and that the cognitive dimension may prevail upon ocular behaviour. Specifically the embarrassing questions were rated as more difficult and produced more upward, rather than downward looks - contrary to suggestions made by Tomkins and McCarter (1964) and Goffman (1956) that embarrassment provokes feelings of shame and results in downward looks. This may be so in other circumstances, but apparently not under the conditions of the present study.

The third main finding that spatial questions result in more maintainence of eye contact may also be partially explained by the fact that the spatial questions were rated easier; but of course, it is possible that it is easier to visualize spatial effects than to formulate verbal responses while looking in the eyes of another - an hypothesis which requires further investigation.

The fact that the condition in which the objects were located to the right of the subject lead to more downward looks on spatial questions and to a greater cognition intensity effect on maintainence of eye contact than the other two conditions is difficult to explain. It does seem strong enough to merit further investigation.

The curvilinear interpretation of the emotionality by cognitive intensity interaction upon lateral eye movements seem to be a major consideration and may well be the most important finding of the study if verified by future research. When questions were easy the straightforward results obtained by other investigators (Libby, 1971; Schwartz, Davidson, Maer, and Bromfield, 1973) were replicated. That is, embarrassing questions produced more left looking than nonembarrassing questions. But when questions were difficult the opposite effect occured.

Thus, the similarity to the Yerkes-Dodson anxiety curve comes to mind. Easy, nonembarrassing questions and difficult, embarrassing questions may represent extremes of too little and too much anxiety for effective performance. The remaining two combinations - easy and embarrassing, and difficult and nonembarrassing - may correspond to intermediate degrees of anxiety. Future research then, should explore whether right-left looking reflects too little, just enough or too much involvement in the interview situation.

One interesting finding in this study serves to confirm an implicit working assumption in our society. That is, an interview in which it is desirable that the questions be embarrassing and difficult as possible for the interviewee, should take place in a bare room. In this study when the room was bare, (objects absent), embarrassing questions were rated as more embarrassing and more difficult than the embarrassing questions in either of the other two conditions. This is consistant with the fact that police interrogations almost always take place in bare or scarcely furnished rooms.

Since none of the independent variables provided any effects on lateral gaze aversions that support either view of the hemispheric dominance hypothesis it is interesting to consider some reasons why this study may not have been ideal in obtaining such results. Firstly, Baken (1971) states that women are more likely than men to avert their eyes in both directions; therefore, women are not as easily divided into right-movers and left-movers. Baken warns that it is more difficult to find differences between female right and left movers than between male right and left movers. Thus, the fact that the present study used only female subjects may account

for the lack of replication. However, if it is so that there are such great differences between the sexes in hemispheric lateralization, studies based on these differences may prove a fruitful course to follow in studying the mysteries of the human brain.

Secondly, Gur, Gur and Harris (unpublished) have provided evidence that question content will not determine eye movement in a face-to-face situation, but only in a situation in which the subject is not interacting face-to-face with the interviewer. The interview in the present study was, of course, face-to-face, and this might account for the lack of support for this view of the hemispheric dominance hypothesis. However, the same investigators also state that during a face-to-face interview, subjects will move their eyes consistantly in one direction regardless of the demands made upon the brain, thus emerging into right-movers and left-movers. This study does not support that finding although here again it must be pointed out that these investigators employed male subjects, while the subjects in the present study were female.

A third possible reason why no significant results involving lateral gaze aversions were found might involve the fact that six of the sixty subjects were left-handed. In general, it seems that left-handers are less well lateralized than right-handers (Kinsbourne 1972); therefore, it is more difficult to find consistent differences in the lateral eye movements of left-handed people. However, it is imporbable that the small number of left-handed people in this study could have eliminated any effect that question content might have had on the data, or any emergence of the subjects into right-movers and left-movers. This consideration becomes even more unacceptable in the light of the previously mentioned study by Gur, Gur, and Harris (unpublished). They obtained

significant differences between right and left eye movements even though seventeen out of forty-nine of their subjects were left-handed.

Certainly there is reason for further, more refined research in the study of ocular behaviour. This study suggests two possible methods of improvement. Firstly, investigators should take cognition intensity (difficulty of question) into account when designing or choosing their questions. There seems to be no doubt that question difficulty will influence ocular response, either directly or by interacting with other independent variables.

Secondly, perhaps investigators should obtain the subjects' ratings of the questions; this information would indicate to the experimenters just how successfully they had choosen their questions to represent the intended dimensions. Ideally, this type of research should continually be searching for "pure" questions; that is, questions that are rated by subjects as significantly different in terms of one dimension, and one dimension only. More concern for the questions used could only lead to more accurate interpretations of the effects of question content upon ocular behaviour.

APPENDIX A

SEMANTIC DIFFERENTIAL SCALES

Instructions: "Here is a list of the questions I asked you, (subjects were given a list of the questions), although they are not in the same order as they were during the interview, I would like you to rate each question on each of these three scales; that is, whether it was easy or difficult, embarrassing or nonembarrassing, and verbal or spatial. That means you'll be rating each question three different times, so that you'll have three circled numbers across each row. (The experimenter continually pointed to the relevant places on the scales as she gave the instructions). In this corner is a guide you can refer to. So if you circle a "2" in the first column, that means you found the question very easy. Let's look at another column - if you circle a '5' in the third column, that means you found the question somewhat spatial; if you circle a '6' that means you found the question very spatial. I would like you to try and use the whole range of the scale. Okay, do you understand how to use the scale?

"Now let me explain to you what is meant by verbal and spatial. Spatial indicates that images, pictures, or patterns were brought to mind. Verbal on the other hand, indicates that your mind simply searched for words or logic. Do you understand?

"So now that you've heard all the questions, go ahead and rate each one of them as best you can - trying to remember how you felt about each question at the time it was presented to you during the interview."

If the subject failed to understand any part of the instructions, the experimenter continued to explain that particular point until she was satisfied that the subject understood what she was to do.

The following page is an example of the semantic differential scales used in this study.

1 & 7 = extremely
2 & 6 = very
3 & 5 = somewhat
4 = neutral

Question #	Easy-Difficult	Embarrassing-Unembarrassing	Verbal-Spatial
1	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
2	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
3	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
4	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
5	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
6	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
8	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
9	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
10	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
11	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
12	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
13	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
14	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
15	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
16	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
17	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
18	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
19	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
20	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
21	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
22	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
23	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
24	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
25	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
26	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
27	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
28	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
29	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
30	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
31	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
32	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
33	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
34	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
35	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
36	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
37	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
38	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
39	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
40	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
41	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
42	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
43	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
44	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
45	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
46	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
47	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
...	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7

APPENDIX P

EXPERIMENTAL QUESTIONS

Nonemotional Verbal Easy:

1. What does COD mean?
2. What part of speech is 'the'?
3. What would you do if you lost a book that belonged to one of your friends?
4. What would you do if you went to the store for bread and they didn't have any?
5. What are the advantages of paying bills by cheque?
6. What day comes before Wednesday?

Nonemotional Verbal Difficult:

7. What is the meaning of the word 'time'?
8. Define the word 'economics'.
9. Define the word 'ability'.
10. Finish this sentence--"Ability is native, education is_____".
11. Tell me five verbs beginning with 'R'.
12. Make up a sentence using the words 'exchange' and 'stock'.

Nonemotional Spatial Easy:

13. Try to form a mental picture of what I am going to tell you and tell me when the picture is as clear as you can get it: "A Forest".
14. Try to form a mental picture of what I am going to tell you and tell me when the picture is as clear as you can get it: "An Ocean Liner."
15. Imagine a rectangle. Draw a line from the upper left hand corner to the lower right-hand corner. What two figures do you now have?
16. How are a piano and a violin alike?

17. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "A birdie with a yellow bill hopped upon my window sill".

18. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "Is this a dagger which I see before me, the handle toward my hand".

Nonemotional Spatial Difficult:

19. In pictures of Napoleon, which hand does he hold in his coat?

20. How many points are there on the Maple leaf in the Canadian Flag?

21. How many corners are there in a solid cube?

22. Name two small letters which go below the line of print like the letters p and y.

23. What is a letter that goes below the line of print in small writing and above the line in small printing?

24. Which angle is greater: the smaller angle formed by the hands of a clock at 2:45 or the smaller angle formed by the hands of a clock at 2:30?

Emotional Verbal Easy:

25. What is a four letter word beginning with 'f'?

26. Make up a sentence using the words 'thigh and kissed'.

27. What do you do to attract someone to whom you are sexually attracted?

28. If you are, or were to have a sexual relationship with someone, how often would you like to engage in sexual activity?

29. How often do you use underarm deodorants?

30. Compared with most people, how would you rate yourself on intelligence.

Emotional Verbal Difficult:

31. What is the most embarrassing word I could say to you?

32. What is the most embarrassing word do you think you could say to me?

33. What aspect of your personality do you dislike or regard as a handicap?

34. What was your first impression of me?

35. Why do you think lesbian relationships are considered by some people to be as satisfying as heterosexual relationships?

36. When was the last time you told a lie to someone close to you?

Emotional Spatial Easy:

37. What do you think is the average length of an erect penis?

38. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "They grunted together, Karen squirming backward in the damp earth, Shar grinding himself against her."

39. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "She heaved and hurdled, arched and cried, clawed me, kissed me, even gave a shriek once...".

40. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "He could stand it no longer, he cried out, he sobbed helplessly against her tensed face..."

41. If you are engaged in an intimate sexual experience with someone, do you prefer the lights to be on or off?

42. What are you most afraid of?

Emotional Spatial Difficult:

43. What part of your body do you like to expose to men?

44. What part of your body do you like to hide from men?

45. Describe the scene of the most embarrassing experience you were ever in.

46. Try to get a clear picture in your mind of what I am going to tell you and tell me when it is as clear as you can get it: "A sexual orgy in your own room or apartment".

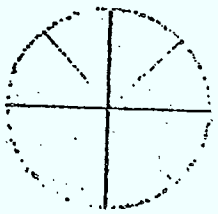
47. Think of your best female friend. What would you do if she expressed a desire to have a sexual relations with you?

48. Imagine you are out with a man for the first time. You notice his fly is open. What would you do?

APPENDIX C

OCULAR MOVEMENT SCORE SHEET

Below is an example of the one inch circles in which subjects' eye movements were recorded by the observers:



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APPENDIX B

AN INVESTIGATION OF THE DEVELOPMENT OF IMMEDIACY PATTERNS IN A DYADIC MEDIATED INTERVIEW SITUATION AS AFFECTED BY FEEDBACK

by

Thomas J. Schleich

B. A., University of Windsor, 1973

A Thesis
Submitted to the Faculty of Graduate Studies in
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for the Degree of Master of Arts
at the University of Windsor

Windsor, Ontario, Canada

1975

APPROVED BY:

(Chairman)

ABSTRACT

To examine the nonverbal psychodynamics of electronic co-presence 48 undergraudate students were each asked 48 questions by a female graduate student during a 2-way closed circuit TV interview. The independent variables studied were 1. Location of Self-View Monitor (on the right of the monitor carrying the interviewer's image vs. on the left vs. absent), 2. Intimacy of Question Content (intimate vs. neutral), 3. Apparent Distance of Interviewer's Image (Close vs. far), 4. Time effects (two Blocks of 24 questions each with 4 Trials within each Block, each Trial consisting of a set of six questions, 5. Order of Intimacy and Apparent Distance Effects (Intimacy and Distance effects were alternated after Block 1 and were counterbalanced). Sixteen proxemic, verbal behaviour, and ocular dependent variables were studied, along with responses to five questionnaires. Results indicated unexpectedly pervasive effects of Monitor Location which dominated other results. Subjects avoided looking at their own picture by averting their gaze up and to the opposite side when beginning to formulate an answer to each question. During the course of the interview they felt ever more at ease and less nervous. Although they moved their chairs slightly further away from the interviewer's image they compensated by increasing the size of their own image by means of zoom controls and replying more at length. They also began to match the size of their own image to that of the interviewer and responded to intimacy of questions with less looking at the interviewer and a prolonged movement of their chairs away from the interviewer's image.

ACKNOWLEDGEMENTS

I am indebted to a number of people, all of whom gave generously of their time and effort during the long months that it took to complete this literary masterpiece.

Firstly, I would like to thank my Chairman, Dr. William L. Libby, Jr., who played an integral role from start to finish, and who gave up many Saturday afternoons to further the cause. I am grateful to my committee members: Dr. J. Ferguson, Dr. J. A. Malone, and Dr. F. Schneider for their time and suggestions. My thanks to Hau Lei for his invaluable assistance at the Computer Centre, and to Bruce Smith for his illustrations.

I can truly say that I couldn't have done it without the efforts of four lovely ladies: Elizabeth Havelock (Media Advisor); Diane Ramey (my interviewer and partner in crime); Mary Anne Martin (who if I'm ever rich and famous I will hire as my personal secretary); and my special lady who encouraged me when I needed it the most!

Oh yes, thanks Communications Canada for paying the shot!

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CHAPTER I

INTRODUCTION

The key assumption of this study is that man has a basic need to communicate. Recent technological progress in telecommunications has stressed the hardware, i.e., computer communications, satellite broadcasting and Bell Picturephones, and has overshadowed the human factor. A communication-technology explosion has taken place in recent years without a concomitant growth in empirical knowledge of its software (human) aspects. Several important questions remain unanswered: what effect does the new technology have upon human interaction?; why is physical travel, whether inter-office, inter-city, or international, still chosen by most individuals when telecommunications media are available, faster and perhaps cheaper?; are there differing detectable (i.e., analyzable) attitudes towards the new technological advances, especially the newly available interactive telecommunications media? If so, what effect do these attitudes have on the behaviour of these individuals when they are confronted with the technology?

One approach to the study of some important aspects of the above questions is offered by the concept of proxemics. Hall (1968) defines proxemics as the study of man's perceptions and use of space. It involves the use of spatial cues to convey a message, and may be consciously manipulated by S or more usually it may be part of his unintended, unconscious repertoire of behaviours.

Proxemics, then, is somewhat analogous to the notion of territoriality used by ethologists (Brown, 1965). In an earlier report (1963b) Hall said, "Proxemic patterns, once learned, are maintained largely out of awareness, and thus have to be investigated without resort to probing the conscious minds of one's Ss". Hall found several factors which affect the distancing behaviour of two people including their relationship and the nature of their meeting; and furthermore (Hall, 1959, 1966) that people from different cultures, or from different groups or backgrounds (i.e., with different attitudes) often hold different concepts of personal space.

Another behaviour, eye contact or gazing behaviour, is closely related to proxemic patterns as shown by Argyle and Dean (1965). In summarizing the functions of eye contact, they note that it signals information seeking, indicates that the channel is open, permits concealment or exhibitionism, shows recognition of social relationships, and reflects approach-avoidance motivation. Argyle and Dean (1965) have put forth a hypothesis of compensation which predicts that when an equilibrium point is reached in the nonverbal expression of interpersonal intimacy, any substantial change in one of the behaviours (e.g., physical distance, eye contact, body orientation or body lean) on the part of one person requires a reciprocal change in one or more of the behaviours on the part of the other person. An example they cite is that "eye contact seems to increase as the communicating pair increase the distance between them." In this case, eye contact psychologically reduces the distance between communicators. Extensive research, both correlational and experimental support the proposed compensatory process (cf. Felipe and Sommer, 1966;

Watson and Graves, 1966; Goldberg, et al., 1969; Patterson and Sechvest, 1970; Romano, 1971; Aiello, 1972; Argyle and Ingham, 1972; Patterson, 1973; Stewart and Patterson, 1973).

Changes in ocular behaviour reflect more than proxemic or physical distance relationships. They also seem to reflect other kinds of psychological distance. Thus Argyle and Dean (1965) found that if Ss approached photographs with the intention of getting close enough to "see well", they would stand closer to photographs of faces with eyes closed than to those with eyes open. Other studies have sought out the specifics of the behaviour. Exline (1963) found that embarrassing and innocuous questions produced only slight differences in visual attention while S was listening, but that there was a significant decrease in eye contact when embarrassing questions were being answered. Somewhat related to this finding is a study carried out by Dosey and Meisels (1969) who found that when stress was artificially introduced into the experiment, Ss stayed further away from the experimenter. It may be that by reducing the degree of eye contact, one psychologically increases the perceived physical distance between himself and the person with whom he is interacting, thereby establishing a new personal space without physically moving. However, the results of a study done by Hobson, Strongman, Bull and Craig (1973) did not support the hypothesis that gaze aversion would increase as the anxiety of one or both of the participants increases. Female subjects exhibit more eye contact than male subjects do as shown by Patterson (1973); Exline, Gray and Schuette (1965), and Aiello (1972) and are more sensitive to experimental factors (Dosey and Meisels, 1969).

Patterson (1973) noted that there was greater eye contact in same sex pairs than in opposite sex pairs. Jurich and Jurich (1974) interviewed subjects about their sexual attitudes and found a high correlation between fingersweat index, rater's global rating, immediacy tone, postural relaxation, speech errors, filled pauses, editorial errors and eye contact. Thus eye contact and immediacy seem to be highly reliable to other indications of anxiety during an interview. Also, Patterson (1973) found that immediacy behaviours are highly consistent over time i.e., an individual will exhibit similar stable behaviours in various testing sessions.

Returning now to our question of how people react towards the new communication technology, Dinoff, et al. (1969) reported that subjects responded to a video-taped interviewer as though he were physically present proving that electronically mediated interviews are feasible both as a research and as an applied clinical device, however, they were concerned with the subjects' verbalizations and rating of the interviewer (e.g., "He was a very nice doctor) rather than their actual behaviour in the interview.

Effective utilization of the new communications media (e.g., Bell Picturephones) may be examined in terms of the extent to which electronically mediated communicative behaviour approximates "natural" face-to-face interaction. In an ongoing face-to-face interaction, communications, both verbal and nonverbal, (e.g., personal distancing and eye behaviour) give constant information as to the affective state of the participating members.

Will such behaviours occur in an electronically mediated interview, i.e., where the participants interact via a closed circuit TV system? Further, what effect will feedback of one's own image during such an interview, or the lack of said feedback, have on the interviewee's behaviour.

In the present study it is proposed that 1) Subjects will choose more distant positions (either through chair movement or through use of the zoom controls) when preparing to answer a group of stressful i.e., embarrassing questions. 2) Subjects will avoid looking at interviewer (or at themselves in the feedback conditions) when answering embarrassing questions. 3) Subjects without feedback are in a more precarious situation, as will be shown in how subjects rate themselves and their present situation on semantic-differentials. 4) For all groups (feedback and nonfeedback) compensation will occur, i.e., eye contact will decrease or own image-size will decrease or both as the interviewer's image distance increases; and, the converse may be true as the interviewer's image-distance decreases.

Changes in own image size may be accomplished either through physical movement of subject's chair (forward or backward) or through electronic manipulation of image size (zoom controls).

METHOD

Apparatus

The following equipment was used:

1) One Sony Video Camera: Model DXC-2000A with Zoom Lens 12.5 - 50 mm. (on confederate).

2) One Sony Video Camera: AVC-3210 with Zoom Lens 16-64mm. (on subject).

3) One Sony Videocorder: AV-3650 (for taping Subjects' responses).

4) One Sony Audio Tapecorder: TC 105 (used as amplifier to send confederate's voice to Subjects' monitor).

5) Three Sony Video Monitors: CVM-110UA (11" picture tube, measured diagonally).

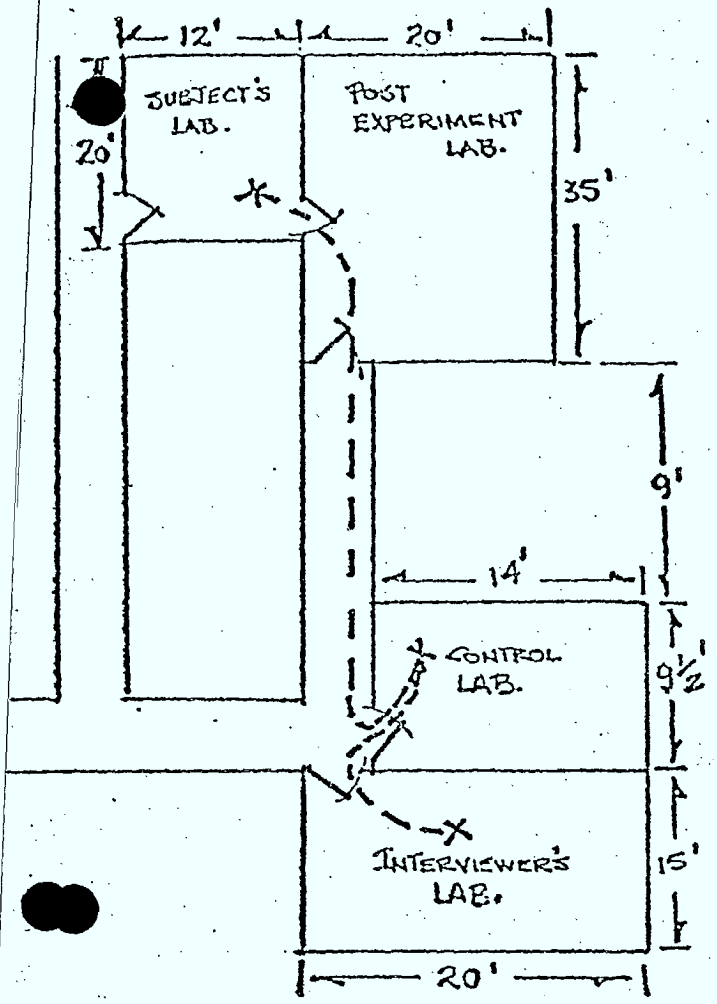
6) Three Sony F-96 Dynamic Microphones.

7) One Bogen "Challenger" Amplifier, Model CHS-35, Series F-109, used as P.A. with one 8 ohm speaker to monitor the beginning and ending of confederate's question block.

Figure 1 depicts the subject's lab; it was completely symmetrical with curtains on the sides and in front. The panel behind the subject's chair served two functions: 1) it blocked vision of the doors, and 2) gave similar backgrounds in both the subject's and the interviewer's monitors.

Figure 2 represents the floor plan of the experimental setting. The dotted lines from the subject's lab and the interviewer's lab to the control lab represent wires. The experimenter could open audio and

GURE (2). FLOOR PLAN OF
EXPERIMENTAL SETING.



The post experimental lab: The subject was brought here after the interview to fill in semantic differentials and to be debriefed.
The subject's lab: See Figure 1.
Control lab: From here the experimenter could open audio and visual communication between the subject and the interviewer.
Interviewer's lab: Was made to appear similar to that of the subject in all aspects that were evident to the subject; thus while the interviewer's chair remained stationary and she had only one monitor, there were panels behind her to make her image appear as if it emanated from a setting similar to that of the subject's.

A: Monitor A carries the interviewer's image.
B: Monitor B carries the subject's image. Depending on experimental condition, it will be the left, right or not supplied.
C: Microphone carries subject's voice to the interviewer. The microphone was placed in between monitors A and B, thus being to the left or right of Monitor A depending upon experimental condition. When there was no feedback monitor (i.e., subject's own image), the microphone was to the best of our recollection, on the right side of Monitor A as viewed by the subject. Note: At the time the placement of the microphone in the "No Monitor" (i.e., Feedback) condition did not seem important.
D: Camera lens pokes out of curtain as close as possible to the top of Monitor A.
E_1: Zoom panel, with five buttons, attached to subject's chair. Four of the buttons are marked zoom 1 minimum 2 3 4 maximum, the fifth is marked focus. This panel is connected to a second panel (E_2) behind the front curtain. E_2 has the same configuration but has lights rather than buttons.
F: Work Area: the subject moves her chair up to this position to fill in semantic-differentials during pauses in the interview.
G: Pieces of masking tape from front of monitor table to background panels, tape-marked every eight inches back to eight feet.
H: Initial chair position; the subject moved the chair from here to her preferred seating distance from the TV camera and monitor.
I: Unobtrusive black boards added or removed to raise or lower Monitor A so that the eyes of the interviewer were on the same level as the eyes of the subject.
J: Curtains ran along the walls and hung from a frame in front such that the room was perfectly symmetrical.
K: The subject's and interviewer's labs were made to appear similar by the use of folding panels in the background.

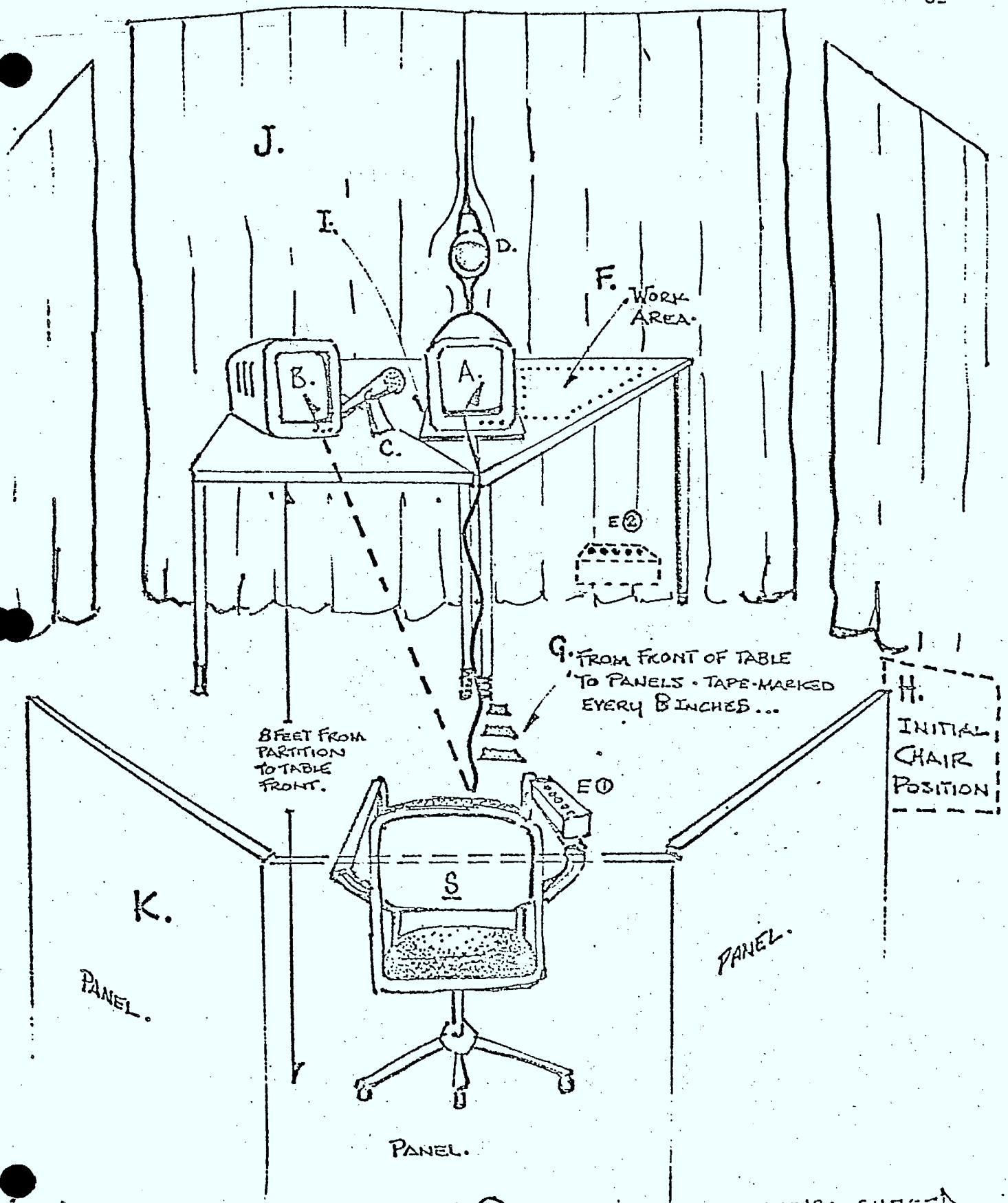


FIGURE ①.

SUBJECTS LAB.

video communication between the interviewer and the subject from the control room. The post experimental lab was used for debriefing the subjects.

Subjects

Forty-eight female volunteer undergraduate students attending summer courses at the University of Windsor.[1]

Interviewer

Female University of Windsor graduate student, aged 24 years who had no previous acquaintance with the subjects.

Procedure

When the subject entered the subject's lab her chair, an office chair on coasters, was located on the far side of the room (the right side as viewed by subject) about parallel to the table on which were the TV monitors. The subject was asked to sit anywhere she liked inbetween Monitor A and the back panel as long as she remained in front of the camera. Subjects were seen individually. The experimenter engaged each subject in a brief casual conversation to make her feel at ease, during which she was told that the experiment was merely a pilot study in order to avoid "evaluation apprehension" (Rosenberg, 1965), that is, the subjects were made to feel as collaborators or confederates rather than as subjects.

Each subject was asked 54 questions, the first six being merely a warmup composed of some personal and some nonpersonal questions. The remaining 48 questions were divided into eight groups of six questions each,

[1] 48 additional Ss who went through the same experimental procedure, except for the order of questions were not used in the present analyses except for My feelings about the Mode of Communication, My feelings about the Interview Situation, and My Behaviour during the Experiment.

such that each group consisted of one type of question--either embarrassing (personal) or nonembarrassing (impersonal). (See Appendix K for schedule used).

Questions were randomized separately for each subject, and each group contained equal amounts of verbal, spatial, easy and difficult questions. (See Appendix F). These questions were asked by the interviewer via closed circuit TV. The interviewer memorized the question, looked at the subject, and slowly, while maintaining her gaze, asked the question. The interviewer continued looking at the subject until the subject finished answering, and then went on to the next question. In fact, in order to be seen to appear to be looking directly into the subject's eyes, the interviewer looked at the camera, rather than into theeyes of the subject's image on her monitor.

The camera was placed as close as possible to the top of Monitor A so that when looking into the eyes of the interviewer's image it was difficult to discriminate whether she was looking at the interviewer's face or at the camera. Thus feedback from her own image on Monitor B suggested to her, when viewed peripherally as she looked at the interviewer on Monitor A, that she was looking where she was in fact looking. To avoid perceived status differences, which might have resulted if the image of the interviewer's face had been other than on the same plane as the subject's face (Dickson, 1973) black boards, carefully cut to fit the bottom of Monitor B were added or removed so as to bring the eyes of the interviewer's image on the same plane as the eyes of the subject.

In Condition I, there was a second monitor (Monitor B) to the right of Monitor A (carrying the interviewer's image) carrying the

subject's own image; and to the left was another table used to fill in Semantic Differentials between groups of questions. In Condition II, the second monitor was to the left of the one carrying the interviewer's image, and the work table was to the right of the others. In Condition III, only the monitor carrying the interviewer's image was present, with a table on each side of the monitor table.

The subject's attention was then brought to the television equipment, and the experimenter explained the purpose and procedure of the experiment (See Appendix F for actual script). The subject was told that the experimenter was attempting to develop an interview procedure using closed-circuit television. He was seeking a nonembarrassing method of studying Canadian attitudes towards sex and other topics, and was presently using the television technique since many people found face to face interviews somewhat intimidating.

On the arm of the subject's chair was a panel marked Zoom 1 minimum 2 3 4 maximum and Focus with buttons to press for the subject to indicate her preferred lens setting; a similar panel lit up according to the button pressed by the subject--from this, the experimenter made the necessary adjustments.

Once the subject was seated, the experimenter instructed the subject in the use of the zoom panel by changing the zoom position on the subject's camera to each of the four lens settings, calling them by number as he did so: "1 minimum 2 3 4 maximim", and relating them to the buttons on the subject's panels at the same time. Zoom 1 minimum was a half-body shot showing the body from the knees to the head, Zoom 4 maximum was a closeup of the face only. The experimenter demonstrated

the lens (or zoom) settings a number of times until the subject could identify the zoom positions (1, 2, 3, 4) by the size of her image on the monitor. In Condition III, this was done using the monitor which was to carry the interviewer's image. In Conditions I and II, it was done on the subject's monitor (Monitor B) while the interviewer's monitor (Monitor A) remained blank.

After the above practice, the subject was asked to press the button which indicated her preferred image-size; this lit up a corresponding light which the experimenter used as a guide for setting the zoom lens. The subject was asked not to verbalize her preference (on the pretense that the experimenter wished to simulate actual conditions with automatic equipment which was supposedly to be used in the "real" experiment), such that a physical involvement with the equipment was necessary.

Once the subject settled on a starting position (i.e., image-size), the experimenter mentally noted both lens setting and chair position (measured by strips of tape on the floor, ranging in equal intervals of eight inches from the monitor table-front back to the background panel--a total of eight feet). Then he went into the control room, recorded the noted information and caused the interviewer's image to appear. The interviewer communicated from a room down the hall and never met the subject face to face until after the experiment.

The first warm-up group of six mixed questions (first three were neutral, last three were personal) were then asked by the interviewer. The experimenter could hear the subject's responsesthrough an audio hook-up, and simply shut off the video-recorder at the end of each group

of questions. After every second group, the experimenter returned to the subject's lab and asked her to move up to the work area (i.e., table beside Monitor A) to fill in semantic-differentials on how she felt about herself and the interviewer during the preceding groups of questions.

At the end of each semantic-differential (See Appendix B_1 or B_2) was a brief description of the questions to be asked in the next two groups of questions, e.g., the next two groups of questions will be of the general, impersonal type; or the next two groups of questions will be personal and possibly embarrassing. The experimenter then went behind the curtain and asked the subject to indicate, via the zoom panel, any change in image-size. If the subject did so, the experimenter made the proper adjustments to the camera; an alternative, as previously explained to the subject, was to move her chair forwards or backwards, wherein she had to use the Focus button for a clear image; if the subject pressed the focus button, the experimenter made the adjustments. On leaving, the experimenter mentally noted lens setting and chair position, and then returned to the control room.

In the first four groups of questions, any change in image-distance made by the subject was presumably made on the basis of the interviewer's last image before fading. After the fourth group of questions was completed, and after the subject had chosen her preferred image-distance, the interviewer said, "Oh, I forgot that we're starting the second half of the interview, you get to see your interviewer's starting image and can adjust your image before the onset of questions." Thereafter the

interviewer's starting image was seen before the subject made a decision as to her image-distance (lens setting or chair position).

The interviewer's image schedule was chosen randomly from either CCCC FFFF or FFFF CCCC wherein C corresponds to Zoom 4 maximum (lens setting) and F corresponds to Zoom 1 minimum. The interviewer's chair position never moved. Changes in her image size were accomplished entirely by means of the zoom controls on her camera.

After all eight groups of questions were completed, the subject was taken to the post-experimental room and given more thorough semantic-differentials rating the mode of communication used; the interview situation; and her own behaviour. (See Appendices C, D and E).

The subject was then introduced face to face to the interviewer and debriefed by both the experimenter and the interviewer. She was told the general purpose, i.e., determining how people feel about, and react to this type of interview situation, but in order to avoid contaminating future subjects, the subject was not told any of the "hidden" purposes, for example, investigation of proxemic patterns or eye behaviours. All questions, though, were answered honestly and the subject was reassured of the value of her participation.

Reliability

Four observers were used to record the ocular responses for all 48 subjects. The first two observers scored together until they had scored at least ten subjects, and until they had agreed on at least forty-three out of forty-eight scores on five consecutive scoring attempts. These trained observers then repeated the same procedure with the other two observers. Checks were made regularly to insure continued agreement.

Over 100 questions, taken from various serouces, were administered to 12 females prior to the actual experiment. These people rated the questions as to degree of intimacy, the 24 questions rated as most intimate and the 24 questions rated as most neutral were used in this study.

Variables of Interest and Overview of Experiment

Five independent variables were of major interest:

1) location of self-view (SV) monitor: a. on right of monitor carrying interviewer's image (SV monitor right); b. on left of monitor carrying interviewer's image (SV monitor left); c. no SV monitor.

2) apparent distance of interviewer image (a. far, b. close).

3) Intimacy of question content, as determined by groups of six questions (a. intimate, 2. neutral).

4) Time: the 48 questions were divided into eight sets of six questions each. Time effects were analyzed in terms of Blocks (Block 1 being responses to the first four sets of questions, Block 2 being responses to the second four sets of questions) and in terms of Trials (for trial effects the eight sets of questions were divided successively into four pairs. Trial 1 consisted of responses to the first set of six questions in a pair; Trial 2 consisted of responses to the second set of six questions in a pair).

5) Order of intimacy and distance effects which alternated after four trials.

There were 16 behavioural dependent variables, plus verbal dependent variables generated from subjects' ratings during and after the experiment.

Behavioural Dependent Variables

1. Lens setting (1 = half body shot including knees, 2, 3, and 4 = close up of face only) recorded by the experimenter according to the button pressed by the subject on her lens setting control panel.

2. Chair position (ranging from 0 = chair placed so that, if sitting upright, subjects' face was approximately six inches (15.34 cm.) from the monitor carrying the interviewer's image to 16 = chair placed so that, if sitting upright subject's face was approximately 8 1/2 feet from the monitor, measured to the nearest 8 inches). Thus 1 = 14" from monitor, 2 = 22" from monitor, 3 = 30" inches from monitor, etc.

3. Time spent looking at interviewer's image between the time the interviewer began asking a question and the time the subject began her answer 0 = not at all, 1 = some of the time, and 2 = all the time. Scored from videotape record.

4. Time spent looking at interviewer's image between the time the subject began her answer and the time she finished her answer (since the interviewer began her next question immediately when the subject finished her answer, no time is left unaccounted for). 0 = not at all, 1 = some of the time, and 2 = all of the time. Scored from videotape record.

5. Time spent looking at own image (on SV monitor) between the time the interviewer began asking a question and the time the subject began her answer. 0 = not at all, 1 = some of the time, and 2 = all of the time. Scored from videotape record.

6. Time spent looking at own image between the time the subject began her answer and the time she finished her answer. 0 = not at all, 1 = some of the time, and 2 = all of the time. Scored from videotape record.

7. Time to onset of verbal response. The time period (as measured by stopwatch to the nearest .5 second) between the moment when the interviewer finished asking a question and the moment the subject began to answer. Scored from videotape record.

8. Time to offset of verbal response. The time period (as measured by stopwatch in .5 seconds) between the time when the interviewer finished asking a question and the moment the subject finished her verbal response. Scored from videotape record.

9. Duration of verbal response. Variable 8 - Variable 7.

10. Maintained gaze at monitor carrying interviewer's image, scored 1 if gaze was maintained throughout the duration of her verbal response, otherwise scored 0.

11. Ups: Please refer to figure 3. If a subject looked away from the monitor carrying interviewer's image, in response to any given question, she either did not look up at all (i.e., looked directly to one side or another, directions 5 and 13) or looked down, directions 6 through 12) or else looked to some extent upwards. The Up score reflects the extent to which the subject looked up. A slightly upward look, directions 4 and 14 were coded 1, a look up at an angle of 45°, directions 3 and 15, were coded 2, a predominantly upward look, directions 2 and 16, were coded 3, and a look directly upward, direction 1, was coded 4.

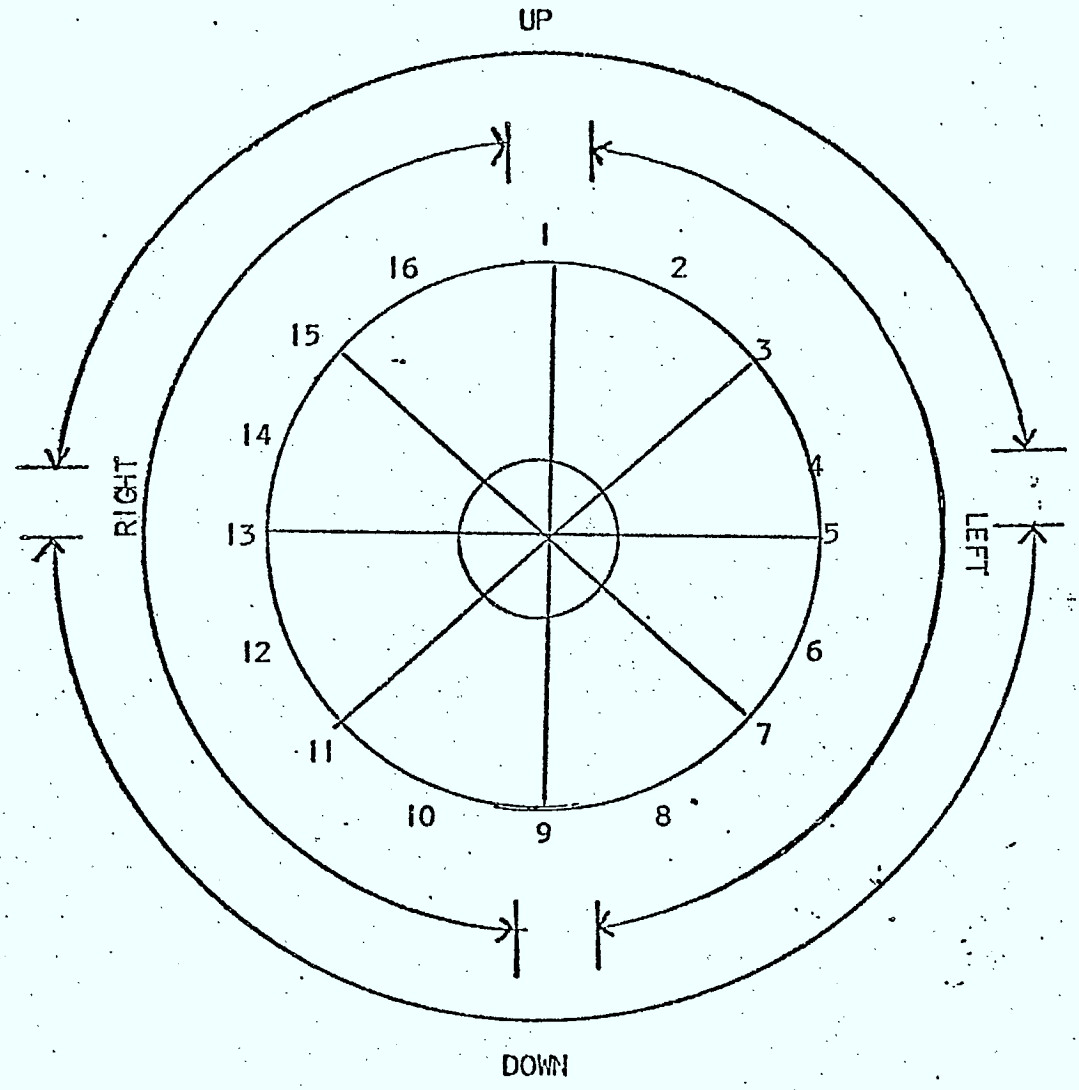


Figure 3: Diagram used for Computation of Scores for Direction of Gaze Aversion.

12. Downs: The down score reflected the degree to which the subject looked down, computed in a way analogous to Ups. See Variable 13 description and Figure 3.

13. Ups -Downs. Variable 11 minus variable 12.

14. Rights (cf. 12)

15. Lefts (cf. 12)

16. Rights-Lefts (cf. 13)

Verbal Dependent Measures

1. Semantic Differential: My feelings about myself during the last block of questions (completed after question sets 2, 4, 6, and 8, Appendix A).

2. Semantic Differential: My perception about the interviewer during the last block of questions (completed after question sets 2, 4, 6, and 8, Appendix B).

3. Semantic Differential: My feelings about the mode of communication (Appendix C).

4. Semantic Differential: My feelings about the interview situation (Appendix D).

5. Semantic Differential: My Behaviour During the Experiment (Appendix E).

An Overview of the Time Course of the Experiment, giving the measures taken and the experimental conditions upon which the subject may be presumed to have been acting at each point in the experiment is given in Table 1.[3]

[3]Several other questionnaires were given after the interview but were not relevant to the present thesis.

CHAPTER III

RESULTS

Since the design of the experiment purposely confounded time and order effects with experimental conditions, the general plan of analyses for both behavioural and verbal dependent measures required two separate analyses of variance for each measure, the first to identify time and order effects, the second to identify the effects of experimental conditions. Verbal measures required additional analyses preceding the application of analyses of variance to identify the major dimensions in terms of which subjects perceived the experiment. Therefore analyses of behavioural and verbal measures are reported in separate sections.

Analyses of Behavioural Dependent Measures

Analyses of variance of the effects of the three levels of self-view monitor location, four levels of order of intimacy and distance (both between subject effects) two levels of blocks of question sets and four levels of trials (both within-subject effects) are reported in Table 2). Of the 15 components of the analysis of variance, 11 have significant effects upon at least one of the dependent variables. The effects of five of these components involving only monitor location, blocks and trials, are detailed in Table 3 which gives the means for significant effects, along with results of Duncan Multiple Range tests to identify which means are significantly different.

Location of self-view monitor had the most pervasive and strongest effects of all the independent variables of the study. Indeed, the monitor location effects defied all expectations and forcefully call our attention to the fact that not only the present or absence of continuous feedback, but also its location on the left or right of the focus of main attention has truly remarkable consequences for non-verbal behaviour. These effects may be summarized in four categories:

(1) When the self view monitor is on the left of the monitor carrying the interviewer's image, as opposed to being on the right, both ocular and verbal response behaviour of the viewer is affected. She looks less often at the interviewer's image at the beginning of her answer to each question, and she waits longer to respond, and speaks for less time. Although in general looking at the interviewer at the beginning of an answer is closely related to maintaining eye contact, since the latter necessarily implies the former, it should be noted that no comparable effects held for maintained gaze. Subjects could, and evidently did, sometimes look away between the end of the question and the beginning of their answer, but look back at the interviewer as they began their answer. They were clearly less inclined to look back when receiving feedback of their own image from a monitor on the left. It seems as if it was more difficult for them to respond under these circumstances since they seemed to take more time groping for an answer and less time to say it once they found it.

(2) When a self-view monitor was present at all, either on the left or the right, subjects looked up more frequently then down as the first ocular response to the interviewer's question. When the monitor was absent they had a very slight tendency to look down. It seems that the very presence of a monitor provokes visual escape from the plane of their own image.

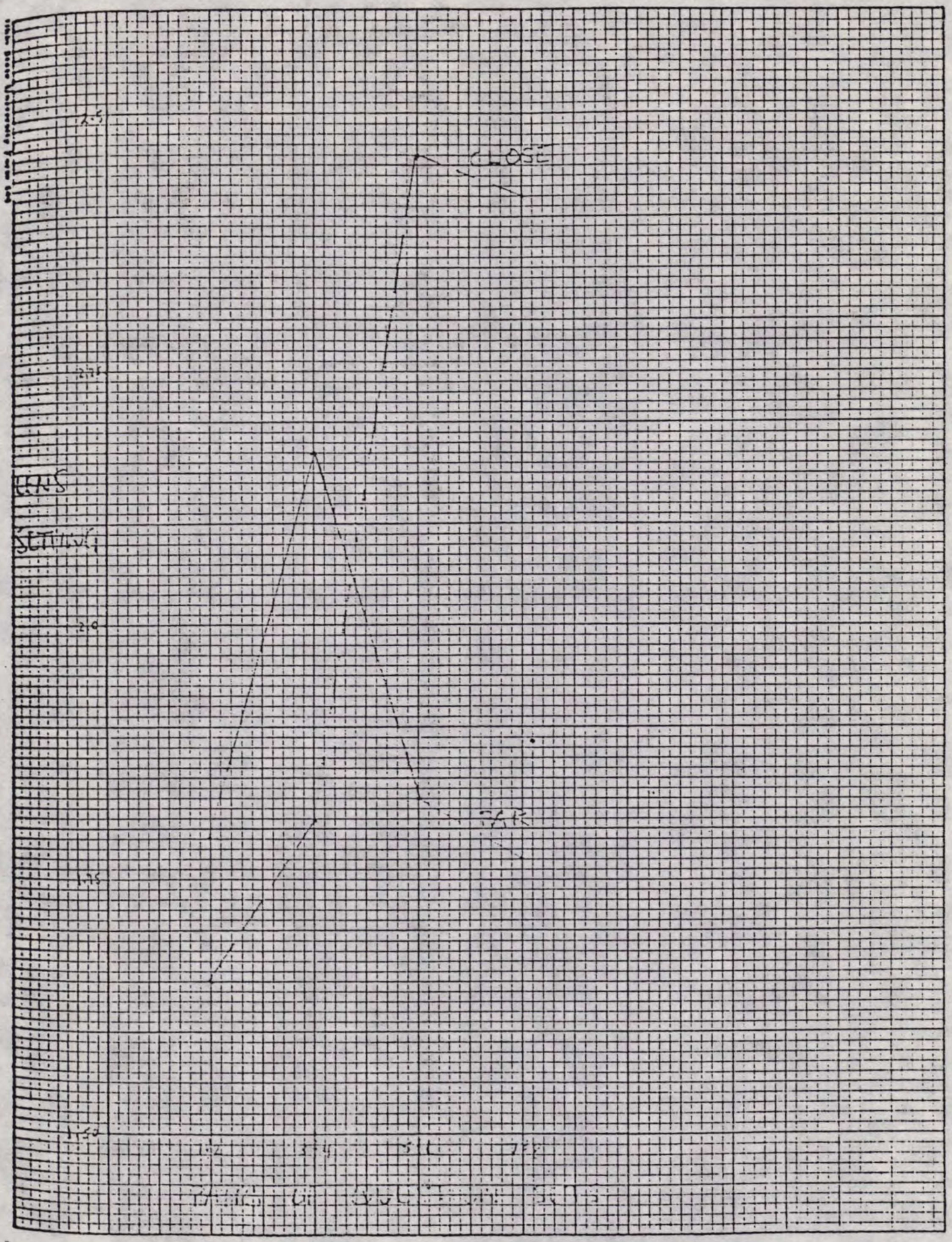
(3) When the self-view monitor was on their left, subjects averted their gaze more frequently to the right, than to the left; when the monitor was on the right they did the opposite, averting their gaze more frequently to the left than to the right. Evidently the monitor provoked visual escape. Although subjects certainly did look at their own image now and then it is clear that, when beginning to respond to a question they did not want to see themselves.

(4) Given significant differences between monitor right and monitor left, the effects of absence of the monitor were not consistent. Thus though the time to onset of their verbal response compared to the monitor right condition--that is, they waited less time to respond than when monitor was on left--the duration of their verbal response compared to the monitor left condition. Indeed their reply was even shorter than the monitor left condition. The frequency of looking at the interviewer was similar to the monitor right condition. Thus, when taking less time to give their response they were more likely to gaze at the interviewer at the time they began to reply to her. Finally, the direction of their horizontal gaze aversion corresponds to the monitor left condition; that

is, when there is no monitor they look away to the right. This behaviour was unexpected, since several previous studies (e.g., Libby and Yaklevich, 1973) suggest that the normal direction of horizontal gaze aversion may be to the left--certainly not significantly to the right! However, the location of the microphone on the right in the monitor absent condition may well explain the present findings. Perhaps, in the absence of visual feedback of own image, subjects look at the microphone. Since in both the self-view monitor present conditions the microphone was on the same side as the monitor it is clear that any positive valence the microphone may have had for visual attention was countermanded by the negative valance of subject's own image.

The significant effects of Blocks, Trials, and the Blocks x Trials interaction may be discussed together. During the time course of the experiment subjects' proxemic behaviour took an interesting twist. During the first block of questions their chair position averaged about 47 inches (119.4cm) from the interviewer's monitor; during the second block it averaged about 49 inches--both distances increasing slightly but significantly (only about 4% from trial 1 to trial 4 within each block). during their respective blocks. However, during the trials constituting the first block they continually adjusted their lens setting, making their image larger and larger, the average setting being 1.69 prior to trial 1 and increasing from 1.75 after trial 1 to 2.10 after trial 5, an increase of just over 17% as opposed to an increase in chair distance of just over 4%. Evidently, given the characteristics of the 16-64 mm

FIGURE 4 TIME COURSE OF LENS SETTING FOR CLOSE AND FAR EXPERIMENTAL IMAGES



zoom lens used in the study, any decrease in apparent distance due to actual chair movement away from the interviewer's monitor (and camera) was more than compensated by the increase in the size of their image due to technological manipulations of the lens setting controls. It is also important to note that lens settings stabilized by the beginning of the second block of questions; that is, although lens settings increased during Block 1 there was little further change during Block 2. Since chair position was also quite stable during Block 2 the second Block may be regarded as a more stable background for the observation of effects due to other experimental conditions.

Time also had a significant effect upon subjects' verbal behaviour. During Block 2 subjects talked longer in response to each question than during Block 1--shown in effects upon duration and offset of verbal response. If length of response can be taken as an index of immediacy it seems as if subjects felt more at home with the interviewer as time went by. In contrast to the Blocks effects upon duration of response, there was also a Trials effect within Blocks, upon onset of verbal response, indicating that subjects took longer and longer to begin their response from the first to the last question set within a Block. Were they becoming more reflective and concerned with the quality of their response, in line with an increasing immediacy interpretation, or were they becoming more anxious and tongue-tied?

There was also a Blocks by Trials interaction upon an ocular variable, Ups-Downs, which defied explanation and may be noted only in passing.

Table 3 shows only one other interesting result, qualifying the preceding effect of Blocks upon duration of verbal response. The significant Monitor Location by Blocks Interaction shows that subjects' replies grow longer only when they have feedback of their own image. It does not matter whether it be from a monitor on the left or on the right, but if continuous feedback of own image is not present the length of their verbal responses does not increase. Particulary notable is the increase from Block 1 to Block 2 when the monitor is located on the right. If they are more comfortable when the monitor is on the right, as suggested by monitor location effects upon looking, how are we to interpret the fact that response length remains so short when there is no monitor?

The remaining six components of the analysis of variance in Table 2 with significant effects included order effects, which, in turn, include the experimental conditions of question intimacy and apparent distance of interviewer image. In order to assess order effect in more detail four separate analyses of variance were performed upon pairs of question sets. Independent variables for these analyses were Location of Self-view Monitor, Question Intimacy, Closeness of Interviewer Image (all between subjects) and Question Pairs (the only within subject variable). The significant effects of these variables for each of the four pairs of question sets are shown in Table 4. Duncan Multiple Range tests indicate the significant differences among means in the column for a given question pair for each component of the analysis of variance yielding significant effects for that question pair. In general, discussion will be limited to effects significant for at least two pairs of question sets. The Effects of Location of self-View Monitor merely confirm the pervasiveness and consistency

of the effects already noted from Table 3. Of interest are the effects of intimacy and closeness and their interactions.

Question intimacy affects two question pairs for three dependent variables, chair position, length of verbal response and maintained gaze. Of these effects, chair position is seemingly paradoxical, since the direction of effects during the last block is the reverse of that during the first block. The effect is best discussed in terms of the Monitor by Intimacy interaction. The remaining two effects of intimacy are straightforward. First, people talk more in response to neutral questions than in response to intimate ones during the first block of questions. It would seem that early on intimacy begets uptightness. Second, subjects maintain eye gaze more for neutral than for intimate questions, a finding in line with those of Libby (1971). Apparently one may compensate for intimacy of topic by reducing ocular intimacy.

Effects of Apparent Closeness of Interviewer Image are especially important in view of the aims of the study to unravel the characteristics of electronic co-presence. By the second Block, when, as we have previously learned, lens setting behaviour has become relatively stable, subjects compensate for changes in interviewer's image size by corresponding changes in their own image size. That is, they tend to match their own picture size to that of their interviewer, just as in face-to-face behaviour physical approach by one partner which naturally increases the size of his image for the other is necessarily complemented by a corresponding change in the size of the other's image for him.

The Monitor Location by Intimacy interaction upon chair position is indeed intriguing since, on the surface it appears to contradict any rational explanation. When self-view monitors are present, and more especially when present on the right side of interviewer's image, the significant effects of intimacy during Block 1 are precisely the opposite of the significant effects of intimacy during Block 2. During Block 1, as anticipated, intimate questions produce greater distance of chair position from the monitor carrying the interviewer's image. However, during Block 2, to our surprize, it is the neutral questions that produce greater distance. A paradox? An uncanny example of a rare event? Probably not at all! Reference to Figure 5 will aid interpretation. It will be recalled that there are four orders of question set, two begin with neutral questions during Block 1 and end with intimate questions during Block 2; the other two begin with intimate questions during Block 1 and end with neutral questions during Block 2. It would seem that there may be a natural flow of interview content which, when observed by the interviewer, leads to greater immediacy or psychological closeness; but which, when not followed, leads to coolness and distance. Thus beginning an interview with neutral questions, followed by more intimate ones may produce an impression of increasing personal interest and caring; while beginning an interview with intimate questions, followed by neutral ones, may produce an impression of abrasive intrusiveness, followed by retreat and rejection. This latter sequence, especially when a cooperative interviewee has reacted to premature intimacy with honest attempts at self-disclosure, would seem logically to lead to erection of barriers to communication by the interviewee who perceives himself as rejected.

FIGURE 5 TIME COURSE OF CHAIR POSITION FOR FOUR ORDERS OF QUESTION INTIMACY AND CLOSENESS OF INTERVIEWER IMAGE

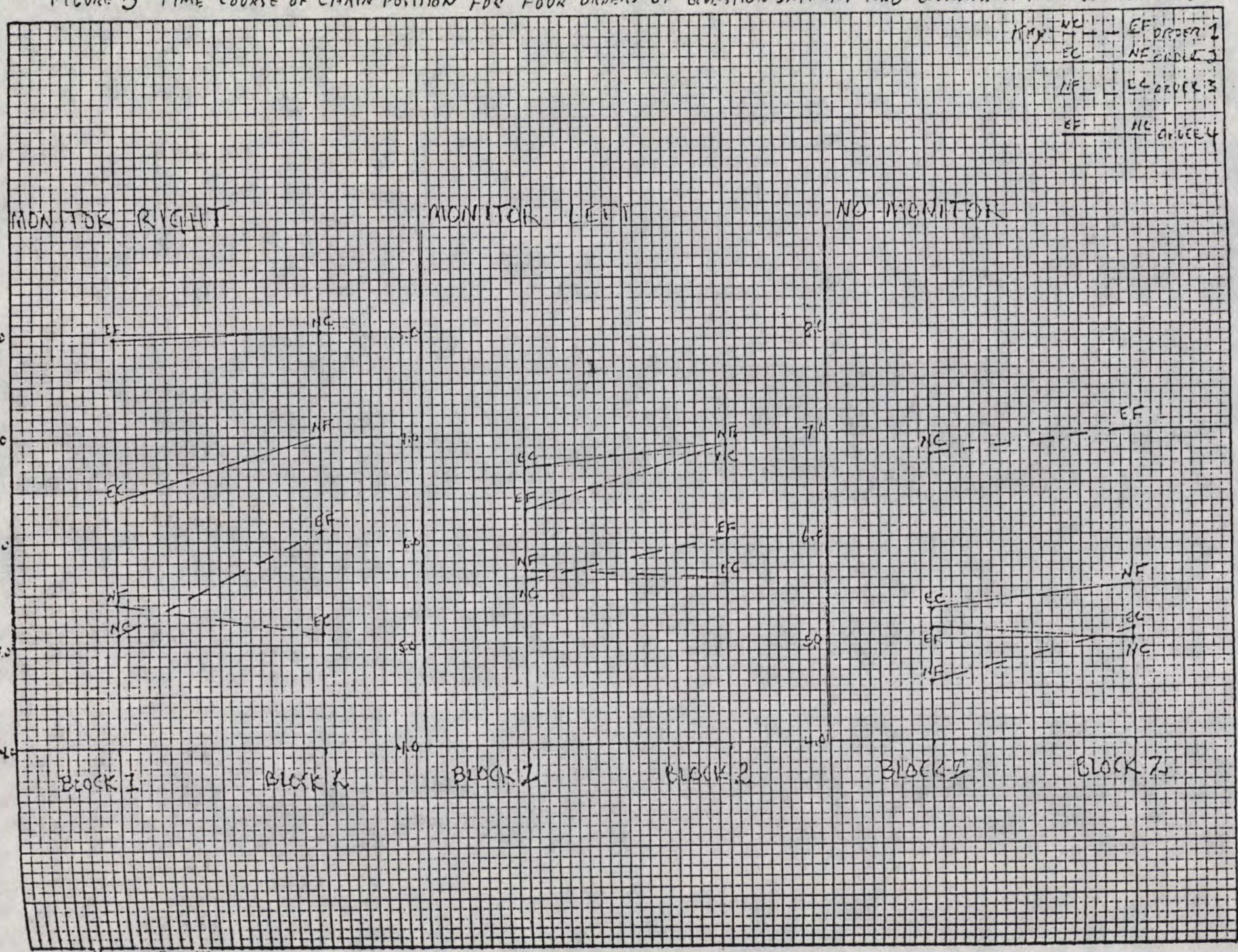


Figure 5 shows that when an interview begins with neutral questions, regardless of Apparent Distance of Interviewer Image, Interviewee's chair position is relatively close and becomes closer as questions switch to topics of greater intimacy. However, when the Interview begins with intimate questions, interviewee's chair position is relatively distant and either remains so, or becomes more distant as questions become more neutral.

The Monitor Location by Intimacy, by Closeness interaction is significant for looking at the interviewer at the beginning of the answer to a question and for the closely related variable, maintainance of eye gaze. Duncan tests show that the patterns of differences for the two variables are similar. However no neat interpretation comes to mind. The greatest frequency of looking at the interviewer occurs for monitor right, neutral, far; monitor absent, neutral, close; and monitor absent, intimate far conditions. The least frequency of looking occurs for monitor left, intimate, far; monitor left, intimate, close; and monitor absent, intimate, close. It is difficult to interpret this interaction beyond the simple pattern shown by the main effects of monitor location and intimacy. If there is a pattern we have failed to detect it.

Additional significant effects are the Monitor Location x Pairs interaction upon duration of verbal response, the Intimacy x Pairs interaction upon time to offset of verbal response, and the Closeness x Pairs Interaction upon time to onset of verbal response. No interpretable patterns for these effects are apparent.

Analyses of Verbal Dependent Measures

Each of the five verbal dependent measures consisted of a number of questionnaire items. In order to identify the major dimensions underlying responses to the items of each instrument principal components analysis were performed--one for each instrument. The resulting factors with eigenvalues greater than one were subjected to varimax rotation. An item was considered to load on a uniquely factor if its loading was at least .40 and was .20 higher than its loading on any other factors. Items which loaded .40 or greater on more than one factor were considered to have mixed loadings. Tables reporting the principle component analyses list the items in order of their unique loadings on factors, starting with the first factor; mixed loading items are listed after those with unique loadings. Factor names begin with description of the positive pole of the factor. Factor scores, along with individual scale items were subjected to analyses of variance analogous to those of behavioural dependent measures, and the significant mean effects resulting from these analyses, along with results of Duncan Multiple Range tests to identify significantly different means are reported. In general, results are presented only if both a factor score and at least one item loading on the factor yielded significant results.

Scale I: My feelings about myself during the last block of questions.

The principle components analysis of the six items of this scale is reported in Table 5. For this analysis the four different administrations of the same item were treated as separate cases in order to yield four factor scores for each subject amenable to analyses of variance

TABLE 5

Principal Components Analysis Showing Factor Loadings After Varimax Rotation of the Six Items of Scale I (My Feelings About Myself During the Last Block of Questions)

Factor	Item	Factor Loadings			Mean
		I	II	III	
I	1. Tense vs. calm	-0.93	0.00	-0.07	4.45
	2. At ease vs. nervous	0.91	0.08	0.16	3.48
II	3. Ugly vs. beautiful	-0.00	-0.86	-0.03	3.95
	4. Goodlooking vs. Plain	0.06	0.86	0.02	4.35
III	5. Told truth vs. told Lies	0.09	0.01	0.79	2.07
	6. Dishonest vs. Honest	-0.11	-0.04	-0.77	6.20

to identify time effects. From Table 5 it may be seen that there were three factors, named as follows: I. Nervous tension vs. Calm Ease; II. Ugly plainness vs. Good looking beauty; III. Dishonest Lying vs. Honest Truth Telling. Each factor was uniquely identified by two items loading .77 or higher.

Table 6shows the significantly different means resulting from an analysis of variance of the effects of self-view monitor location, order of intimacy and distance (both between subject effects), blocks of question sets and trials (both within subject effects). The levels of monitor location, order and block effects are as before. There were two levels of trials consisting of the two administrations of Scale I after each two pairs of question sets. In view of the interesting and hard to interpret effects of monitor location and order upon behavioural dependent measures an exception to the general rule of reporting only effects significant for factor scores and at least on item loading on the factor will be made.

Location of Self-view monitor significantly affected only one item, tense vs. calm, the differences among the means suggesting that subjects experienced greater tension when the monitor was located on the left, than when it was on the right or absent.

Significant differences appeared among order effects for the good-looking vs. plain scale, which unreported previous studies suggest is a major component of self-ratings of self esteem under circumstances such as prevailed in the present study. The pattern of differences helps

TABLE 6

Significant Mean Effects from Analysis of Variance of Effects of Monitor Location, Question Order, Blocks and Trials Upon Items and Factor Scores of Scale I (My feelings about Myself During the Last Block of Questions).

		Tense vs. Calm	At ease vs. Nervous	Ugly vs. Beauti-ful	Good Looking vs. Plain	Told Truth vs. Told Lies	Dis-honest vs. Honest	Factor Score I	Factor Score II	Factor Score III
Monitor	Right	4.56[ab]								
	Left	3.92[b]								
	None	4.89[a]								
Block	1	4.15					6.15	0.17		
	2	4.77					6.45	-0.20		
Order #1 Block	1				4.33[b]					
	2				3.92[c]					
Order #2 Block	1				4.54[b]					
	2				4.50[b]					
Order #3 Block	1				4.42[b]					
	2				3.92[c]					
Order #4 Block 1	1				4.67[b]					
	2				5.17[a]					
Trial	1						6.21	0.10		
	2						6.48	-0.13		

reinforce our interpretation of significant differences among orders for chair position. Specifically, when an order begins with a block of neutral questions and changes to intimate ones (orders 1 and 3) subjects experience themselves as significantly more good looking during the second block of questions; when an order begins with intimate questions and changes during the second block to neutral questions, subjects experience themselves as at least as plain or plainer. The interpretation seems to parallel and reinforce that suggested for Monitor x Intimacy effects upon chair position. It again seems as if the start with neutral items may be the common form of opening a relationship and that when opened in this way the switch to more intimate items may be taken as increasing interest and concern for getting to know the interviewee. However, the opening with intimate items, switching to neutral ones may come across as socially inappropriate intrusiveness followed, after self-disclosure by the interviewee, by rejection and coldness.

Finally, the significant block and trial effects, conforming to the rule of significance for both a factor score and a corresponding item, help elucidate the previous finding that subjects kept re-adjusting their lens setting during the first block of questions, but seemed to leave it alone more during the second block. We now learn that subjects experienced themselves as less tense, more calm and more at ease as time passed during the experiment, both from trial to trial within blocks, and from one block to the next.

Table 7 shows the significantly different means resulting from an analysis of variance of the effects of Monitor Location, Question

TABLE 7

Significant Mean Effects from Analysis of Variance of the Effects of Monitor Location, Question Intimacy, and Closeness of Interviewer Image Upon the Items and Factor Scores of Scale I (My Feelings About Myself During the Last Block of Questions)

		Tense vs. Calm	At ease vs. Nervous	Ugly vs. Beautiful	Good Looking vs. Plain	Told Truth vs. Told Lies	Dishonest vs. Honest	Factor Score I	Factor Score II	Factor Score III
Trial Set										
#1	Intimate Far	4.75^{a}	2.67^{b}					-0.36^{b}		
	Close	3.50^{ab}	4.00^{a}					0.53^{a}		
	Neutral Far	3.25^{b}	4.58^{a}					0.72^{a}		
	Close	4.08^{ab}	3.67^{ab}					0.22^{ab}		
#2	Monitor Right	4.69^{a}	3.38^{ab}					-0.09^{b}		
	Left	3.63^{b}	4.25^{a}					0.54^{a}		
	None	4.88^{a}	3.00^{b}					-0.28^{b}		
Intimacy	Intimate	4.83								
	Neutral	3.96								

Intimacy, and Interviewer Image Closeness (all between subject effects). Separate analyses were performed for each of the four separate administrations of Scale 2. The table is quite small because significant effects were confined to Trial sets 1 and 2 and to Factor 1, Nervous Tension vs. Calm Ease.

The most straightforward results occured for Location of Self-view Monitor during Trial set 2. It is evident that during this second quarter of the interview subjects experienced themselves as more tense and nervous when the self-view monitor was on the left than when it was on the right or absent. It was certainly not anticipated that the monitor left condition would create so much more anxiety and worry than the other two conditions, nor does it seem obvious why the monitor right and monitor absent conditions seem almost equally conducive to calmness and being at ease.

The effects of Question Intimacy and Interviewer Image Closeness are interesting and helpful in interpreting other results, but somewhat unexpected. During Trial 1 there is no direct main effect of either independent variable. Instead there is an Intimacy by Closeness interaction such that the self is experienced as least tense and nervous when the interviewer's image is distant but she is asking <u>intimate</u> questions! The subjects feel more tense and nervous when the interviewer is either distant and asking neutral questions or when she is close and asking intimate questions! By the second Trial set the picture had become less complex, but still unpredicted. Subjects simply report themselves as feeling less tense and more at ease after intimate questions than after

neutral questions. This evidence does not strongly support interpretations of previous results depending upon the notion that intimate questions during the first Block of question sets were taken as inappropriately intrusive. However, it does appear that intimate questions became increasingly more relaxing, if not relatively enjoyable, as the first Block of questions progressed. Indeed, it must be remembered that the second administration of Scale I occurred after the end of the first Block of questions at which time subjects were already repositioning their chairs in anticipation of the second Block. Moreover, the intimate questions were described as "personal and perhaps embarrassing". Emphasis on the personal aspect could lead subjects to think of them as more involving and caring, relative to their typical interactions with the impersonal bureaucracy of the administration of the university.

Scale 2: My perceptions about the Interviewer during the last block of questions. The principal components analysis of the six items of this scale is reported in Table 9. For this analysis the four different administrations of the same items were treated as separate cases just as for Scale I. For this scale only two factors emerged: I. Distant Smallness vs. Detailed Closeness; and II. Reliable Honesty vs. Undependable Dishonestly. Factor I was identified by four items, three of which loaded .88 or higher; Factor II was identified by two items loading .79 or higher.

Table 8 shows the significantly different means resulting from an analysis of variance of the effects of self-view monitor location, order of intimacy and distance (both between subject effects), blocks of question sets and trials (both within subject effects). Levels were as

TABLE 8

Principal Components Analysis Showing Factor Loading After Varimax Rotation of the Six Items of Scale 2 (My Perceptions About the Interviewer During the Last Block of Questions)

Factor	Item	Factor Loadings		Mean
		I	II	
I	Near vs. Far	0.89	0.00	3.75
	Image was Large vs. Image was small	0.89	-0.00	3.99
	Distant vs. Close	-0.88	-0.03	4.17
	Image Showed many details vs. Image showed few Details	0.60	-0.08	3.71
II	Undependable vs. Reliable	0.07	0.81	5.58
	Honest vs. Dishonest	0.10	-0.79	2.30

TABLE 9

Significant Mean Effects from Analysis of Variance of Effects of Monitor Location, Question Order, Blocks and Trials Upon Items and Factor Scores or Scale 2 (My Perceptions about the Interviewer During the Last Block of Questions).

			Near vs. Far	Image was Large vs. Small	Distant vs. Close	Image Showed Details vs. Few Details	Undependable vs. Reliable	Honest vs. Dishonest	Factor Score I	Factor Score II
Order #		1				3.81^{ab}			0.13^{ab}	
		2				4.38^{a}			0.31^{a}	
		3				3.19^{b}			-0.11^{b}	
		4				3.75^{ab}			-0.25^{b}	
Order 1	Block	1	3.38^{bc}	3.29^{bc}	4.83^{ab}	3.25^{ab}			-0.35^{cdc}	
		2	4.42^{ab}	5.13^{a}	3.04^{d}	4.38^{ab}			0.62^{ab}	
2	Block	1	3.21^{bcd}	3.63^{abc}	4.33^{bc}	4.38^{ab}			-0.09^{bcd}	
		2	4.88^{a}	5.25^{a}	3.17^{cd}	4.38^{ab}			0.71^{a}	
3	Block	1	4.54^{ab}	4.88^{ab}	3.96^{bcd}	3.38^{ab}			0.31^{abc}	
		2	3.08^{cd}	2.71^{c}	4.63^{ab}	3.00^{b}			-0.53^{dc}	
4	Block	1	4.21^{abc}	5.08^{a}	3.83^{bcd}	4.67^{a}			0.45^{ab}	
		2	2.04^{d}	2.50^{c}	5.58^{a}	2.83^{b}			-0.95^{e}	
Monitor Right										
Block 1										
Trial		1		3.69^{c}					-0.25^{d}	
		2		4.06^{bc}					0.04^{bc}	
Block 2										
Trial		1		3.94^{bc}					0.12^{abc}	
		2		3.81^{bc}					-0.01^{c}	
Left										
Block 1										
Trial		1		4.63^{a}					0.31^{a}	
		2		4.06^{bc}					-0.02^{c}	
Block 2										
Trial		1		4.19^{b}					0.17^{abc}	
		2		4.06^{bc}					0.05^{bc}	
None Block 1										
Trial		1		4.63^{a}					0.25^{ab}	
		2		4.25^{ab}					0.13^{abc}	
Block 2										
Trial		1		3.69^{c}					-0.25^{d}	
		2		3.69^{c}					-0.32^{d}	

described for Scale 1. Significant effects occured for a factor score and at least one corresponding item for Orders, Orders x Blocks, and Monitor Location, by Blocks by Trials.

The Order effect is interesting, revealing intimacy effects upon perception of experimental conditions. Specifically, for the two orders in which the interviewer's image first appeared as small and distant, the average impression of the interviewer over all four measures was as presenting a more distant, less detailed image, than when she first appeared as large and close. However, this overall impression must be qualified by the Order x Blocks interaction which clearly shows that impressions of the apparent distance of interviewer's image significantly matched her actual image size for all blocks of the experiment. Indeed, this significant correspondence prevails for all four scales associated with the Distance factor. Subjects were indeed aware of the distance manipulation of interviewer's image.

There is also a Monitor Location by Blocks by Trials interaction. The interviewer appeared most distant when the monitor was on the left for Block 1, Trial 1 and when there was no monitor for Block 1, Trial 1. She appeared closest when the self-view monitor was on the right for Block 1, Trial 1 and when there was no monitor for Block 2, Trials 1 and 2. No ready explanation is handly.

Table 10 shows the significantly different means resulting from an analysis of variance of the effects of Monitor Location, Question Intimacy,

and Interviewer Image Closeness (all between subject effects). Separate analyses were performed for each of the four separate administrations of Scale 2. Significant effects upon Factor II. Reliability-Honesty will be described first; followed by effects upon Factor I. Distance.

During the first Trial set subjects perceived significant differences in the reliability of the interviewer, depending upon Monitor Location and Question Intimacy. She was perceived as more reliable when the monitor was on the left and the questions were intimate. She was perceived as least reliable when the monitor was on the right and questions were intimate. No ready explanation is available.

Effects upon Factor I were more strightforward. Closeness of Interviewer Image affected the Distance/Smallness vs. Detailed Closeness factor for all four Trial sets. With each succeeding administration it affected more of the corresponding scales. Thus during the first trial set differences in interviewer image size were perceived mainly in terms of near vs. far and image was small vs. image was large. By the second trial set the differences were perceived also in terms of distant, vs. close. For the third and fourth trial sets the differences in interviewer image size were perceived in terms of all three preceding items plus image showed many details vs. image showed few details. Moreover the perceptions became much more complex by the third and fourth trials. That is, there was a Monitor Location x Question Intimacy x Closeness interaction such that the interviewer was perceived as farther away if her image was in fact small and (a) the self-view monitor was on the right or absent and the questions were neutral or (b) the monitor was on the left and the questions were intimate; she was perceived as

closer if her image was in fact large and (a) the self-view monitor was on the right or absent and the questions were neutral, or (b) the monitor was on the left and the questions were intimate. Under other circumstances there was no significant difference in perceptions of interviewer's image size! Obviously environmental and psychological conditions coloured veridicality of perceptions. Why? Explanation defies us at present.

Scale 3: My feelings about the Mode of Communication. The principal components analysis of Scale 3 is given in Table 11. There were eight factors: I. Good and Involving vs. Bad and Useless; II. Easy to Understand vs. Hard to Interpret; III. Secure and Private vs. Public and Open to Tampering; IV. Not Tiring vs. Frustrating; V. Hot vs. Cool; VI. Feeling Observed vs. Feeling of Privacy; VII. Colourful vs. Colourless; and VIII. Simple vs. Complex. The first four factors were defined by unique loadings above .66 of at least two items; the remaining four were defined by only one uniquely loading items. Ten of the 26 items had mixed loadings.[2]

Table 12 gives the results of an analysis of variance of the effects of Monitor Location and Order of intimacy and distance effects. The Monitor effects upon Factor III are particularly interesting. Evidently both Monitor present conditions are perceived as more secure and private than the monitor absent condition which is seen as more public and open to tampering! Whatever the disadvantages or distraction caused by the presence of continuous feedback of one's own image, it seems to convey that the

[2]The ANOVA reported for Scales 3, 4 and 5 are based on the responses of 96 Ss (see Footnote 1). It included both monitor location and order of questions, however only monitor location effects are reported.

TABLE 12

Significant Mean Effects from Analysis of Variance of the Effects of Monitor Location and Question Order Upon Items and Factor Scores of Scale 3 (My Feelings About the Mode of Communication)

		Mode of Communication was Secure vs. Was Open to Tampering	Factor Score III
Monitor	Right	3.50[b]	0.23[a]
	Left	3.56[b]	0.20[a]
	None	4.59[a]	-0.43[b]

self-impression one thinks one is giving off, is infact being transmitted. Effects of Orders and a Monitor by Order interaction are also given in the Table but are not readily open to interpretation.

Scale 4: My feelings about the interview situation. The principal components analysis of Scale 4 is given in Table 13. It yielded four factors, the first three of which were defined by two items each loading .66 or higher. The factors were named: I. Distractingness of own image vs. Helpfulness of Own Image; II. Communicating with Interviewer vs. Apartness from Interviewer; III. Indirectness of Felt Contact with Interviewer vs. Directness of Felt Contact with Interviewer; and IV. Look-away to Right vs. Look-away to Left.

Table 14 gives the results of an analysis of variance for the effects of Monitor Location and Order of Intimacy and distance effects. Only the Monitor Location had significant effects, these being upon Factors II and IV. Subjects apparently were quite well aware of their direction of look-away. For monitor location on left they significantly report looking away to the right; similarly for the monitor absent condition. For monitor location on the right they report looking away to the left. This, of course, is exactly what they did. The interpretation is reinforced by the results for Factor II which involve primarily the report of whether or not they looked at their own picture. Subjects say they avoided looking at their own picture when self-view monitor was continuously present, but that they did look at it when it was present only for a few minutes to orient them to the experiment. Notably,

TABLE I

Time Course of the Experiment from Viewpoint of the Subject, Showing Information Available on which to Base Choice of Lens and Chair Positions, and Timing of Measures of Dependent Variables

		Receiver has received advance information		Chair Movements	Lens Setting	E Measures Lens & Chair	Behaviouree Measures Lens & Chair	Completes Semantic Differentials	Other	ORDER 1		ORDER 2		ORDER 3 →		ORDER 4	
		RE: Question Intimacy	RE: Image Distance							Question Intimacy	Interviewer's Distance	Question Intimacy	Interviewer's Distance	Question Intimacy	Interviewer's Distance	Question Intimacy	Interviewer's Distance
Question Set #1	Pre	No	No	From Wall	Yes	Yes			S is briefed re: use of controls; 8 sets of questions.								
	During						Yes			Neutral	Close	Intimate	Close	Neutral	Far	Intimate	Far
	Post																
#2	Pre	No	No	Optional	Optional	Yes											
	During						Yes			Neutral	Close	Intimate	Close	Neutral	Far	Intimate	Far
	Post			Yes to table; yes from table				Yes									
#3	Pre	Yes	No		Optional	Yes											
	During						Yes			Neutral	Close	Intimate	Close	Neutral	Far	Intimate	Far
	Post																
#4	Pre	Yes	No	Optional	Optional	Yes											
	During						Yes			Neutral	Close	Intimate	Close	Neutral	Far	Intimate	Far
	Post			Yes to table; yes from table				Yes	S is informed that part Two is beginning & that she will see interviewer image size first.								
#5	Pre	Yes	Yes	Optional	Yes												
	During						Yes			Neutral	Close	Intimate	Close	Neutral	Far	Intimate	Far
	Post																
#6	Pre	Yes	Yes	Optional	Optional	Yes											
	During						Yes			Neutral	Close	Intimate	Close	Neutral	Far	Intimate	Far
	Post			Yes to table; yes from table				Yes									
#7	Pre	Yes	Yes		Optional	Yes											
	During						Yes			Neutral	Close	Intimate	Close	Neutral	Far	Intimate	Far
	Post																
#8	Pre	Yes	Yes	Optional	Optional	Yes											
	During						Yes			Neutral	Close	Intimate	Close	Neutral	Far	Intimate	Far
	Post			Yes to Table				Yes	S completes post-experimental questionnaires and is de-briefed.								

TABLE II

Principal Components Analysis Showing Factor Loading After Varimax Rotation of the 26 Items of Scale 3 (My Feelings About the Mode of Communication)

Factor	Item	Factor Loadings								Mean
		I	II	III	IV	V	VI	VII	VIII	
I	1. Mode of Communication was weak vs. Strong	0.80	0.05	0.08	0.01	0.11	-0.13	0.06	-0.05	3.99
	2. Good vs. bad	-0.72	-0.01	-0.48	-0.17	-0.10	-0.04	0.03	0.07	3.52
	3. Direct vs. Indirect	-0.68	-0.06	0.08	-0.71	0.03	-0.08	-0.17	0.00	3.39
	4. Useful vs. Useless	-0.61	-0.23	0.08	-0.03	-0.01	0.16	-0.16	0.05	3.54
	5. Mode of Communication made me feel involved vs. mode of communication made me feel left out	-0.61	-0.04	-0.33	-0.15	0.03	-0.18	-0.20	0.40	3.72
	6. Pleasant vs. Unpleasant	-0.55	-0.02	-0.25	-0.33	-0.16	0.21	-0.34	0.01	3.67
II	7. Hard to interpret what was meant vs. easy to interpret what was meant	0.16	0.84	0.14	-0.05	-0.14	-0.11	0.01	0.04	4.85
	8. Complicated vs. Easy to understand	-0.05	0.66	-0.22	0.34	-0.09	0.16	0.22	0.16	5.41
III	9. Private vs. Public	0.02	0.08	-0.78	-0.04	0.09	0.19	-0.14	0.13	3.81
	10. Mode of Communication was secure vs. mode of communication was open to tampering by others.	-0.07	-0.02	-0.77	-0.14	-0.05	-0.02	-0.25	0.08	3.89
IV	11. Taxing vs. Does not tire me	0.02	0.13	-0.09	0.75	-0.29	0.04	-0.09	-0.06	5.05
	12. Frustrates me vs. Is not frustrating	0.37	0.07	0.14	0.67	0.24	-0.05	0.05	0.05	4.65
V	13. Hot vs. Cool	-0.11	0.04	-0.05	0.03	-0.82	-0.09	-0.15	0.08	4.39
VI	14. Made me feel that someone else was constantly aware of what I was doing vs. Made me feel like I was in private	0.08	0.08	0.05	0.05	-0.14	-0.80	-0.01	0.16	3.02
VII	15. Colourful vs. Colourless	-0.27	-0.14	-0.16	0.05	-0.15	0.00	-0.76	0.05	5.07
VIII	16. Complex vs. Simple	0.13	0.20	-0.03	0.14	-0.41	-0.06	0.17	0.67	4.65
Mixed	17. Artificial vs. True to everyday life	0.61	0.14	0.42	0.02	0.05	0.20	-0.09	0.27	3.24
	18. Natural vs. Phoney	-0.55	-0.11	-0.63	-0.03	-0.13	-0.20	0.01	-0.10	4.02
	19. A safe way to communicate vs. A dangerous way to communicate	-0.48	-0.10	-0.58	-0.27	-0.22	0.05	0.22	-0.05	3.99
	20. Boring vs. Leaves me alert	0.41	0.12	0.34	0.21	0.34	0.39	0.18	-0.01	5.03
	21. Unenjoyable vs. Enjoyable	0.55	0.14	0.18	0.45	0.01	-0.11	0.15	0.06	4.67
	22. Allowed me to take an active role vs. Forced me to take a passive role	-0.50	-0.07	-0.17	-0.07	0.16	-0.18	-0.17	0.64	3.90
	23. Leaves me uncertain what to think and do vs. Makes it clear what to think and do	0.15	0.53	-0.09	0.47	0.31	-0.23	-0.00	-0.01	4.26
	24. Leaves me certain as to how I was supposed to respond vs. Leaves me not sure as to how I was supposed to respond	-0.07	-0.55	-0.12	-0.12	-0.23	0.55	-0.02	0.12	4.05
	25. Suitable for discussion with close intimate friends vs. Suitable only for common gossip	-0.16	0.08	-0.24	-0.38	-0.07	-0.24	-0.41	-0.18	3.32
	26. Comfortable vs. Uncomfortable	-0.29	-0.13	-0.28	-0.50	-0.03	0.31	-0.40	-0.05	4.10

TABLE 2

Combined Analyses of Variance Tables Showing Effects of Monitor Location (Right, Left, & None) Order of Experimental Effects (Question Intimacy and Apparent Distance of Interviewer), Blocks of Question Sets (Two Blocks), and Question Sets (Four Sets per block) Upon the Sixteen Dependent Measures

	d.f.	Proxemic Behaviour		Verbal Behaviour			Ocular									
		Lens Setting	Chair Position	Onset of Verbal Response	Length of Verbal Response	Offset of Verbal Response	Looking at Interviewer (beginning answer)	Looking at Interviewer (during answer)	Maints	Up	Down	Up-Down	Right	Left	Right-Left	Looking at Self (beginning answer)
Monitor (M)	2	1.81	2.24	6.83**	7.06**	4.95**	6.70**	1.64	3.17	2.90	4.74*	4.50*	9.44**	11.52**	12.59**	2.00
Order (O)	3	1.96	2.95*	0.17	2.35	1.34	0.52	0.61	0.44	0.21	0.67	0.23	0.75	1.67	1.33	0.67
M X O	6	1.16	2.62*	1.69	1.06	1.15	2.44*	1.41	2.08	1.21	2.87*	1.85	2.61*	0.99	2.15	0.67
Subjects/MO	36															
Blocks (B)	1	9.00**	5.96*	0.63	8.83**	6.12*	0.02	2.74	0.01	1.82	0.01	0.57	6.93	0.61	3.46	2.00
M X B	2	1.40	0.13	0.22	3.59*	1.35	1.02	0.45	1.59	4.38*	0.89	2.89	1.76	1.58	2.02	2.00
O X B	3	2.39	1.30	1.41	1.29	0.20	2.59	2.91	7.59**	4.75*	1.02	3.24*	1.35	3.41*	0.31	0.67
M X O X B	6	3.29*	1.05	0.01	0.52	0.23	0.48	0.65	1.67	2.66*	0.58	1.71	3.88**	2.92**	4.30**	0.67
SB/MO	36															
Trials (T)	3	5.22**	4.05**	2.89*	2.01	2.62	0.69	0.26	0.64	0.12	0.58	0.18	0.58	0.19	0.44	0.67
M X T	6	0.79	1.18	1.07	1.83	1.48	0.49	0.91	0.99	0.34	0.41	0.47	0.91	0.90	0.62	0.67
O X T	9	0.51	2.29*	2.36	0.51	1.78	0.53	0.35	1.00	1.29	0.61	0.96	0.87	0.59	0.86	1.11
M X O X T	18	1.15	1.93*	1.12	1.60	0.74	0.82	0.72	1.12	0.46	0.67	0.45	0.83	0.87	0.93	1.11
ST/MO	108															
B X T	3	4.57*	1.06	0.16	1.92	0.55	1.05	0.32	0.94	2.38	2.53	3.48*	3.60*	1.19	2.32	0.67
M X B X T	6	0.92	0.43	0.58	1.40	0.55	0.86	0.60	0.96	0.24	1.16	0.42	1.59	0.51	0.78	0.67
O X B X T	9	0.77	0.73	1.67	0.75	1.56	1.29	1.73	1.70	1.08	1.50	1.48	0.69	1.06	0.60	1.11
M X O X B X T	18	1.41	1.20	1.24	0.73	0.91	1.13	1.33	0.77	0.82	0.54	0.77	1.43	0.60	0.90	1.11
SBT/MO	108															

*Mean squares for error terms are: Subjects/MO

TABLE 3

Means for Significant Effects of Monitor Location, Blocks of Question Sets and Question Sets upon the Behavioural Dependent Variables.[1]

			Proxemic Behaviour		Verbal Behaviour			Ocular Behaviour							
			Lens Setting	Chair Position	Onset of Verbal Response	Length of Verbal Response	Offset of Verbal Respone	Looking at Interviewer (Begin	Maints	Up	Down	Up-Down	Right	Left	Right-Left
Monitor (M)		Right			21^{b}	21^{a}	42^{a}	44^{a}			21^{b}	40^{a}	32^{b}	73^{a}	-42^{b}
		Left			30^{a}	15^{b}	45^{a}	20^{b}			30^{ab}	30^{a}	80^{a}	39^{b}	41^{a}
		None			21^{b}	11^{b}	33^{b}	42^{a}			43^{a}	-3^{b}	70^{a}	31^{b}	39^{a}
Block (B)		1	19	59		14	38						57		
		2	21	62		18	43						64		
M X B	Right	B1				17^{b}				58^{ab}					
		B2				25^{a}				63^{a}					
	Left	B1				13^{bc}				68^{a}					
		B2				17^{b}				52^{b}					
	None	B1				11^{c}				41^{c}					
		B2				11^{c}				39^{c}					
Trial (T)		1	19^{b}	59^{c}	23^{b}										
		2	20^{a}	60^{bc}	24^{ab}										
		3	21^{a}	61^{ab}	24^{ab}										
		4	20^{a}	61^{a}	26^{a}										
B X T	B1	T1	18^{d}									25^{ab}	59^{a}		
		T2	19^{cd}									33^{a}	47^{b}		
		T3	21^{ab}									20^{ab}	65^{a}		
		T4	20^{bc}									19^{ab}	57^{ab}		
	B2	T1	21^{ab}									25^{ab}	60^{a}		
		T2	22^{a}									7^{b}	69^{a}		
		3	22^{ab}									23^{ab}	62^{a}		
		4	20^{abc}									27^{a}	66^{a}		

[1] Significance of Results Based on Table 1, order of experimental effects are omitted and given in Table 3. Due to rounding, some differences disappeared.

TABLE 4

Significant Mean Effects of Monitor Location (Right, Left & None), [...]imacy and Neutral), Apparent Distance of Interviewer Image (Far & Close), and Pai[...] Upon the Behavioural Dependent Measures for Each of Four Pairs of Question [...] Block 1 and Two Pairs in Block 2).[1]

Proxemic and Verbal Behaviour (Block 1: Pairs 1&2, 3&4; Block 2: Pairs 5&6, 7&8)

Effect	Level	Lens Setting Block 1	Lens Setting Block 2	Chair Position Block 1	Chair Position Block 2	Onset Block 1	Onset Block 2	Length Block 1	Length Block 2	Offset Block 1	Offset Block 2
Monitor (M)	Right	16^{b}			67^{a}	192^{b} 218^{b}	192^{b}	163^{a}	280^{a} 223^{a}	382^{ab}	467^{a}
	Left	16^{b}			64^{ab}	288^{a} 313^{a}	299^{a}	119^{b}	162^{b} 183^{ab}	432^{a}	483^{a}
	None	22^{a}			57^{b}	201^{b} 201^{b}	218^{b}	102^{b}	108^{b} 110^{b}	303^{b}	341^{b}
Intimacy (I)	Intimate			63	58			100 111			
	Neutral			55	67			195 145			
Closeness (C)	Far		18 18								560^{a}
	Close		25 24								373^{b}
M X I Right	Intimate			71^{a} 72^{a}	56^{c} 56^{c}	186^{b}	273^{abc}				424^{abc}
	Neutral			51^{b} 53^{b}	71^{a} 79^{a}	199^{b}	214^{bc}				541^{ab}
Left	Intimate			63^{ab} 66^{ab}	56^{bc} 59^{bc}	351^{a}	263^{abc}				387^{abc}
	Neutral			58^{b} 55^{b}	68^{ab} 70^{ab}	225^{b}	336^{a}				295^{c}
None	Intimate			52^{b} 52^{b}	60^{abc} 61^{bc}	187^{b}	296^{ab}				
	Neutral			57^{b} 57^{b}	53^{c} 53^{c}	228^{b}	166^{c}				
M X C Right	Far										
	Close										
Left	Far										
	Close										
None	Far										
	Close										
I X C Intimate	Far							94^{b}			
	Close							107^{b}			
Neutral	Far							239^{a}			
	Close							152^{b}			
MXIXC Right Intimate	Far		20^{ab} 20^{ab}								
	Close		20^{ab} 20^{ab}								
Neutral	Far		15^{b} 15^{b}								
	Close		30^{a} 28^{a}								
Left Intimate	Far		15^{b} 14^{b}								
	Close		30^{a} 29^{a}								
Neutral	Far		18^{ab} 18^{ab}								
	Close		15^{b} 18^{ab}								
None Intimate	Far		23^{ab} 20^{ab}								
	Close		23^{ab} 23^{ab}								
Neutral	Far		20^{ab} 20^{ab}								
	Close		30^{a} 29^{a}								
Pairs (P)	1										
	2										
M X P Right	1							133^{b}	331^{a}		
	2							194^{a}	229^{b}		
Left	1							133^{b}	134^{cd}		
	2							99^{b}	189^{bc}		
None	1							99^{b}	112^{cd}		
	2							105^{b}	104^{d}		
I X P Intimate	1										
	2										
Neutral	1										
	2										
C X P Far	1					253^{a} 207^{b}					329^{b}
	2					211^{b} 275^{a}					423^{a}
Close	1					196^{b} 266^{ab}					301^{ab}
	2					256^{a} 229^{ab}					346^{ab}
I X C X P Intimate Far	1										
	2										
Close	1										
	2										
Neutral Far	1										
	2										
Close	1										
	2										

Ocular Behaviour (Block 1: Pairs 1&2, 3&4; Block 2: Pairs 5&6, 7&8)

Effect	Level	Looking at Interviewer (Begin) Block 1	Looking at Interviewer (Begin) Block 2	Look at Interviewer (During) Block 1	Look at Interviewer (During) Block 2	Maints Block 1	Maints Block 2	Up Block 1	Up Block 2	Down Block 1	Down Block 2
Monitor (M)	Right	49^{a}	43^{a} 40^{a}			15^{a}			69^{a}	19^{b}	19^{b}
	Left	17^{b}	21^{b} 19^{b}			5^{b}			53^{ab}	30^{ab}	30^{ab}
	None	42^{a}	47^{a} 43^{a}			14^{a}			41^{b}	52^{a}	39^{a}
Intimacy (I)	Intimate		30	102		9	9	68			
	Neutral		44	92		15	15	48			
Closeness (C)	Far										
	Close										
M X I Right	Intimate										
	Neutral										
Left	Intimate										
	Neutral										
None	Intimate										
	Neutral										
M X C Right	Far										
	Close										
Left	Far										
	Close										
None	Far										
	Close										
I X C Intimate	Far										
	Close										
Neutral	Far										
	Close										
MXIXC Right Intimate	Far	36^{abc} 49^{abc}	25^{c} 29^{bcd}	100^{abc}		14^{bcd}	6^{bc} 8^{b}		79^{a}	11^{c} 21^{b}	25^{b}
	Close	39^{abc} 54^{ab}	40^{abc} 43^{abc}	99^{abc}		6^{cd}	12^{abc} 8^{b}		85^{a}	20^{bc} 11^{b}	14^{b}
Neutral	Far	65^{a} 60^{a}	65^{cb} 58^{ab}	90^{bc}		28^{a}	24^{a} 19^{ab}		35^{abc}	11^{c} 5^{b}	20^{b}
	Close	41^{abc} 33^{cde}	43^{abc} 33^{bc}	86^{bc}		10^{bcd}	11^{abc} 10^{b}		79^{a}	54^{ab} 38^{ab}	16^{b}
Left Intimate	Far	21^{bc} 14^{d}	13^{c} 24^{bcd}	98^{abc}		6^{cd}	3^{c} 10^{b}		35^{abc}	29^{abc} 43^{ab}	29^{b}
	Close	20^{bc} 18^{de}	15^{c} 21^{cd}	103^{ab}		8^{cd}	6^{bc} 9^{b}		76^{ab}	13^{c} 14^{b}	28^{b}
Neutral	Far	31^{abc} 13^{e}	36^{ab} 18^{cd}	99^{abc}		11^{bcd}	15^{ab} 6^{b}		76^{ab}	29^{abc} 31^{ab}	24^{b}
	Close	24^{abc} 23^{de}	21^{c} 15^{d}	74^{c}		10^{bcd}	9^{abc} 9^{b}		25^{c}	31^{abc} 33^{ab}	40^{ab}
None Intimate	Far	60^{ab} 63^{a}	49^{abc} 53^{ab}	110^{a}		20^{abc}	20^{ab} 25^{a}		39^{abc}	23^{bc} 40^{ab}	20^{b}
	Close	14^{c} 13^{e}	39^{abc} 26^{bd}	96^{abc}		1^{d}	8^{bc} 4^{b}		78^{a}	48^{abc} 59^{ab}	73^{a}
Neutral	Far	33^{abc} 36^{bcd}	28^{bc} 16^{cd}	94^{abc}		9^{bcd}	13^{abc} 9^{b}		40^{abc}	63^{a} 81^{a}	49^{ab}
	Close	50^{abc} 55^{ab}	71^{a} 74^{a}	108^{ab}		23^{ab}	20^{ab} 19^{ab}		59^{ab}	21^{bc} 26^{b}	16^{b}
Pairs (P)	1	393									28
	2	467									38
M X P Right	1	506^{a}									
	2	438^{ab}									
Left	1	412^{bc}									
	2	510^{a}									
None	1	335^{cd}									
	2	318^{d}									
I X P Intimate	1	454 393^{b}									
	2	403 521^{a}									
Neutral	1	381 393^{b}									
	2	441 413^{b}									
C X P Far	1										
	2										
Close	1										
	2										
I X C X P Intimate Far	1										18^{b}
	2										31^{ab}
Close	1										38^{a}
	2										38^{a}
Neutral Far	1										38^{a}
	2										23^{b}
Close	1										20^{b}
	2										28^{ab}

Ocular Behaviour (continued) (Block 1: Pairs 1&2, 3&4; Block 2: Pairs 5&6, 7&8)

Effect	Level	Up-Down Block 1	Up-Down Block 2	Right Block 1	Right Block 2	Left Block 1	Left Block 2	Left-Right Block 1	Left-Right Block 2
Monitor (M)	Right	38^{a}	36^{a} 51^{a}	31^{b} 31^{b}	34^{b} 32^{b}	69^{a} 73^{a}	75^{a} 76^{a}	-38^{b} -42^{b}	-41^{b} -44^{b}
	Left	37^{a}	16^{ab} 23^{ab}	66^{a} 80^{a}	90^{a} 85^{a}	46^{b} 41^{b}	31^{b} 38^{b}	20^{a} 39^{a}	59^{a} 46^{a}
	None	-17^{b}	-6^{b} 2^{b}	63^{a} 72^{a}	69^{a} 76^{a}	39^{b} 25^{b}	31^{b} 27^{b}	23^{a} 47^{a}	38^{a} 49^{a}
Intimacy (I)	Intimate	44							
	Neutral	14							
Closeness (C)	Far					40			
	Close					63			
M X I Right	Intimate								
	Neutral								
Left	Intimate								
	Neutral								
None	Intimate								
	Neutral								
M X C Right	Far						65^{ab}		-22^{bc}
	Close						88^{a}		-67^{c}
Left	Far						58^{ab}		11^{ab}
	Close						19^{c}		82^{a}
None	Far						16^{c}		68^{a}
	Close						39^{bc}		30^{ab}
I X C Intimate	Far								
	Close								
Neutral	Far								
	Close								
MXIXC Right Intimate	Far		54^{abc}	46^{bcd} 28^{c}	50^{bc}			-5^{bcde} -40^{b}	
	Close		71^{a}	25^{cd} 50^{bc}	21^{c}			-88^{e} -20^{b}	
Neutral	Far		15^{abcd}	24^{cd} 15^{c}	36^{bc}			-13^{bcde} -56^{b}	
	Close		63^{ab}	28^{cd} 30^{c}	20^{c}			-49^{cde} -55^{b}	
Left Intimate	Far		6^{abcd}	83^{abc} 108^{ab}	94^{ab}			49^{abc} 95^{a}	
	Close		49^{abc}	16^{d} 36^{c}	68^{bc}			-70^{de} -35^{b}	
Neutral	Far		51^{abc}	53^{bcd} 61^{abc}	43^{bc}			4^{abcde} 8^{ab}	
	Close		-15^{cd}	114^{a} 116^{a}	135^{a}			99^{a} 89^{a}	
None Intimate	Far		19^{abcd}	51^{bcd} 56^{abc}	66^{bc}			23^{abcd} 38^{ab}	
	Close		-45^{d}	95^{ab} 108^{ab}	78^{abc}			54^{ab} 86^{a}	
Neutral	Far		-9^{bcd}	70^{abcd} 58^{abc}	100^{ab}			30^{abc} 24^{ab}	
	Close		43^{abc}	34^{cd} 68^{abc}	60^{bc}			-13^{bcde} 40^{ab}	
Pairs (P)	1	25							
	2	7							
M X P Right	1				34^{c}				
	2				33^{c}				
Left	1				74^{b}				
	2				106^{a}				
None	1				71^{b}				
	2				67^{b}				
I X P Intimate	1								
	2								
Neutral	1								
	2								
C X P Far	1								
	2								
Close	1								
	2								
I X C X P Intimate Far	1		34						
	2		18						
Close	1		18						
	2		33						
Neutral Far	1		4						
	2		35						
Close	1		38						
	2		23						

TABLE 10

Significant Mean Effects From Analysis of Variance of the Effects of Monitor Location, Question Intimacy, and Closeness of Interviewer Image Upon the Items and Factor Scores of Scale 2 (My Perceptions about the Interviewer During the Last Block of Questions).

		Near vs. Far	Image was Large vs. Small	Distant vs. Close	Image Showed many details vs. Few Details	Undependable vs. Reliable	Honest vs. Dishonest	Factor Score I	Factor Score II
Trial Set I									
Closeness	Far	4.63	5.04			5.42		0.39	
	Close	3.42	3.58			6.08		-0.17	
Monitor Rt.	Intimate					4.75^{b}			-0.45^{b}
	Neutral					6.38^{a}			0.23^{ab}
Lt.	Intimate					6.25^{a}			0.52^{a}
	Neutral					5.50^{ab}			-0.35^{ab}
None	Intimate					6.00^{a}			0.29^{ab}
	Neutral					5.63^{ab}			-0.12^{ab}
Trial Set II									
Closeness	Far	4.13	4.92	3.63				0.37	
	Close	3.17	3.33	4.75				-0.27	
Trial Set III									
Closeness	Far	5.04	5.33	3.04	4.38			0.76	
	Close	2.58	2.54	5.04	2.83			-0.74	
Monitor Rt.	Intimate								
	Far	$^{abc}4.75$	$^{abc}5.00$	3.50^{cd}				$^{abc}0.54$	
	Close	$^{bcd}3.75$	$^{cde}3.00$	2.75^{d}				$^{bcde}0.01$	
	Neutral								
	Far	6.50^{a}	6.00^{a}	2.25^{d}				1.34^{ab}	
	Close	1.25^{d}	1.75^{e}	6.25^{ab}				-1.39^{f}	
Lt.	Intimate								
	Far	6.25^{ab}	6.50^{a}	2.00^{d}				1.52^{a}	
	Close	2.50^{cd}	2.50^{de}	6.00^{abc}				-0.99^{def}	
	Neutral								
	Far	$^{abc}4.50$	$^{abcd}4.25$	$^{bcd}3.75$				$^{abcd}0.21$	
	Close	$^{bcd}3.75$	$^{bcde}3.50$	$^{abcd}4.00$				$^{bcdef}-0.06$	
None, Intimate	Far	3.50^{cd}	$^{abcd}4.50$	$^{bcd}3.75$				$^{bcde}0.69$	
	Close	2.75^{cd}	2.25^{de}	4.75^{cbcd}				-0.78^{f}	
Neutral	Far	$^{abc}4.75$	5.75^{ab}	3.00^{d}				0.90^{ab}	
	Close	1.50^{d}	2.25^{de}	6.50^{a}				-1.30^{ef}	
Trial IV									
Closeness	Far	4.25	5.04	3.17	4.38			0.56	
	Close	2.54	2.67	5.17	3.00			-0.74	
Monitor, Right	Intimate								
	Far				4.25^{ab}			$^{abc}0.54$	
	Close				3.75^{ab}			$^{abcd}-0.12$	
Neutral	Far				4.25^{ab}			1.12^{a}	
	Close				1.75^{b}			-1.58^{e}	
Left	Intimate								
	Far				5.50^{a}			1.04^{a}	
	Close				2.75^{b}			$^{bcde}-0.52$	
Neutral	Far				3.25^{ab}			$^{abcd}-0.06$	
	Close				4.00^{ab}			$^{abcde}-0.25$	
None	Intimate								
	Far				3.25^{ab}			$^{abcd}-0.02$	
	Close				3.25^{ab}			-0.85^{cde}	
Neutral	Far				5.75^{a}			0.74^{ab}	
	Close				2.50^{b}			-1.14^{de}	

TABLE 13

Principal Components Analysis Showing Factor Loading After Varimax Rotation of the Eight Items of Scale 4 (My Feelings About the Interview Situation).

Factor	Item	Factor Loadings				Mean
		I	II	III	IV	
I	1. Seeing my own image made me relax vs. seeing my own image made me nervous	0.87	0.16	-0.09	-0.15	4.75
	2. Seeing my own picture was distracting vs. seeing my own picture was helpful	-0.79	0.17	-0.25	-0.12	3.91
II	3. I felt my interviewer sensed how I was reacting vs. I felt my interviewer did not sense how I was reacting	-0.33	0.78	0.05	-0.09	2.33
	4. I looked at my interviewer vs. I avoided looking at my interviewer	0.28	0.66	-0.08	0.46	2.10
III	5. I felt the interviewer was never talking directly to me vs. I felt the interviewer was speaking directly to me	-0.09	-0.19	-0.82	-0.13	6.07
	6. I felt my interviewer was uncertain whether I was listening vs. I felt my interviewer was certain whether I was listening	-0.05	0.07	-0.82	0.09	5.66
IV	7. I looked away to the left vs. I looked away to the right	-0.09	-0.01	0.04	0.96	4.17
Mixed	8. I looked at my own picture vs. I avoided looking at my own picture	0.37	0.49	0.18	-0.05	3.94

TABLE 15

Principal Components Analysis Showing Factor Loading After Varimax Rotation of the Nine Items of Scale 5 (My Behaviour During the Experiment)

Factor	Item	Factor Loadings I	II	III	IV	Mean
I	1. Perceived no cues as to how I was expected to behave vs. perceived and obeyed cues from which I inferred how I was expected to behave	-0.78	-0.01	-0.18	0.02	3.49
	2. Perceived and acted on cues indicating how to appear well adjusted vs. perceived no cues as to how to go about appearing well adjusted	0.62	0.16	-0.17	-0.14	4.56
II	3. Leaned over backwards to be honest so the experimenter will not draw erroneous conclusion vs. tried to respond so the experimenter will draw erroneous conclusions	-0.00	-0.83	0.10	-0.02	2.73
	4. Tried to provide data of no use to science or the experimenter vs. tried to provide data of use to science or to the experimenter	0.11	0.72	0.15	0.18	5.19
III	5. Tried not to bias the outcome of the study one way or another vs. behaved as I felt, letting my own prejudices influence me	-0.18	-0.16	-0.79	0.05	4.65
	6. Had no suspicions about true purpose of the study vs. had suspicions about true purpose of the study	-0.43	-0.20	0.67	0.09	3.58
IV	7. Wanted to give data that would displease the experimenter vs. wanted to give data would please the experimenter	-0.06	0.14	-0.06	0.71	4.66
Mixed	8. Had my own ideas about what the study would show if correctly interpreted vs. had no idea what the study would show if correctly interpreted	0.57	-0.11	-0.05	0.59	4.09
	9. Unconcerned with giving impression of competence vs. perceived and obeyed cues which indicated what to do to appear competent	-0.44	0.17	0.28	0.60	3.95

TABLE 14

Significant Mean Effects from Analysis of Variance of the Effects of Monitor Location and Question Order Upon Items and Factor Scores of Scale 4 (My Feelings about the Interview Situation)

		I looked to the left vs. to the right	I looked at my own picture vs. avoided looking	Factor Score II	Factor Score IV
Monitor	Right	3.63^{a}	4.25^{a}	0.16^{a}	-0.44^{b}
	Left	4.69^{a}	4.50^{a}	0.23^{a}	0.34^{a}
	None	4.19^{ab}	3.06^{b}	-0.39^{b}	0.09^{a}

however, they do not report strongly looking away from their own picture, rather they say they looked toward it in the monitor absent condition when it was only briefly present.

Scale 5: My Behaviour During the Experiment: This scale was included as a standard check on subjects' behaviour during the experiment and attitudes toward the experiment which may have influenced their behaviour. It was administered in conjunction with debriefing as it, insofar as it yields valid information, obviously requires subjects to step out of role and be honest in sharing their perceptions of their expectations and motivations during their participation in the interview. The principal components analyses shown in Table 15 yielded four factors: I. Perceived No Cues to Expected Behaviour vs. Perceived and Obeyed Cues; II. Desire to Provide Useful Data vs. Effort to Give Misleading Data; III. Deliberate Attempts Not to Bias Data vs. Unsuspicious Free Rein to Behaviour; and IV. Desire to Please Experimenter vs. Desire to Displease the Experimenter. Evidently strong experimental effects of these variables would cast doubt upon the validity of the data of the experiment.

Table 16 contains significant means resulting from the analysis of variance for the effects of Monitor Location and Order of Intimacy and Distance effects. Monitor Location affects Factor II, suggesting that placement of self-view monitor may affect whether or not subjects try to provide useful data. A glance at the means for the only item with significant results, "Leaned over backwards to be honest so the experimenter will not draw erroneous conclusions vs. tried to respond so the experimenter will draw erroneous conclusions" shows that all means are low; that is,

TABLE 16

Significant Mean Effects from Analysis of Variance of the Effects of Monitor Location and Question Order Upon Items and Factor Scores of Scale 5 (My Behaviour During the Experiment).

		Leaned Over Backwards so experimenter will not draw erroneous conclusions vs. will draw erroneous conclusions	Factor Score II
Monitor	Right	3.13^{a}	-0.32^{b}
	Left	2.78^{ab}	-0.06^{ab}
	None	2.28^{b}	0.38^{a}

all subjects, regardless of monitor condition, say that they tried at least somewhat to be honest and avoid giving erroneous data. Differences reflect degrees of effort to be honest rather than contrasts of honesty with dishonest. The significant Monitor Location effects may thus be interpreted as indicating that although subjects tried somewhat to provide useful data when the monitor was located on the right, they tried significantly harder when there was no monitor at all. When the monitor was on the left their effort was in-between. Since other results have suggested that subjects may have been more relaxed in the monitor right condition it may be that the more reasonable interpretation of the present results is that these subjects did not feel so great a need as the more anxious subjects to "lean over backwards to be honest."

DISCUSSION AND CONCLUSIONS

The results may be discussed in terms of the similarities and differences between the nonverbal dynamics of electronic co-presence and physical co-presence (face-to-face interaction). Perhaps the leading approximation to a theoretical base for understanding nonverbal behaviour in the face-to-face situation is the Argyle-Dean hypothesis of intimacy equilibrium (Argyle and Dean, 1965) which may be rephrased as stating that for a given level of intimacy between two people in a face-to-face encounter, an increase in nonverbal behaviour implying greater or lesser intimacy will be compensated by a corresponding opposite change in some other form of nonverbal behaviour so as to maintain the given level of intimacy. There appear to be at least three aspects of intimacy equilibrium: 1) within-modal compensation. For example, physical approach may be compensated by physical retreat, an increase in looking may be compensated by a decrease on the part of the person observed. 2) cross-modal compensation. For example, physical approach may be compensated by less frequent looking or by turning the body. 3) a change in intimacy level may be compensated by corresponding nonverbal approach or avoidance. For example, as two people disclose more of themselves to each other they may stand, sit, or lie closer to each other, or look at each other more. These phenomena have been well documented by studies of physical co-presence (e.g., Aiello, 1972, Patterson, 1973). The present results suggest that electronic co-presence is characterized by similar phenomena but that the range of alternatives is different, if not greater. We shall consider how each of the three aspects of intimacy equilibrium was evidenced under the conditions of electronic co-presence and then proceed to consider some effects peculiar to the electronic situation, especially the effects of simultaneous visual feedback of one's own nonverbal behaviour.

Within-modal compensation, translated into terms appropriate for electronic co-presence was a major point of study. When two people

are physically co-present actual physical approach by one of them necessarily brings the other closer to him; thus within-modal compensation requires physical retreat, while "standing one's ground" implies increased tension or some cross-modal form of compensation. Electronic co-presence entails greater freedom, since approach in the form of making one's own image greater by movement toward a camera or by changing setting of a zoom camera lens does not necessarily imply a corresponding change on the part of one's partner. Our finding that people do indeed make within-modal compensations by matching their image size to that of their interviewer raises several questions. Does intimacy equilibrium imply discrete zones of personal space rather than a continuum, such that approach requires retreat only after exceeding a normal range? If so it might be that "standing one's ground" implies a return approach, perhaps to explore the boundaries of the present intimacy level. Thus matching by our subjects would imply "If you want to come closer I'll signify my own friendly intentions by doing the same." Certainly, in accord with the hypothesis of discrete degrees of personal space, our subjects' matching did not extend to the point of true reciprocation. They did not, on the average, make their own picture as large or as small as that of the confederate. Their matching was partial or symbolic, not complete.

It may be noted, however, that matching did not occur until the interview was half way over, and not until after the interviewer had made an obvious shift in her own image size. Until that time subjects gradually made their image larger, regardless of the apparent distance of the interviewer's image. Perhaps the image size of the interviewer was taken as unintentional and beyond her control until it was dramatically brought to the subject's attention that a change was possible. Perception of the intentionality of apparent distance during electronic co-presence thus appears worthy of investigation. Other changes during the experiment may also account in whole or in part for the switch to matching. Interviewees became notably less nervous and more at ease as the experiment progressed. Perhaps after tension decreased subjects became more aware of appropriateness of image matching. Moreover there is evidence that the quality of perception of interviewer's image size changed as time passed. Whereas during the first few question sets

image variations on the part of the interviewer were conceived in terms of near vs. far and small vs. large, as time went by the more psychological dimensions of "distant vs. close" and "many details vs. few details" became more salient. This latter aspect of the Distance dimension is associated with complexity and information content of image and reflects a different way of thinking about the size of the image one receives and presents. Moreover the repetitive administration of the rating scales may have called attention to new ways of acting and thinking about image size.

The within-modal compensation of image size is even more clear cut than heretofore mentioned. There were, of course, two ways for a subject to change the size of her image, by adjusting her zoom lens setting or by moving her chair toward or away from the camera. The same two ways were available to the interviewer. The interviewer chose the technological adjustment rather than physical movement; so did the subject. Thus our compensation is not only within the image size mode, but also within the technological mode.

In marked contrast variations in intimacy of question content were not compensated or at least not exclusively compensated, with in the verbal mode. Instead (or in addition—we cannot tell since no analyses of verbal content of subjects' answers were made) a cross-modal compensation was used. Specifically, when asked intimate questions subjects physically moved their chairs further away from the monitor carrying the interviewer's image, just as they may have moved their chairs away from her body if she had been physically present. Thus psychological over-intimacy was compensative by spatial movement. The cross-modal compensation may however, be regarded as within-modal on a higher level of abstraction. Both the psychological and spatial modes were typical of face-to-face behaviour. Thus the entire transaction, though occurring in the context of electronic co-presence, may be regarded as if it occurred in the physical, face-to-face mode, rather than the technological mode or across modes.

In addition to chair movements an additional cross-modal compensation for question intimacy was made by reducing eye gaze at the interviewer.

Thus intimacy of topic was compensated by reducing ocular intimacy.

To regard responding to verbal over-intimacy with proxemic movement under the conditions of the present study as a simple cross-modal compensation is, however, to disregard the intricacies of the context of electronic co-presence. Subjects consistently responded in this way only in the presence of self-view monitors which gave continuous feedback of their own image. Moreover, once they began responding to intimate questions by distancing, they continued to do so when questions became neutral and once they began responding to neutral questions by placing their chair somewhat closer to the monitor carrying the interviewer's image, they approached even closer when the questions became supposedly over-intimate and embarrassing. The appealing interpretation is that intrusiveness followed by neutrality comes across as rejection, especially after people may have opened up by interpreting the intrusiveness as interest. Opening neutrality followed by over-intimacy, by the same token, comes across as civil tact followed by increased concern and caring. Rejection calls for the response of keeping one's distance or increasing it; increased caring calls for reducing one's distance. And that is what happened—but only in the presence of continuous electronic feedback of own image. When feedback was not present there were no such clear cut effects. Thus, taking the whole electronic context into account we cannot interpret results strictly in terms of within- or cross-modal compensations for intimacy equilibrium, but must deal with the potentialities, novel or traditional, seemingly unnatural or desirable, of electronic co-presence.

The third aspect of maintaining intimacy equilibrium compensation for changes in intimacy level, was also shown by results. During the course of the interview subjects reported a continual decrease in tension and an increase in feeling of calmness and being at ease—apparently equivalent to increased intimacy with the interviewer. However, throughout the interview they kept moving their chair further away from the interviewer's image—to be sure only a matter of a few inches. If intimacy equilibrium were to be maintained other compensating behaviours would have to occur—and they did. Not only did subjects, on the average and disregarding matching effects, make their own image relatively much larger by increasing

zoom controls than they reduced it by moving their chair away. They also spoke longer when giving answers and took longer to answer, implying, under the circumstances, increased effort to give sound answers. Thus it would seem that feelings of greater intimacy were accompanied on balance with nonverbal behaviours reflecting increased immediacy. Again, however, the intricacies of electronic co-presence must be considered. Although duration of verbal response increased from the first to the second half of the interview, this happened only if self-view monitors were present!

The major key to interpretation of results and certainly the most pervasive and striking results were due to presence or absence and location, when present, of self-view monitors giving a subject continuous access to what she looked like to the interviewer. When self-view monitors were present:

1) subjects' first direction of gaze aversion after the end of a question was far more often up than down, as if they wished to avoid looking at their own image.
2) subjects avoided looking at their image by averting their gaze to the left, when monitor was on the right, and to the right, when monitor was on the left.
3) indicated some awareness of avoiding looking at their own picture by reporting looking away to the right in the monitor left condition and looking away to the left in the monitor right condition, as well as looking less frequently at their own image in both monitor present conditions than in the monitor absent condition when they were able to see themselves only very briefly.
4) reported seeing the communication mode as more secure and private, as opposed to open to tampering.
5) did not report presence of monitors as distracting on the average— some did see them as distracting, but others found them helpful.

On the whole then, the very presence of monitors, although they directly and indirectly affected almost everything that went on in the situation, may not be taken as undesirable without further examination. However, the location of monitor, when present turns out to be very important. When monitors are on the left:

1) subjects look at the interviewer less frequently at the beginning

of their answer, pause longer before responding, and curtail the length of their replies

2) experience greater tension and nervousness.

Evidently there is something about placement of a self-view monitor on the left which creates tension and anxiety. Previous studies have found that people's preferred direction of gaze aversion is to the left (e.g. Libby and Yaklevich, 1973). Although people may not mind, and indeed may prefer, having their own image accessible to them, they apparently do not want to look at it very often. To have it placed right where they would naturally look away from the object of their main focus of attention, the interviewer, may be disconcerting and tension producing. Our results would certainly suggest that feedback monitors should be placed on the right, and not on the left, of the main focus of attention.

APPENDIX A

1 & 7 = extremely
2 & 6 = very
3 & 5 = somewhat
4 = neutral or inbetween

MY FEELINGS ABOUT MYSELF DURING THE LAST BLOCK OF QUESTIONS

1.	at ease	1	2	3	4	5	6	7	nervous
2.	good looking	1	2	3	4	5	6	7	plain
3.	dishonest	1	2	3	4	5	6	7	honest
4.	told truth	1	2	3	4	5	6	7	told lies
5.	ugly	1	2	3	4	5	6	7	beautiful
6.	tense	1	2	3	4	5	6	7	calm

APPENDIX B_1

1 & 7 = extremely
2 & 6 = very
3 & 5 = somewhat
4 = neutral or inbetween

MY PERCEPTIONS ABOUT THE INTERVIEWER DURING THE LAST BLOCK OF QUESTIONS

near	1	2	3	4	5	6	7	far
honest	1	2	3	4	5	6	7	dishonest
undependable	1	2	3	4	5	6	7	reliable
image showed many details	1	2	3	4	5	6	7	image showed few details
image was large	1	2	3	4	5	6	7	image was small
distant	1	2	3	4	5	6	7	close

THE NEXT BLOCK OF QUESTIONS WILL BE PERSONAL AND POSSIBLY EMBARRASSING

APPENDIX B_2

1 & 7 = Extremely
2 & 6 = Very
3 & 5 = Somewhat
4 = Neutral or In-between

MY PERCEPTIONS ABOUT THE INTERVIEWER DURING THE LAST BLOCK OF QUESTIONS

near	1	2	3	4	5	6	7	far
honest	1	2	3	4	5	6	7	dishonest
undependable	1	2	3	4	5	6	7	reliable
image showed many details	1	2	3	4	5	6	7	image showed few details
image was large	1	2	3	4	5	6	7	image was small
distant	1	2	3	4	5	6	7	close

THE NEXT BLOCK OF QUESTIONS WILL BE OF THE GENERAL, IMPERSONAL TYPE

APPENDIX C

1 & 7 = Extremely
2 & 6 = Very
3 & 5 = Somewhat
4 = Neutral or In-Between

MY FEELINGS ABOUT THE MODE OF COMMUNICATION IN THIS STUDY

allowed me to take an active role	1	2	3	4	5	6	7	forced me to take a passive role.
mode of communication was weak	1	2	3	4	5	6	7	mode of communication was strong
hot	1	2	3	4	5	6	7	cool
direct	1	2	3	4	5	6	7	indirect
complex	1	2	3	4	5	6	7	simple
colourful	1	2	3	4	5	6	7	colourless
mode of communication made me feel involved	1	2	3	4	5	6	7	mode of communication made me feel left out
complicated	1	2	3	4	5	6	7	easy to understand
hard to interpret what was meant	1	2	3	4	5	6	7	easy to interpret what was meant
unenjoyable	1	2	3	4	5	6	7	enjoyable
suitable for discussion with close intimate friends	1	2	3	4	5	6	7	suitable only for common gossip
boring	1	2	3	4	5	6	7	leaves me alert
frustrates me	1	2	3	4	5	6	7	is not frustrating
comfortable	1	2	3	4	5	6	7	uncomfortable
leaves me uncertain what to think and do	1	2	3	4	5	6	7	makes it clear what to think and do
useful	1	2	3	4	5	6	7	useless
made me feel that someone else was constantly aware of what I was doing	1	2	3	4	5	6	7	made me feel like I was in private

	leaves me certain as to how I was supposed to respond	1	2	3	4	5	6	7	leaves me not sure as to how I was supposed to respond
	private	1	2	3	4	5	6	7	public
	artificial	1	2	3	4	5	6	7	true to everyday life
	pleasant	1	2	3	4	5	6	7	unpleasant
	taxing	1	2	3	4	5	6	7	does not tire me
	mode of communication was secure	1	2	3	4	5	6	7	mode of communication was open to tampering by others
	natural	1	2	3	4	5	6	7	phoney
	a safe way to communicate	1	2	3	4	5	6	7	a dangerous way to communicate
	good	1	2	3	4	5	6	7	bad

APPENDIX D

1 & 7 = extremely
2 & 7 = very
3 & 5 = somewhat
4 = neutral or in-between

MY FEELINGS ABOUT THE INTERVIEW SITUATION

I looked at my interviewer	1	2	3	4	5	6	7	I avoided looking at my interviewer
I felt the interviewer was never talking directly to me	1	2	3	4	5	6	7	I felt the interviewer was speaking directly to me
seeing my own picture was distracting	1	2	3	4	5	6	7	seeing my own picture was helpful
I looked at my own picture	1	2	3	4	5	6	7	I avoided looking at my own picture
I looked away to the left	1	2	3	4	5	6	7	I looked away to the right
I felt my interviewer sensed how I was reacting	1	2	3	4	5	6	7	I felt my interviewer did not sense how I was reacting
Seeing my own image made me relax	1	2	3	4	5	6	7	seeing my own image made me nervous
I felt my interviewer was uncertain whether I was listening	1	2	3	4	5	6	7	I felt my interviewer was certain whether I was listening

APPENDIX E

1 & 7 = Extremely
2 & 6 = Very
3 & 5 = Somewhat
4 = Neutral and in-between

MY BEHAVIOUR DURING EXPERIMENT

perceived no cues as to how I was expected to behave	1	2	3	4	5	6	7	perceived and obeyed cues from which I inferred how I was expected to behave
had my own ideas about what the study would show if correctly interpreted	1	2	3	4	5	6	7	had no idea what the study would show if correctly interpreted
wanted to give data that would displease the experimenter	1	2	3	4	5	6	7	wanted to give data that would please the experimenter
unconcerned with giving impression of competence	1	2	3	4	5	6	7	perceived and obeyed cues which indicated what to do to appear competent
leaned over backwards to be honest so the experimenter will not draw erroneous conclusions	1	2	3	4	5	6	7	tried to respond so the experimenter will draw erroneous conclusions
perceived and acted on cues indicating how to appear well-adjusted	1	2	3	4	5	6	7	perceived no cues as to how to go about appearing well-adjusted
had no suspicions about true purpose of the study	1	2	3	4	5	6	7	had suspicions about true purpose of the study
tried to provide data of no use to science or the experimenter	1	2	3	4	5	6	7	tried to provide data of use to science or to the experimenter
tried not to bias the outcome of the study one way or another	1	2	3	4	5	6	7	behaved as I felt, letting my own prejudices influence me

EXPERIMENTAL QUESTIONS

1. What would you do if you went to the store for bread and they didn't have any.
2. Try to form a mental picture of what I am going to tell you and tell me when the picture is as clear as you can get it: "An Ocean Liner".
3. What is the most embarrassing word do you think you could say to me?
4. Define the word "ability".
5. If you are engaged in an intimate sexual experience with someone, do you prefer the lights to be on or off?
6. Finish this sentence - "Ability is native, education is _____".
7. Think of your best female friend. What would you do if she expressed a desire to have sexual relations with you?
8. Which angle is greater: the smaller angle formed by the hands of a clock at 2:45, or the smaller angle formed by the hands of a clock at 2:30?
9. Try to form a mental picture of what I am going to tell you and tell me when the picture is as clear as you can get it: "A Forest".
10. What day comes before Wednesday?
11. What part of your body do you like to expose to men?
12. In pictures of Napoleon, which hand does he hold in his coat?
13. Name two small letters which go below the line of print like the letters p and y.
14. What was your first impression of me?
15. What do you do to attract someone to whom you are sexually attracted?
16. Imagine a rectangle. Draw a line from the upper left-hand corner to the lower right-hand corner. What two figures do you now have?
17. When was the last time you told a lie to someone close to you?
18. Make up a sentence using the words "thigh" and "kissed".
19. What is the most embarrassing word I could say to you?
20. How are a piano and violin alike?
21. What are you most afraid of?

2. Define the word "economics".

3. What part of speech is "the"?

4. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it; "Is this a dagger which I see before me, the handle toward my hand".

5. What are the advantages of paying bills by cheque?

26. What is a four-letter word beginning with f?

27. Describe the scene of the most embarrassing situation you were ever in.

28. How often do you use underarm deodorants?

29. Compared with most people, how would you rate yourself on intelligence?

30. What do you think is the average length of an erect penis?

31. Make up a sentence using the words "exchange" and "stock".

32. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "He could stand it no longer; he cried out, he sobbed helplessly against her tensed face..."

33. Try to get a clear picture in your mind of what I am going to tell you and tell me when it is as clear as you can get it: "A sexual orgy in your own room or apartment".

34. How many points are there on the Maple Leaf in the Canadian flag?

35. What aspect of your personality do you dislike or regard as a handicap?

36. If you are or were to have a sexual relationship with someone, how often would you like to engage in sexual activity?

37. How many corners are there in a solid cube?

38. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "They grunted together, Karen squirming backward in the damp earth, Shar grinding himself against her".

39. Why do you think lesbian relationships are considered by some people to be as satisfying as heterosexual relationships?

40. What would you do if you lost a book that belonged to one of your friends?

41. What part of your body do you like to hide from men?

42. What does C.O.D. mean?

43. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "She heaved and hurdled, arched and cried, clawed me, kissed me, even gave a shriek once..."

Imagine you are out with a man for the first time. You notice his fly is open. What would you do?

45. What is a letter that goes below the line of print in small writing and above the line in small printing?

46. Tell me five verbs beginning with "r".

47. Try to form a mental picture from the following quote and tell me when the picture is as clear as you can get it: "A birdie with a yellow bill hopped upon my window sill".

48. What is the meaning of the word "time"?

OCULAR RESPONSE

APPENDIX G

LOOK ALL THE TIME - 2
LOOK AT LEAST SOME OF THE TIME - 1
DON'T LOOK AT ALL - —

INT.	SELF	G#	INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.
___	___	BA	___	___	BA	___	___	BA	___	___
___	___	DA	___	___	DA	___	___	DA	___	___

INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.
___	___	BA	___	___	BA	___	___	BA	___	___
___	___	DA	___	___	DA	___	___	DA	___	___

INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.
___	___	BA	___	___	BA	___	___	BA	___	___
___	___	DA	___	___	DA	___	___	DA	___	___

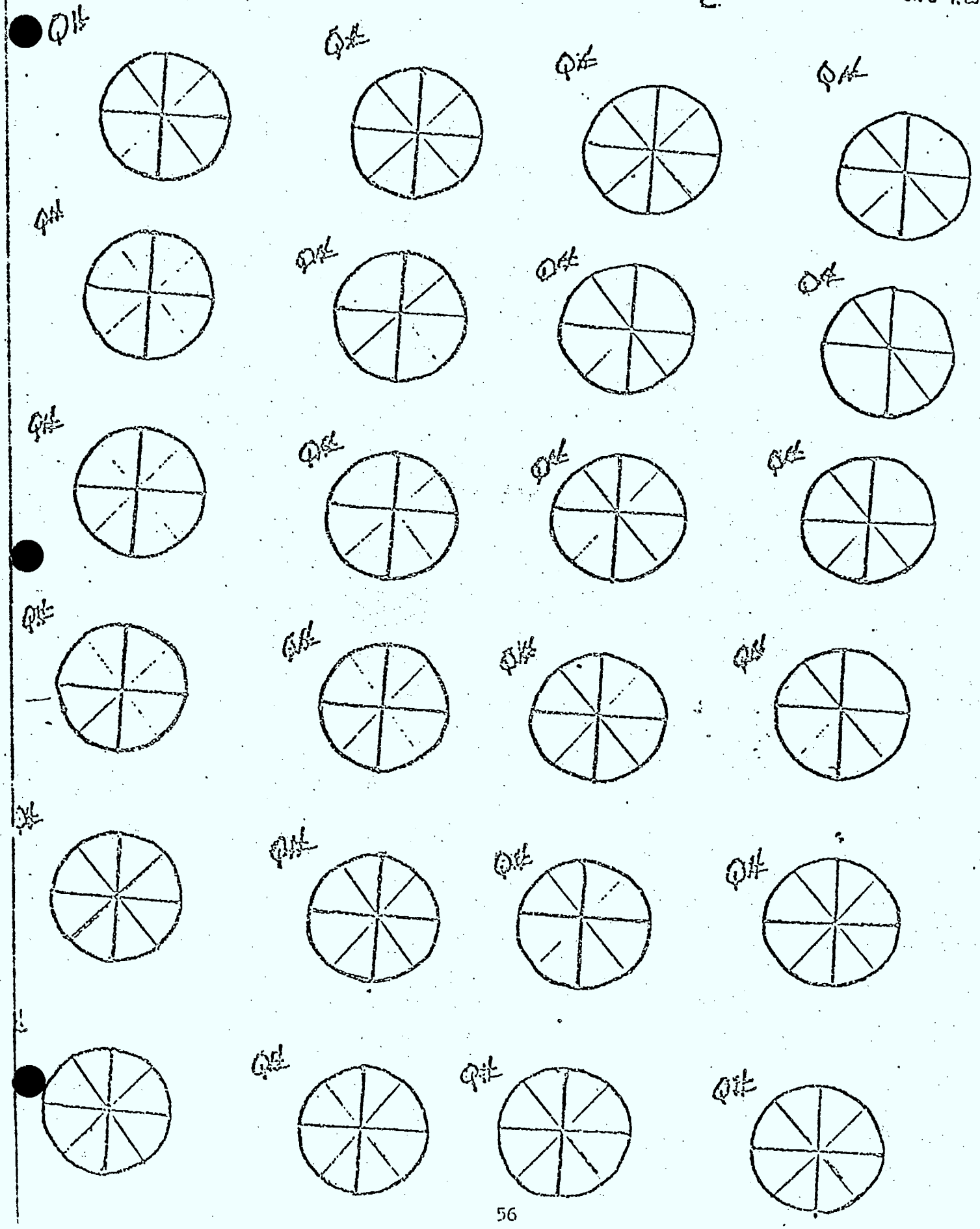
INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.
___	___	BA	___	___	BA	___	___	BA	___	___
___	___	DA	___	___	DA	___	___	DA	___	___

INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.
___	___	BA	___	___	BA	___	___	BA	___	___
___	___	DA	___	___	DA	___	___	DA	___	___

INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.	G#	INT.	SLF.
___	___	BA	___	___	BA	___	___	BA	___	___
___	___	DA	___	___	DA	___	___	DA	___	___

DIRECTION OF OCULAR RESPONSE

[C = CLOSED EYES BEFORE RESPOND



Subject #_____ RESPONSE TIME RECORD

A Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

B Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

C Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

D Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

E Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

F Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

G Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

H Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

Subject #______

RESPONSE TIME RECORD

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_______

Time (seconds) to onset of ocular response (first look-away)______________
Maintained eye contact (did not look away until after verbal response) ________

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_______

Time (seconds) to onset of ocular response (first look-away)______________
Maintained eye contact (did not look away until after verbal response) ________

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_______

Time (seconds) to onset of ocular response (first look-away)______________
Maintained eye contact (did not look away until after verbal response) ________

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_______

Time (seconds) to onset of ocular response (first look-away)______________
Maintained eye contact (did not look away until after verbal response) ________

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_______

Time (seconds) to onset of ocular response (first look-away)______________
Maintained eye contact (did not look away until after verbal response) ________

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_______

Time (seconds) to onset of ocular response (first look-away)______________
Maintained eye contact (did not look away until after verbal response) ________

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_______

Time (seconds) to onset of ocular response (first look-away)______________
Maintained eye contact (did not look away until after verbal response) ________

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_______

Time (seconds) to onset of ocular response (first look-away)______________
Maintained eye contact (did not look away until after verbal response) ________

Subject #_____ RESPONSE TIME RECORD

11 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

12 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

13 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

14 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

15 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

16 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

17 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

18 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

Subject #_____ RESPONSE TIME RECORD

19 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

20 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

21 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

22 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

23 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

24 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

25 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

26 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

Subject #_____ RESPONSE TIME RECORD

27 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

28 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

29 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

30 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

31 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

32 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

3 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response) _____

Subject #______ RESPONSE TIME RECORD

Time (seconds) to onset of verbal response______
" " " offset " " " ______

No verbal response______

Time (seconds) to onset of ocular response (first look-away)______
Maintained eye contact (did not look away until after verbal response) ______

Time (seconds) to onset of verbal response______
" " " offset " " " ______

No verbal response______

Time (seconds) to onset of ocular response (first look-away)______
Maintained eye contact (did not look away until after verbal response) ______

Time (seconds) to onset of verbal response______
" " " offset " " " ______

No verbal response______

Time (seconds) to onset of ocular response (first look-away)______
Maintained eye contact (did not look away until after verbal response) ______

Time (seconds) to onset of verbal response______
" " " offset " " " ______

No verbal response______

Time (seconds) to onset of ocular response (first look-away)______
Maintained eye contact (did not look away until after verbal response) ______

Time (seconds) to onset of verbal response______
" " " offset " " " ______

No verbal response______

Time (seconds) to onset of ocular response (first look-away)______
Maintained eye contact (did not look away until after verbal response) ______

Time (seconds) to onset of verbal response______
" " " offset " " " ______

No verbal response______

Time (seconds) to onset of ocular response (first look-away)______
Maintained eye contact (did not look away until after verbal response) ______

Time (seconds) to onset of verbal response______
" " " offset " " " ______

No verbal response______

Time (seconds) to onset of ocular response (first look-away)______
Maintained eye contact (did not look away until after verbal response) ______

Time (seconds) to onset of verbal response______
" " " offset " " " ______

No verbal response______

Time (seconds) to onset of ocular response (first look-away)______
Maintained eye contact (did not look away until after verbal response) ______

Subject #_____ RESPONSE TIME RECORD

43 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response)_____

44 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response)_____

45 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response)_____

46 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response)_____

47 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response)_____

48 Time (seconds) to onset of verbal response_____
" " " offset " " " _____

No verbal response_____

Time (seconds) to onset of ocular response (first look-away)_____
Maintained eye contact (did not look away until after verbal response)_____

APPENDIX J

Script

Hi, you must be _____. I'm Tom Schleich. Thank you for volunteering for this project. I assure you there's nothing to be apprehensive about and in fact I think you'll have some fun! Have you ever seen yourself on TV? Well you're going to in just a few moments. There's another girl in another part of the building that's an undergraduate, she'll be interviewing you over closed circuit TV. This is only a pilot study in which we are attempting, with your help, to develop an interview procedure, and select appropriate questions dealing with Canadian attitudes towards sex and other topics. Your cooperation in this initial phase is invaluable to us!

Are you at all familiar with the Kinsey report (Subject responds). Well, one of the problems of doing research in this sensitive area which deals with people's sexual attitudes and other intimate topics is that people sometimes get embarrassed in the face to face interview. One possibility for making the situation more comfortable and less threatening is to have the interviewer and interviewee in separate rooms, and communicate via closed-circuit TV. This is the approach we are using in the present study.

Let's go over here now. I'd like you to take this chair and sit anywhere between this monitor (monitor A) and the back. Pause. Just so long as you are in front of this camera. (subject sits). The person you'll be getting to know during the next 20 minutes or so is Diane Ramey. As I said she's in another part of the building and has a camera just like yours.

Diane's picture will appear on this monitor soon. (Conditions I and II) and your own image will appear on this one (Experimenter points).

The first thing we would like you to do is to learn how to control your image so that you may "put your best foot forward", or come across to Diane in any way you like. During your talk with her there will be several breaks or pauses during which you will get a chance to adjust your image, to try a new approach if you want to, for you see movement or image adjustment during a set of questions may throw your image out of focus or off the screen.

These buttons (experimenter points) are hooked up to lights on a panel behind that curtain. Each button represents one distance on the lens. "1 minimum is a small distant shot of you, 2 is slightly larger, 3 larger still and 4 maximum, is a large close-up picture. We'll use these to simulate the automatic apparatus which we'll be using when we start our real study later this summer. We want you to be as much at ease as possible, to make sure you are comfortable and relaxed about checking and changing your image, let's practice a bit. Push the focus button whenever your image isn't clear enough. Let's start at 1 minimum, press that button (1 minimum) and I'll show you how you'll look. OK great, now press 2 (Experimenter changes zoom). Fine! How about 3. (Subject presses button, Experimenter responds). That's good, now give 4 maximum a try. OK let's do it again. (Subject pushes each button in turn, Experimenter responds by changing lens position). The experimenter then presents each position randomly and asks the subject to identify it. OK now push the button with which you'd like to start! Now we are

ready to open the visual channel between you and Diane. In a moment her image will appear on this monitor (and simultaneously your's will appear on her's). To begin, Diane will ask you a few warm-up questions (there will be eight other groups with six questions in each). We'd like you to give a candid, off the top of your head response. No response need be given if the question in some way makes you ill at ease. This goes for any of the questions. Do you understand so far? (Experimenter answers any questions). The interviewer will then ask the other questions in Group 1. At the end of every second group, you will rate yourself and your interviewer on these scales (Experimenter shows sample of Semantic Differential), and adjust your image if you wish.

(The Experimenter enters after each group, instructs the subject on how to use Semantic Differentials, the Subject fills in scales, the Experimenter than asks the subject to press one of the buttons on the panel if she wishes to change her image).

(Beginning last 4 blocks). The subject chooses image then, "Oh, I forgot that we're starting the second half of the questions. You get to see your interviewer's starting image and can adjust yours to the most comfortable position before the onset of each block of questions. (The subject resets and the second half of the groups begins).

(After last block) the Experimenter re-enters, introduces the interviewer to the subject and they begin the debriefing session after the subject has filled out the longer semantic differentials.

APPENDIX K

Eight possible treatments, 12 Subjects will be assigned to each.

Interviewer's image-distance schedules. C = close, F = far.

Schedule 1: (c) CCCC FFFF (There is also a warm up cell of the same type).

Schedule 2: (f) FFFF CCCC

Question Schedules. N = Nonembarrassing, E = embarrassing

Schedule 1 NNNN EEEE (The warm up cell beings with neutral

Schedule 2 EEEE EEEE and ends with slightly embarrassing

Schedule 3 EENN EENN questions).

Schedule 4 NNEE NNEE

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