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MUTUAL EYE CONTACT AND SOCIAL INTERACTION AND
THEIR RELATIONSHIP TO AFFILIATION

By

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B.A., Temple University, 1963


Presented in partial fulfillment of the requirements
for the degree of
Master of Arts

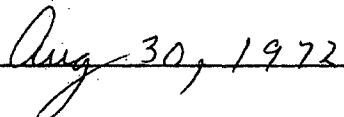
UNIVERSITY OF MONTANA

1972

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CHAPTER I

INTRODUCTION

Gaze direction and eye contact have been viewed as socially significant since ancient times. Although certain cultural differences are surely to be discovered, Tomkins (1963), in an extensive review of the early writings on this subject, describes the universal "taboo" on "looking" and states that the power of the look is also universal. In the more recent past, Simmel (1921) espoused the view that visual interaction is a means of establishing communication. Simmel emphasized, however, that the mutuality of the gaze is the important feature. Heider (1958) noted the awareness of attention one has when another person is looking as did Sartre (Scheutz, 1948) in his in-depth description of the experience of being looked at. Sartre perceived the mutual gaze as a signal for an approaching struggle for dominance. Simmel and Sartre both recognized the mutual gaze or mutual eye contact as a signal for some type of social interaction. Goffman (1964) also subscribes to this idea and further states that one of the principal ways of signaling an interest in social interaction is whether or not people are willing to establish mutual eye contact.

Within the last ten years many investigators have been working in the area of eye contact research. Argyle and Dean (1965) postulated four main functions of eye contact as information seeking, signaling that the channel is open (which places a person under some obligation to interact), concealment or exhibitionism, and establishment and recognition of a social relationship. Kendon (1967) postulated his monitoring, regulatory, and expressive functions, which are very similar to Argyle and Dean's. Kendon also said that being looked at acts as a "releaser" for social action. Momentary mutual gaze is one of the signals that people are open for an interaction, and the extended mutual gaze signifies an intensifying of direct relations.

Effect of Distance

One of the most important aspects of eye contact which has been dealt with observationally and experimentally is the effect of distance. Goffman (1963) noted that eye contact between two approaching strangers is quite usual up to about 8 feet apart. At this point there seems to be a polite aversion of the eyes while bodily passing takes place. Argyle et al. (1968) found in a study of the effects of visibility between pairs of subjects that people are most comfortable in each others presence at distances of from 4 to 10 feet apart with opposite sex pairs less comfortable at the 4 foot distance. Argyle and Dean (1965) found that at closer

distances there was generally less eye contact and the glances were shorter than at greater distances. The distances he used were 2, 6, and 10 feet. These findings led to the postulation of Argyle and Dean's affiliation conflict theory which proposes that in affiliation motivation there are approach and avoidance forces which produce an equilibrium level of proximity, eye contact, and other aspects of social interaction. In a review Kendon (1967) concluded that whether affiliation motivation was at any moment positive or negative may depend on the circumstances and the facial expression of the other person in addition to the evaluation of the need for affiliation as a stable personality trait.

Need for Affiliation (N Affiliation)

Rather than now getting into the intricacies of the positive and negative aspects of affiliation motivation and approach and avoidance equilibrium levels, it seems parsimonious to deal more directly with straight forward theoretical ties between need for affiliation and eye contact. Simmel (1921) sees willingness to engage in visual interaction as a means of establishing communion with others and whether we seek or avoid such visual contact depends upon our desire for union with another. In recent years this has come to be called need for affiliation. Need for affiliation was originally coined and defined by Shipley

and Verhoff (1952) as a concern over separation. This rather restricted definition was further enlarged and broadened by French and Chadwick (1956) to read, "the desire to establish and/or maintain warm friendly relations". At the time the definition was made, Elizabeth French also devised a projective test, the French Test of Insight, which could be scored for n affiliation and which has been extensively used in studies on eye contact and affiliation.

Exline (1960) in a study of accuracy of perception of interpersonal preferences using college students found that women had consistently higher n affiliation scores, using the French Test of Insight. His data also suggested that students in certain fields, namely, education, psychology and the social sciences, generally had greater affiliation needs. Also crude records of the visual behavior toward the speaker of his high and low affiliation subjects showed significant differences with those high in affiliation engaging in more eye contact. Consequently, Exline suggested that n affiliation might be a personality variable which perhaps could be related to a visual style. In a later study (Exline, 1963) on the role of visual interaction in interpersonal communication he found not only that women had more visual interaction and held their gaze longer, but that the data also suggested that sex and n affiliation interact to affect the amount of mutual visual

interaction. Strongman and Champness (1968), however, using pairs of students in 2 minute get-acquainted test sessions found no differences at all between the sexes on either eye contact or directed gaze. They also tested for the effect of level of affiliation on eye contact or gaze and found none, but this may be due to the nature of the test instrument. They did not use the same measure of affiliation, but used a questionnaire which they themselves consider to have been very broad.

Measurement

The technical problems of measuring eye contact have been handled in so many ways that it becomes very difficult to compare experimental results. The problem was that of determining whether one could tell whether he was being looked at directly, and at what distances this would be possible. Gibson and Pick (1963) placed a looker, who maintained a passive facial expression, at a distance of 2 m. or about 6½ feet from the observer. With the looker, using 7 fixation points on and around the observer's head, and assuming 3 different head postures, straight on and 30° to either side, the observer could discriminate shifts of fixation of the magnitude of 10 cm. Therefore, it was concluded that the ability to tell whether one was being looked at directly was quite high at this distance and presumably as high at lesser distances.

The next problem was to determine whether a third party could tell whether someone else was being looked at. Exline (1963) dealt with this problem and found that the correlation between two observers, hidden behind a one-way vision screen, on the eye contact of a common subject was .98 being significant beyond the .01 level (see Figure 1A). Additional evidence was obtained by showing the profiles of common subjects, recorded in adjacent positions on a multi-channel recorder, to be almost identical. The limitations of this study were that no subject-observer distances were reported and that, as reported, there were no data to rigorously test whether the subjects judged to have exchanged mutual glances really did look directly at one another's eyes.

Argyle and Dean (1965) in an experiment to determine the effects of distance on eye contact used a slightly different technique. Pairs of subjects, one a constant gaze confederate, were placed at 90° angles behind tables and the intersubject distance was varied at 2, 6, or 10 feet. Observers were placed behind a one-way vision screen to the left and behind the in-line subjects (see Figure 1B). The observers were looking directly into the eyes of the subject and it is reported that they could tell with accuracy when the subject looked at the confederate. Because of the high agreement between the two observers, only one was used for the latter part of the experiment. It was stated in this study that subjects did not spend much time fixating on other parts of

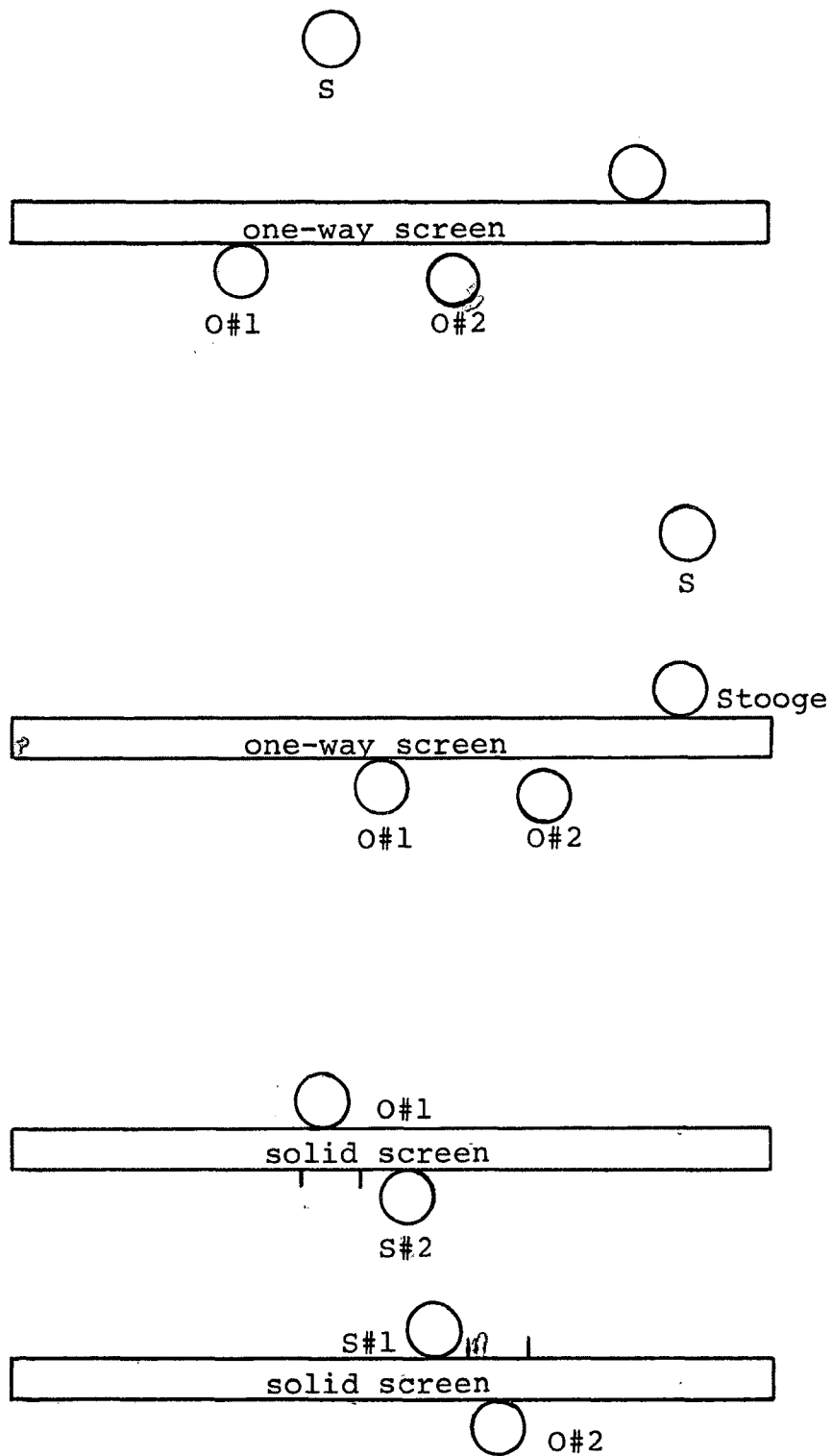


Figure 1. Three designs for observing mutual eye contact between pairs of subjects.

the head or scanning the rest of the face so the assessment of mutual eye contact was quite easy.

Strongman and Champness (1968) used still a third technique for assessing mutual eye contact though it was closely adapted from Exline. In their experiment two observers were hidden behind screens in which were placed apertures to allow them to observe the line of regard of their subjects. Both observers recorded from the same side of their subject.

Stephenson and Rutter (1970) attacked Argyle and Dean (1965), not on the findings that eye contact between two people increases with the distance between them, but on the basic method for determining eye contact. They contended and demonstrated that with increasing distance, gaze directed at an ear or shoulder would be increasingly recorded as eye contact by observers in Argyle and Dean's design. Because the confederates in Stephenson and Rutter's experiment were unable to stare, converse and record eye contact at the same time their results were not reported and unfortunately cannot be compared to the Gibson and Pick (1963) results. Argyle (1970) replied that, in his opinion, Stephenson and Rutter's basic assumption was false, namely that during social interaction real people spend much time looking at areas adjacent to the face. He states that from past experience interactors look each other directly in the region of the eyes or they look right away. When subjects are not engaged in eye contact, they look at objects or they look

blankly into space. The controversy continues. For the purposes of this study at least, it was assumed that mutual eye contact was what we were measuring.

The Present Study

The main purpose of this study was to test one of the most commonly agreed-upon functions of eye contact; the social "releaser" function. All of the studies to date have been carried out between subjects in a forced interaction situation. Most commonly the subjects are seated in chairs around or across a table and social interaction in the form of conversation is required, whether it be structured or unstructured. The present study attempted to show that mutual eye contact will lead to some sort of voluntary social interaction in a more naturalistic setting.

The same criticism of artificiality may be leveled at much of the research in need for affiliation and eye contact. In these studies the subjects are placed in an artificial situation and respond in a forced or semi-structured interaction which may tend to obscure the personality trait, n affiliation, by the demand characteristics of the experiment. It was hoped that the free response character of this study would allow maximum expression of this personality variable. It is possible that the use of this more natural setting helped to resolve some of the discrepant findings on eye contact, sex, and need for affiliation as measured by the

French Test of Insight. The observational area was limited to a 10 foot square as this is essentially the limit of distance with which reported work has been done and the measuring technique which was used was that of Strongman and Champness (1968) with minor modifications.

In summary, then, the present study was undertaken in an attempt to confirm a previously unexplored basic hypothesis of the functions of eye contact. The hypothesis was that mutual eye contact would lead to social interaction. In addition an attempt was made to relate mutual eye contact, social interaction, and need for affiliation.

CHAPTER II

METHOD

Subjects

Ss were 160 Introductory Psychology students, 80 males, 80 females, at the University of Montana. The only additional limitations were that they be unaccompanied to the experiment and previously unacquainted with the observer.

Physical Arrangements for Observation

The experimental area consisted of a hallway in the Psychology Building. At a midpoint in the hallway was the outside entrance to the building and at one end of the hallway an observer was positioned, seated on a stool. The floor in front of the O was gridded off for a distance of 10 feet. Behind this O was a wall through which an observation hole had been drilled and covered with one-way vision screen. This aperture was placed slightly to the right of the O and was used for observation and recording by an E (E #1) concealed behind the wall. A second E (E #2) was positioned against the side wall at the far end of the experimental grid and stepped behind and to the right of the incoming Ss (Figure 2).

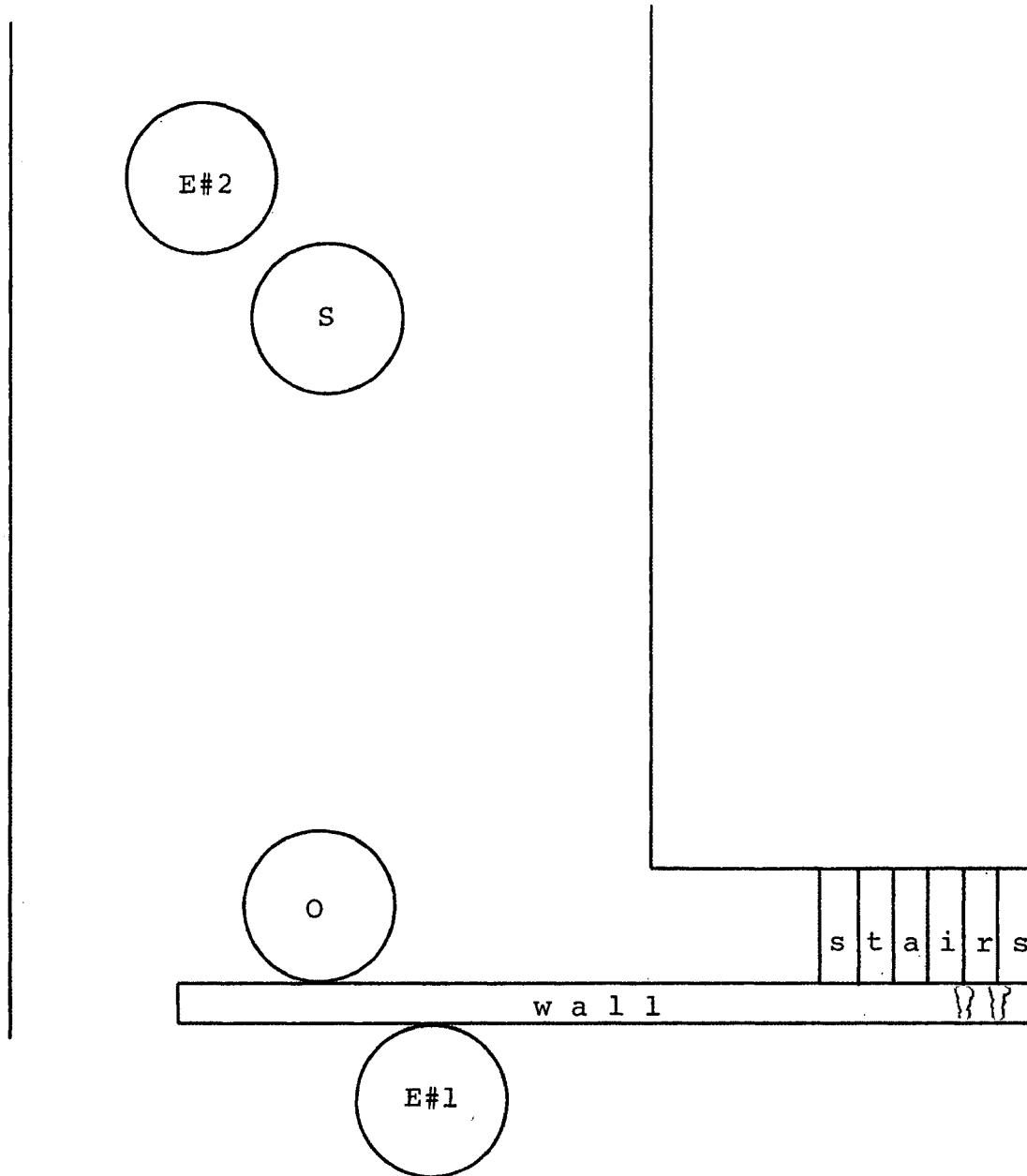


Figure 2. Design for observing mutual eye contact in a naturalistic setting.

E #1 recorded eye contact of S with O and E #2 recorded eye contact of O with S by depressing silent switches. (This method is very similar to that used by Strongman and Champness who found a 95% agreement between their Es on eye contact). These switches activated one pen of a multichannel event recorder only when both switches were on, thereby giving a measure of mutual eye contact only. In addition, E #1 recorded the occurrence of conversation or any of three gestures, head nod, hand signal or facial display, by the use of another silent switch.

The O recorded, by means of a switch hidden from view, the total time of the S's passage through the gridded area. The initial depression of the switch by O governed the initiation of movement of the recording paper. The use of the multichannel event recorder then provided a time line showing the total experimental time, the mutual eye contact time and its position in total time, and the occurrence and placing in the total time of the social interactions.

At the end of the experiment the Ss were asked to take the French Test of Insight. Exline's (1960) development of N Affiliation Categories is . . .

"Affiliation motivation is defined as a desire to establish and/or maintain warm and friendly interpersonal relations. The operational measure of the concept incorporates both approach responses toward affiliation and avoidance responses toward rejection. Affiliation motivation was measured by an instrument consisting of 10 single-sentence descriptions of behavior typical of hypothetical individuals with whom it is assumed the S can identify when asked to 'explain'

the behavior. A sample item is 'Joe/Frances is always willing to listen'. Sample responses illustrative of approach (positive) and avoidance (negative) affiliation motivation respectively are, 'Because he likes other people', and, 'He thinks the other will get mad at him if he doesn't listen'. The test, presented as a test of insight which measures the ability to understand the behavior of others, results in a total score, a positive score, and a negative score for each S. Affiliation motivation is operationally defined as the sum total of each S's affiliation responses (positive, neutral and negative). Those Ss scoring above the median were designated as high affiliators, while those whose scores fell below the median were designated as low affiliators."

In this study the same rationale and scoring system was used with the exception that for purposes of statistical analysis, the scores for n affiliation were not dichotomized.

Procedure

The factors to be investigated were mutual eye contact, social interaction and n affiliation in like sex and opposite sex pairs. There were two experimental conditions, normal observation and extended gaze. A male and female group of Ss, equally divided in number, were run individually under one of the two conditions by either male or female Os.

<u>Observation Condition</u>	<u>Extended Gaze</u>		<u>Normal Observation</u>	
Observer Sex	M	F	M	F
Subject Sex	M F	M F	M F	M F

In the first half of the experiment the O was given instructions to record the amount of time required by the S to pass through the grid. It is thought that this would permit O's almost normal observation of S. The two Es then recorded the mutual eye contact (MEC) and social interactions (SI) between S and O. In the second half of the experiment the O was instructed not only to record the time as in the previous condition but also to attempt to maintain eye contact with S during this time. The O was further instructed to maintain a constant, neutral facial expression throughout the testing under both conditions.

The Ss were told to report at an appointed time to an upstairs room in the Psychology Building to take a paper-and-pencil test. They also were instructed to go unaccompanied. The Ss under both conditions were forced to cross the grid by the physical properties of the building. After crossing they grid they proceeded up the stairs to the test room where they were asked to complete the French Test of Insight. Testing was conducted over a period of 5 days with Ss scheduled every 10 minutes with few interruptions from 10:00 in the morning until 4:00 in the afternoon.

CHAPTER III

RESULTS

The data was analyzed in a 2 x 2 x 2 factorial design with the factors designated as subject sex, observer sex, and observation condition. In order to avoid fractions in data presentation and scoring, the data represent recording intervals with two intervals equaling one second of mutual eye contact time.

Because the effect of the treatment upon the variance was unknown, an F max test was run on the scores before proceeding with the above analysis of variance. This test failed to indicate homogeneity of variance and a square root transformation was carried out with the F max test again indicating lack of homogeneity. Because the analysis of variance is considered so robust (Box, 1954), it was decided to run the analysis without transformations and despite the fact that homogeneity of variance had not been shown. The .01 level of significance was chosen in an attempt to compensate for this lack of efficiency.

The results are presented in Table 1 and indicate that there were significant effects for sex of the observer and observation condition as well as interaction effects between these two, all significant beyond the .01 level.

TABLE 1

SUMMARY OF ANALYSIS OF VARIANCE
ON MUTUAL EYE CONTACT¹

Source	df	MS	F
Sex of Subject (A)	1	.0063	-
Sex of Observer (B)	1	12.9391	20.56*
Observation Condition (C)	1	10.5063	16.67*
A x B	1	.0390	-
A x C	1	.2249	-
B x C	1	4.3890	6.9733*
Within (Error)	152	.6294	-

¹Raw data in $\frac{1}{2}$ sec. intervals

*p < .01

In order to explore the relationship between mutual eye contact and n affiliation responses, a Pearson product moment correlation coefficient was computed. The result in Table 2 indicates no significant relationship between these two. Because the social interaction data was dichotomous, either occurring or not occurring, a point biserial correlation coefficient was computed for n affiliation and social interaction, and social interaction and mutual eye contact respectively. The results, also in Table 2, indicate that the correlation between n affiliation and social interaction was non-significant, while that between mutual eye contact and social interaction was significant beyond the .01 level.

A chi square test was run on the number of social interactions under each of the observation conditions, namely normal observation and extended gaze, with female and male observers. The result obtained and shown in Table 3 is that the chi square is significant beyond the .05 level and inspection of the table reveals that the obtained significant finding stems largely from the female observer extended gaze cells.

The difference between the means for n affiliation scores of males and females (see Table 4) was examined by means of a t test and found to be non-significant.

TABLE 2
CORRELATION COEFFICIENTS FOR MEC, SI
AND N AFFILIATION (N 160)

Measures	r or rpb
MEC and SI	.3618*
N Affiliation and SI	.0862
MEC and N Affiliation	.1087

* $p < .01$

TABLE 3

FREQUENCIES OF SOCIAL INTERACTION OF SUBJECTS
 WITH MALE AND FEMALE OBSERVERS UNDER
 TWO OBSERVATION CONDITIONS

	<u>Male Observer</u>		<u>Female Observer</u>	
	EG	NO	EG	NO
SI	3	2	13	3
NO SI	37	38	27	37

*p < .05

TABLE 4

MEAN MALE AND FEMALE N AFFILIATION SCORES*
 DERIVED FROM ADMINISTRATION OF
 THE FRENCH TEST OF INSIGHT

Observation Condition	<u>Sex of Subject</u>			
	<u>Male</u>		<u>Female</u>	
	n	\bar{X}	n	\bar{X}
<u>Normal Observation</u>				
Female Observer	20	3.40	20	2.85
Male Observer	20	3.30	20	3.90
<u>Extended Gaze</u>				
Female Observer	20	5.15	20	3.00
Male Observer	20	3.20	20	4.80
Total	80	3.76	80	3.64

* $t = 1.09$ N.S.

CHAPTER IV

DISCUSSION

Goffman (1963) reported the phenomenon that two approaching strangers will avert their eyes as the interpersonal distance decreases from about 8 feet. Since the present study involved eye contact and decreasing interpersonal distance within a 10 foot area, Goffman's findings of low mutual eye contact should have been obtained. In fact, this occurred under the normal observation condition of the study. When the observer was under instructions simply to time the subject's crossing of the experimental area, he acted like Goffman's subjects and averted his eyes. However, under the extended gaze or stare condition, mutual eye contact times are significantly greater than under the more natural observational condition. In this condition the observer was instructed to actively seek eye contact with the subject and to maintain it. Because of this action, any glances on the part of the subject would be scored as mutual eye contact. Since the observer was seated so that the subject did all of the approaching, the subject took approximately twice as long to close the interpersonal distance than would have been the case had the observer been moving toward the subject. This also constitutes

a change from Goffman's observation conditions and may account for some of the increase in eye contact under the stare condition. A third possible, but less supportable, explanation for MEC increase in the stare condition is that the stare is qualitatively different from the casual glance and carries a completely different message which elicits eye contact, however this explanation would be difficult to verify.

No differences in MEC were found for male versus female subjects even when observers of both sex are used. This finding is in agreement with Strongman and Champness (1968) who, using a similar measuring technique, also found no sex differences. The present study does not agree with the non-significant suggestions of sex differences reported by Exline (1963). In contrast to finding no differences for the subjects, the significant differences in MEC with male and female observers has two possible interpretations: (1) the male and female observers for this study were not equated for esthetic qualities, which is a constant problem in studies involving sex differences, (2) the mores of eye contact behavior may be different for males and females in this culture, specifically, it may be that to return the stare of a strange male, either for a male or a female, is socially inappropriate while to return the gaze of a staring female may be quite appropriate for either sex. The fact that significant interaction effects between sex of the observer and observation

condition were found, lends further support to the above speculation, namely, that a staring female represents an entirely different stimulus configuration than a non-staring female or a male.

The finding of a high correlation between MEC and SI indicates that as MEC increases, SI increases time relationship. It is striking that in 2 out of the 4 cases when MEC time was greater than one second (2 scale points), SI occurred. This interpretation agrees with Kendon (1967) who postulates MEC as a social action releaser, however, this data shows that there is probably a minimum amount of MEC necessary to release the behavior and it is in the neighborhood of one second.

The confirmation of the hypothesis that mutual eye contact will result in social interaction lends great weight also to Argyle and Dean's (1965) postulate that one of the main functions of eye contact is signalling that the channel is open which places a person under some obligation to interact. Confirmation also indicates that the experimental manipulation of observation conditions was effective in influencing subject behavior.

The chi square test of observation conditions by sex of the observer indicates that female stare conditions lead to more social interactions than male stare conditions. It appears that with both sex subjects, more social interaction occurs if the female initiates and maintains eye contact

than if a male does so. Perhaps they can be explained best by the previously reported findings that high MEC times correlate with high social interaction, and that a female observer elicits more mutual eye contact, with means that she would be engaged in more social interactions.

In this study n affiliation was not found to correlate with either social interaction or mutual eye contact, but the mean n affiliation scores were comparable to those reported by Exline (1960, 1963) using the French Test of Insight, in which he found significant sex differences in n affiliation scores. A possible explanation is that the discrepant findings between Exline and the present investigator may be attributed to relatively recent social changes such as more freedom for women. The present findings are supported by Strongman and Champness (1968) who reported no sex differences in n affiliation using another measuring technique.

It might be expected that subjects high in n affiliation would be more sensitive to cues leading to social interaction. This expectation, however, was not supported by the data in this study, as n affiliation did not correlate with social interaction. This finding casts some doubt on the value of the French Test of Insight as a predictor of affiliative behavior. Perhaps paper-and-pencil tests reflect a socially learned set of responses which may be readily changeable, while eye contact reflects a more primitive and natural level

of behavior. In a situation involving conflict or ambiguity the more primitive systems take precedence, which may explain why mutual eye contact correlated with social interaction while n affiliation as measured by the French Test of Insight did not in this study.

Generalizing from the above findings, we might expect that females might be more effective in initiating social interaction in a therapeutic setting or in any other situation which relies heavily on interpersonal relations. The extent to which physiology and culture interact to cause eye contact behavior has not yet been evaluated, however. In this culture where women are expected to be somewhat passive, they may have learned to use eye behavior as an active coping device, precipitating social interaction. The investigation of whether this behavior is typical of all females or restricted to those of a college population is a possibility for future research.

CHAPTER V

SUMMARY

One hundred and sixty subjects, equal number of males and females, were observed crossing a 10 foot area by either a male or female observer under one of two conditions, normal observation or extended gaze. Measures of mutual eye contact and social interaction were taken. All subjects were then tested for n affiliation with the French Test of Insight.

The results of the study indicate that both the sex of the observer and the observation condition as well as the interaction between them are significant in effecting the amount of mutual eye contact shown while no differences attributable to sex of subject could be demonstrated. Female observers elicit more social interaction under a stare condition than under a normal observation condition or than a male under either condition. No relationship between n affiliation and either mutual eye contact or social interaction was found, however a strong relationship was shown to exist between mutual eye contact and social interaction and several interpretations for social communication are discussed.

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APPENDIX A

TEST OF INSIGHT

Name _____ Date _____

This is a test of your understanding of the reasons why people behave as they do. You will be given a characteristic behavior of each of a member of men. Your task is to explain why each man behaves as he does. Read each description and then decide what you think would usually be the reason why a man does what this man does. Decide what this man is like, what he wants to have or do, and what the results of his behavior are apt to be. If you think of more than one explanation give only the one you think is most likely. Write your answers in the spaces provided.

Bill always lets the "other fellow" win.

Ed feels upset if he hears that anyone is criticizing or blaming him.

Fred enjoys organizing groups and committees.

Joe is always willing to listen

Frank would rather follow than lead.

Tom never joins clubs or social groups.

John's friends can always depend on him for a loan.

Don is always trying something new.

George said, "They probably won't ask me to go with them."

Pete said, "I'm pretty sure I can do it."

APPENDIX B

SCORING CATEGORIES FOR THE TEST OF INSIGHT

1. Desire for goal (A+)
2. Goal directed activity (I+)
3. Personal qualifications for goal attainment (Q+)
4. Expectation of goal attainment (Ga+)
5. Goal attainment (Q+)
6. Positive affect to goal attainment (P)
7. Desire to avoid failure (A-)
8. Activity directed toward avoiding failure (I-)
9. Lack of qualifications for, or possession of qualifications preventing, goal attainment (Q-)
10. Expectation of failure (Ga-)
11. Defensive statements or rationalization (D)
12. Failure to attain goal (G-)
13. Negative affect to failure (N)

APPENDIX C

RELIABILITY AND VALIDITY DATA

Test of Insight scores correlated .18 and .19 respectively with affiliation sentiments and an affiliation questionnaire, (French, 1958). In the same study scoring of two successive samples of 30 and 37 ten-item papers produced category agreement of .88 and .91 respectively. In the present study interscorer reliabilities of .86 and .92 were found on two sets of five ten-item papers.