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PERCEIVED MUTUAL EYE CONTACT AS RELATED TO PERSONAL LIKING

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PERCEIVED MUTUAL EYE CONTACT AS RELATED TO PERSONAL LIKING

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Jeffrey Mkhudlwana Beka Hadebe

A Thesis

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

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ABSTRACT

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PERCEIVED MUTUAL EYE CONTACT AS RELATED TO PERSONAL LIKING

By

Jeffrey Mkhudlwana Beka Hadebe

Linkages between subjectively-estimated mutual eye contact (SEMEC) and liking were studied within seven small mixed-sex groups concerned with enhancing members' interpersonal communication skills that met about 20 times (mostly 90-minute sessions) during 10 weeks. After brief SEMEC training, each participant's SEMEC with each other group member was collected for every group's 4th, 10th, and 18th sessions. Similar but more inclusive Liked-Disliked ratings were also collected following total group experiences of $22\frac{1}{2}$ and $43\frac{1}{2}$ hours. Employing a 3 (occasions) X 3 (degrees of liking) X 3 (sex: FF, FM, & MM) ANOVA design was seven (one per group) entries per cell, a strong positive bond obtained between dyad's total SEMEC and Liking despite these data's divergent collection times base periods, and instabilities. This SEMEC-Liking bond agrees with findings from more technology-bound laboratory studies and its greater ecological representativeness encourages future explorations with appropriate subjective methods.

This study is dedicated

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to my family

ACKNOWLEDGEMENTS

I would like to extend my sincere gratitude to Professor John R. Hurley, my committee chairman, without whose continued patience, support, and advisement this thesis would have never been written. I also wish to acknowledge the other committee members, Professors Donald Grummon, and Dozier Thornton for their professional insight and assistance.

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INTRODUCTION

The purpose of this study was to explore the relationships between amount of mutual eye contact (MEC), familiarity, and personal liking. MEC is defined as an event in which two people claim to have looked at each other's eyes while communicating, verbally or nonverbally. These events were measured during meetings of small, interpersonally-oriented groups for college undergraduates. Familiarity is defined by the number of hours that these groups had met. An early session, perhaps the third of a series of 20, would represent low familiarity; a middle session, perhaps the tenth, would represent more familiarity; and a late or near-final session in this series would represent most familiarity. Personal liking/disliking was measured by self-reports from the group members.

It was hypothesized that in the earlier sessions of these groups, the participants would have relatively little MEC, for such sessions often include anxieties about getting acquainted with each other. By the middle sessions, the participants would be much more familiar with each other. It seemed probable, therefore, that their like or dislike of one another would have begun to stabilize. This

increased degree of familiarity along with the crystallization of their likings or dislikings, was assumed to be reflected by changes in the amounts of MEC. Near the groups' end, familiarity would even be greater, personal bonds and/or alienations even more intense, and partners' MEC might be more stable.

Because the philosophical orientation (Egan, 1976) of these small groups emphasizes empathy, self-disclosure, mutual acceptance, and constructive relationships, it was hypothesized that increased familiarity and personal liking for each other would be associated with increased MEC, while decreased personal liking would be associated with declining MEC between dyadic partners during these group sessions. Virtually all studies reviewed below were conducted in laboratories, under experimental conditions. The present study differed from them in that it was done in a more naturalistic environment where participants were more freely interacting with each other. Participants interacted in an almost natural way.

Review of Relevant Literature

Studies of Eye Contact

Extensive research has been done on the role of eye contact (EC), mutual glance, or gaze, but virtually all of it was conducted in laboratories under experimental conditions. These studies appeared mainly between 1965

and 1975. Mehrabian (1967), a major contributor to these works, hypothesized (1) that relatively more immediate head-orientation and EC elicit stronger positive or negative impressions of the communicator from the addressee, and (2) that a relatively more immediate body-orientation provides the addressee with either greater positive or negative impressions about the communicator. Immediate head- and eye-orientation was defined as an event in which the communicator's head and eyes were directed toward (H1) or away from (H2) the addressee during communications. Immediate body-orientation was defined as an act which the communicator's body slightly leaned toward (B1) or away from (B2) the addressee during communications. About 116 female university undergradutes participated in this study. The results generally supported the first hypothesis. That is, immediate head- and EC-orientation by the communicator tended to intensify both negative and positive impressions of addressees.

Mehrabian (1967), like Ellsworth, Carlworth, and Henson (1972) who found that EC elicited avoidance behavior in humans, did not fully explicate the conditions under which the EC tended to evoke adverse effects. According to Ellsworth and Carlsmith (1968), it is essential to realize that the impression given by EC also depends on the messages provided by other communication

cues. In support of this point. Ellsworth and Langer (1976) wrote:

The stare does have some intrinsic properties: it elicits attention, arousal, and a sense of interpersonal involvement inferred and the response perceived to be appropriate upon contextual cues. Consequently, the behavioral response is a function of the stare and its context, or a stare in context (p. 122).

This observation also supported Argle and Dean's (1965) affiliative conflict theory which states that Intimacy = EC, physical proximity, intimacy of the topic, amount of smiling, etc.

According to Kleinke, Staneski, and Berger (1975), EC, along with physical attraction and other variables, has positive effects on interpersonal interaction. Kendon (1967) remarked that within a friendly atmosphere, EC may be perceived as a desire for affiliation and liking, while in a threatening and/or highly competitive situation, EC may be perceived as a challenge and be negatively related to liking. This observation was supported by Langer and Abelson (1972) who reported that if help is to be received, the manner in which a request is presented is more influential than the nature of the favor itself.

In his Encoding Experiment IV, Mehrabian (1968a) requested the participants to imagine themselves as various addressers, encoder-communicators, interacting with different addressees. They were asked to stand in a way

they felt and thought they would if they were actually addressing the described addressee. Mehrabian observed that:

- Males used more EC than females in their attempts to positively impress the addressee.
- Males differed from females by showing greater
 EC with individuals of high status than with
 those of low status.
- c. Participants showed more EC with addressees they "liked" than with addressees they "disliked."

This last conclusion supported findings by Exline (1963) and Kleinke, Deautels, and Knap (1977).

Mehrabian (1968b) also investigated the effects of the communicator's posture, orientation, and distance from the addressee on his/her attitude toward the addressee. The findings indicated that the communicators showed more EC with the addressees they "liked" than with those they "disliked" (Exline, Gray, & Schutte, 1965). The plotted curve of these findings looked parabolic. They do not agree with Kimble and Olszewiski's (1980) observation that the actor's messages with negative or positive emotions tended to generate more EC than messages with

neutral or ambivalent feelings. They also observed that emotionally intense actors' messages (negative or positive) elicited more EC than weaker or lower intensity (negative or positive) messages. The reasons underlying the discrepancy between these two studies are not obvious. Mehrabian's work was quite likely to receive more credibility, however, due to his extensive prior research in this sector. Mehrabian's (1968a) experiment was much more involved than that of Kimble and Olszewski (1980), but this greater complexity might have caused spurious results. One answer to this disagreement may be that an increase in emotional intensity (negative or positive) may accompany increasing EC up to a certain point, beyond which emotional intensity continues to increase while EC starts Thus, the correlation between amounts of decreasing. emotional intensity and EC may be curvilinear. It is essential to note that the above explanation may not always be relevant. For example, just before they start fighting, boxers have been observed to stare unrelentingly at each other with the apparent intent of intimidating their opponent.

The importance of EC during a dyadic interaction was expressed by Simmel (1908) who wrote:

By the glance which reveals the other, one discloses himself. By the same act in which the observer seeks to know the observed, he surrenders himself to be understood by the observer. The eye cannot take unless at the same time it

gives. The eye of a person discloses his own soul when he seeks to uncover that of another (p. 646).

While EC may help interactants to get some insight about each other, the lack of EG may also be used to conceal certain information. In the similar vein, Simmel said:

Shame causes a person to look at the ground to avoid the glance of the other. The reason for this is certainly not only because he is thus spared the visible evidence on the way in which the other regards his painful situation, but the deeper reason is that the lowering glance to a certain degree prevents the other from comprehending the extent of his confusion. The glance in the eye of the other serves not only for me to know the other but enables him to know me. Upon the line which unites the two eyes, it conveys to the other the real personality, the real attitude, the real impulse (p. 606).

It is essential to note, however, that this observation is not always true because pathological liars, e.g., pyschopaths, tend to maintain large amounts of EC while telling lie after lie. This observation was supported by Nielsen (1962) who said:

One man's reaction to another is reflected in his eyes. The mirror of the mind, as in no other part of the face; however, not every person is expressive with his eyes and some people reveal themselves only in unguarded moments. Similarly, not everybody is able to translate the language of the eyes into ordinary, verbal descriptions (p. 128).

According to Schack (1852), as cited by Nielsen (1962), "the fine and subtle expressions and meanings of the eye are difficult to catch in a phrase, they must be grasped with one's feelings, realized by way of imagination, seen and understood in nature" (p. 51). Nielson (1962) continued further:

Yet, without necessarily being able to describe the phenomena, people are extremely sensitive to the way in which they use their eyes, and very sensitive to whether another person stares at them. We sense very quickly if a person looks directly at us, and may get a queer and uncomfortable feeling of being "looked at," "looked over and assessed," or "seen through." We may get this feeling very strongly even if we ourselves do not look in the direction of the other person, but merely sense his presence in the peripheral field of vision and indirectly know that he is looking at us (p. 129).

The meaning of EC is also culture-bound. Thus, among the Nguni and Sotho natives in South Africa, it is a sign of disrespect, and even defiance, for a child to maintain EC while talking with an adult, or for a wife while talking with her husband. However, when they are together, away from other people, a wife can maintain EC while talking with her husband. In such cases, the lowering of EC during dyadic interaction is not indicative of any hidden information as it is generally believed in Western cultures. This is consistent with Argyle and Dean's (1965) observation, that "there are cross-cultural differences, varying from taboos on eye contact, to much greater amounts of intimacy than the common in Western countries" (p. 290).

Studies on Liking/Disliking and Eye-Contact

This section reviews studies on liking/disliking which are related to eye contact (EC), the main focus of this study. Exline and Winters (1965) explored the relationship between affective relations and EC. They hypothesized: (1) that in interpersonal interactions, the participant's EC sends cues to others as to whether s/he is liked or disliked by the other; (2) that an observer can infer whether or not interactants like each other from their mutual eye contact (MEC): and (3) that persons tend to increase EC while talking to preferred interviewers, but to decrease EC while talking to nonpreferred interviewers. Their findings supported all three hypotheses. In another study, Exline and Winters (1965) reported that males decreased EC during critical interviews, but increased EC during praising interviews.

Scherwitz and Helmreich (1973) studied interactive effects of EC and verbal content on interpersonal attraction in dyads. They found that under <u>high evaluative</u> conditions, confederates who had low EC with the participants were most liked; those who had an average amount of EC were next liked; and those who had the highest EC were least liked. Under <u>low evaluative</u> conditions, however, participants showed more liking for confederates with the highest amount of EC with them and showed least liking for

those with whom they had least EC. The latter condition appears more relevant to the groups of the present study.

Kleinke and Pohlen (1971) investigated affective and emotional responses as a function of the other person's gaze and cooperativeness in a two-person game. They observed that their participants "rated the cooperative confederate significantly higher than the competitive confederate on liking preference" (p. 311). This hypothesis was supported and the findings also agreed with Exline's (1963) observation that "groups composed of persons more disposed toward relationships of communion than control engage in more mutual visual interaction than groups not so disposed" (p. 4).

A study of Ellsworth and Carlsmith (1968) investigated effects of EC and verbal content on affective responses to dyadic interaction. It was found that in a dyadic interaction, increased EC during negative verbal content resulted in negative evaluations, while increased EC during positive verbal content led to positive evaluations. This supported the earlier findings of Argle and Dean (1965), as well as those of Kleinke, Meeker, and LaFong (1974), which found that "the gaze was an important variable affecting subjects' responses on rating forms. Gazing couples were rated more favorably on all ten items, compared with non-gazing couples" (p. 370).

Argyle and Dean's (1965) affiliative conflict theory discusses the equilibrium development equation for intimacy. The authors maintain that if one element (e.g., physical proximity manipulations) is missing from the equations in a dyadic interaction, EC may be employed to satisfy affiliation needs. To test this proposition, Pellegrini, Hicks, and Gordon (1970) hypothesized that, with physical proximity held constant, assigned approvalseeking behavior will increase EC while assigned approvalavoidance behavior will have the opposite effect. The hypothesis was supported.

Earlier, Rosenfeld (1965) found that participants who played an approval-seeking role sat closer to a confederate than did those assigned to an approval-avoiding role. This observation was later supported by the findings of Storm and Thomas (1977). Rosenfeld's findings for proximity could not be compared with those of Pellegrim et al. (1970), however, since his experiment included no control group. The effect of distance between friends on EC in equilibrium theory was further investigated by Russo (1975) who found that the amount of EC increased with distance. Phrased differently, the amount of EC decreases as interactants move closer and closer toward each other (Argyle & Dean, 1965).

Rubin (1970) hypothesized that dating couples, strongly in love, would have more EC with each other than would less

attracted couples. The participants were dating University of Michigan undergraduates who were taking an introductory course in psychology that required experimental participation. A love scale was developed and used to distinguish couples strongly in love from those less so. A third "apart group," composed of participants paired with opposite-sex strangers, was added. Two observers who recorded the participants' visual behavior sat behind a one-way mirror. Each observer pressed a button connected to a cumulative clock each time the individual he was watching looked across the table at the partner's face. Each clock provided measures of individual gazing. In addition, a third clock was also activated each time observers pressed their buttons simultaneously. This clock provided a measure of mutual gaze.

The ANOVA results supported the main hypothesis. These findings were consistent with the idea that EC may be a projection of the exclusive and absorptive component of romantic love (Rubin, 1970), and with Freud (1955) who said "the more (we) are in love, the more completely (we) suffice for each other" (p. 140). In a more poetic spirit, Slater (1963) referred to "the oblivious lovers, who are 'all wrapped up in each other,' and somewhat careless of their social obligations" (p. 349). Rubin (1970) further commented:

One way in which this oblivious absorption may be manifested is through eye contact. As the popular song has it, "Millions of people go by, but they all disappear from view--"cause I only have eyes for you" (p. 272).

According to Argyle and Cook (1976) and Exline and Fehr (1978) gaze and mutual gaze are one form of nonverbal behavior which has a great meaning in human communication. This observation was supported by Libby and Yaklevich (1973) who remarked that nurturant individuals tend to express their interest and love of others by maintaining EC with them irrespective of whether or not the same amount of love and interest is being shown in return. Ellsworth and Ludwig (1972) concluded that EC is a dyadic interaction both indicates and calls for a certain amount of involvement.

Fugita (1974) investigated the effects of anxiety and approval on visual interaction. He hypothesized: (a) that when a low-status person interacts with two higher-status individuals, one approving and the other nonapproving, s/he will have more EC with the approving than with the nonapproving person; (b) that when a high-status individual interacts with two low-status persons, one approving and the other nonapproving, s/he will have more EC with the nonapproving person; and (c) that, as a dyadic interaction progresses forward, and as the topic under discussion gradually gets clearer to the interactants, mutual EC will

increase or decrease depending on anxiety and approval factors. The results supported only the first hypothesis. This observation also supported findings by Efran and Broughton (1966) and Efran (1968) that people make more EC with those from whom they expect approval, and this tendency depends on the status of the person from whom approval is expected.

Otteson and Otteson (1979) hypothesized that children more frequently looked at by their story-telling teacher remember more from the story than those who receive less gaze. Two types of stories were told: complex and simple. The hypothesis was supported. However, there were sex differences. With boys, the hypothesis was supported irrespective of whether the story was complex or not. Of the complex and simple stories paired with high teacher's gaze frequency, girls tended to recall more from the latter than former. Teacher's gaze might have enhanced childrens' story recall because it tends to be associated with the students' self-esteem (Jones & Cooper, 1971), to call for active participation in class (Caproni, Levine, O'Neal, McDonald, & Garwood, 1977), and to be perceived as part of an evaluation (Minor, 1970). Other studies have found EC to have more or less similar effects on interpersonal interaction. EC may convey needs for intimacy or affiliation (Argyle & Dean, 1965) or immediacy (Mehrabian, 1967). It

may also be perceived as a form of approval (Fugita, 1974) and approbation (Efran, 1968).

Jones and Cooper (1971) hypothesized that individuals who received more EC from an experimenter would feel happy about themselves, while those who received less EC would feel the opposite. The participants were 80 high school males arranged in 40 pairs. In an experimental room one member of the pair was told to read instructions adopted from Rosenthal (1966) to the other, while the experimenter observed and rated the participants' EC from behind a oneway mirror. Privately, the experimenter told 20 readers to keep a high frequency of EC with their partners while reading instructions. The remaining 20 were told to maintain less EC with their listener-partner. At the end of the experiment, the listening partners were requested to rate their own feelings on a scale with polar-adjectives designed to assess their feelings. The hypothesis was supported. The participants were then given neutral photographs to rate as successful or unsuccessful. Those participants who had received more EC from their partners gave significantly more positive ratings than did those who had received less EC. Citing Goffman and Simmel about the role of EC in social interaction, Friedman (1967) pointed out that "a prosaic deduction from these paeans to the mutual glance would be that of exchanging glances

with the experimenter, the subject is given a 'good' experience; he feels accepted; he feels that their interaction has been 'warm'" (p. 55).

Eye Contact and Individual Differences

Several studies have reported large individual differences in the amount of EC during dyadic interactions. Kendon (1967) found that

there are subjects who spend as much as 65% of their speaking time in looking at Q (the other participant in a dyadic interaction), or as little as 20% of it. Or there are subjects who look at Q while they are listening for only 30% of their listening time, or they look for over 80% of it (p. 26).

Weisbrod's (1965) participants were found to spend more than 70% of their time speaking time looking at others, but only 47% of their listing time looking at a speaker. Kendon and Cook (1969) studied subjects in daydic conversations. They found that EC patterns were fairly consistent aspects of the interactants' behavior, however, this varied as a function of the identity and also possibly with the participants' liking for the other partner.

Libby (1970) studied EC and direction of looking at stable individual differences. Participants were individually asked 54 questions and were requested to maintain EC with the interviewer until she finished asking each question. Four ocular responses by an interviewer to specific questions were identified:

- Maintained eye contact--scored 1 if a participant maintained EC with the interviewer throughout the duration of his response; scored 0 if he did not.
- Broke EC--scored 1 if a participant broke EC with the interviewer by looking away before the interviewer finished speaking; scored 0 if he did not.
- 3. Directional responses in vertical plane--scored 1 if a participant looked up after the interviewer finished speaking; scored -1 if he looked down; and scored 0 if neither occurred.
- 4. Directional response in horizontal plane--scored 1 if a participant looked at the right after the interviewer finished speaking; scored -1 if he looked at the left; and scored 0 if neither occurred (pp. 305-306).

All four looking variables **demonstrated inter**observer reliability, intra-individual consistency, and temporal stability over the course of the interview.

Eye Contact and Sex Differences

Exline and Thibaut (1961) investigated visual interaction in relation to Machiavellianism and an unethical act. They found that in verbal or nonverbal dyadic interactions, women engaged in more mutual EC than men. This observation agreed with Exline, Gray, and Schutte's (1965) findings. Like Exline and Winters (1965), Kendon and Cook (1969)

found that women look more and were looked at more, but only under certain conditions, e.g., women look more while listening if they like the person, whereas men look more while speaking if they like the person. There is evidently no universal tendency for women to look more or be looked at more (p. 492).

However, the tendency of men to look more at females was frequently observed.

Argyle, Lalljie, and Cook (1968) reported that women were less comfortable talking to a participant whom they could not see nor maintain mutual EC with. Exline (1963) reported that (1) visual information plays a greater role in the social field of women than of men, and (2) womens' visual activity is more sensitive to social field conditions than is men's. Ellsworth and Ludwig (1972) concluded that

in general, these studies indicate that in a neutral or positive interaction at a given level of intimacy, females engage in more eye contact and possibly depend more on visual feedback than do males (p. 380).

Eye Contact and Personality Differences

Exline (1963) found that women with a high need for affiliation maintained more mutual EC when talking than did women with a low need for affiliation. This finding was supported by Exline, Gray, and Schutte (1965) who found that participants high on measures from Schutz's (1958) Fundamental Interpersonal Relations Orientations (FIRO) test had more EC with interviewers than did participants low on both dimensions. However, Kendon and Cook (1969) found that "of 90 correlations involving FIRO only five were significant, almost exactly what would be expected by change. There was no tendency for affiliation, wanted or given, to be related to amount of looking" (p. 493).

Gray (1971) also used FIRO to investigate the amount of EC as a function of need for affiliation, need for dominance, and sex of the participant. He found that dominant female participants maintained more EC with an interviewer than did dominant male participants. However, dependent participants of each sex maintained equal amounts of EC with the interviewer. No correlation was found between the affiliation need and the amount of participants' EC with interviewers.

Efran and Broughton (1966) studied the effects of expectancies for social approval on visual behavior. Need for approval was measured by the Crown-Marlowe (1964) scale. They found positive correlations between need for approval and amount of EC. However, Efran (1968) could not replicate this result. Thus Ellsworth and Ludwig (1972) concluded that "the relationship between affiliation/inclusion/

approval need and eye contact continues to be dubious, and probably depends largely on some third variable, such as the subject's expectations of approval" (p. 381).

Mobbs (1969) investigated EC and introversionextraversion. He found that extraverts maintained more EC than introverts, whether talking or listening. Argyle (1965) observed that dominant and/or socially poised individuals looked more at others than did submissive/or socially anxious persons.

Exline and Messick (1967) investigated relationships between dominance-dependence orientation and social reinforcement on one hand, and the amount of EC on the other. They used FIRO scales to differentiate between dominant and dependent participants. Results showed some interaction. Dependent participants showed more EC with interviewers when given low (as compared to high) amounts of verbal social reinforcement. Their EC was also higher than that of the dominant participants given the same amount of such reinforcement.

A number of studies have commented on the artificiality of the continuously-staring confederate or interviewer. Kendon and Cook (1969) remarked that "most studies have employed a continuously gazing confederate, so that whenever the subject looks at the confederate, eye contact occurs; this is a rather artificial situation" (p. 481).

Libby (1970) also agreed with this observation. He further commented that this is "an unnatural situation which may elicit unnatural responses" (p. 304). Similarly, Vine (1971)

argued that in natural interactions we either give EGs (Eye Gazes) or we look at other target in the head region rather rarely. If this is the case, then observers need only be able to discriminate FGs (Facial Gazes) from non-FGs (non-Facial Gazes), which is relatively an easier task (p. 329).

Nearly all the studies reviewed here were conducted in laboratories, under experimental conditions. The present work differed in that it was done in a naturalistic environment where individuals interacted with each other much more freely. No variables were deliberately manipulated, so the degree of familiarity was not manipulated. Participants interacted in an almost natural way. There was no continuously-staring confederate or interviewer, as in the foregoing studies. In a way, Vine's (1971) suggestion that "observers need only be able to discriminate FGs from non-FGs" was accommodated in this study. Another point of difference is that the amount of EC was recorded by an observer in these previous studies, whereas in the present work it was directly estimated and recorded by the participants.

Hypothesis: There will be positive correlation between amount of mutual eye contact (MEC) and degree of personal liking among dyads during meetings of small interpersonallyoriented groups.

METHODOLOGY

Participants

The persons studied were male and female participants in undergraduate groups oriented toward increasing interpersonal communication skills during Spring term of 1982. Students participated in these growth groups as partial fulfillment of the requirements of a 400 level psychology course at Michigan State University. Enrollment was open to juniors and seniors from any major. This research was conducted concurrently in seven groups. Their composition was as follows:

Group	Male N	Female N		Total	Male to Female Ratio
A	3	4	=	7	0.75
В	3	2	=	5	1.50
С	4	2	=	6	2.00
D	4	4	=	8	1.00
Ε	4	3	=	7	1.33
F	3	4	=	7	0.75
G	_3	_5	=	8	0.60
Total	24	24		48	

The Interpersonal Groups

These groups were primarily educational, rather than psychotherapeutic, in nature. Their main purpose was to provide a favorable climate in which participants could examine and possibly enhance their interpersonal skills. This included learning about and expressing empathic understanding, caring, warmth, acceptance, confrontive skills, etc. Twice during the term each participant was also required to describe his/her perception of self and each other group member. These self-descriptions were then compared with the descriptions of how each other member of that group perceived him/her so as to highlight congruities and discrepancies.

Each group had two 90-minute sessions weekly plus two twelve-hour-long marathon group sessions near the term's third and seventh weekends, totaling about 50 hours of experiential meetings over nine weeks. Each group was led by an undergraduate facilitator or pair of facilitators who had at least one prior term of training in group leadership in addition to having earlier been a member of these groups. Apart from their group sessions, group leaders had an additional two-hour weekly staff meeting with the course instructor.

Measures

This study used two different tools: <u>the Estimate of</u> <u>of Mutual Eye Contact in Seconds</u> (EMECS) and <u>the Liked-</u> <u>Disliked</u> scale. Data generated by the latter were used to select dyads whose mutual eye contact (MEC) estimates, in seconds, would be analyzed.

The EMECS (see Appendix A) was jointly developed by the researcher and his faculty advisor, John R. Hurley. Its purpose was to yield perceived estimates of the amount of MEC that participants had maintained with one another during predetermined group sessions.

The <u>Liked-Disliked</u> measure (see Appendix B) is a scale that precedes Hurley's (1978) eight other scales designed to assess Self-Acceptance vs. Rejection and Acceptance vs. Rejection of Others. These latter measures were not part of the present study. Anchored at its positive pole by <u>Liked</u> and at its negative pole by <u>Disliked</u>, this instrument was presented in semantic differential form with 10 equally-spaced intervening checkpoints and scored from 0 to 9. Each participant rated how much s/he liked self and every other group member (see Appendix B).

Procedure

Training Session

The purpose of the training session was to enhance the likelihood that group members would make meaningful

MEC estimates. All seven interpersonal groups were combined in one classroom where they were asked to sit in seven rows. Seven randomly selected participants were each asked to form a new group by choosing one unfamiliar person from each row. This led to the formation of seven training groups. The members of each group were then asked to sit together in some area of the classroom or adjacent locations. The researcher then gave each member an index card on which to list all training group participants' names. He then asked them to talk to one another about what they expected from their regular 90-minute groups. This discussion lasted about 15 minutes. Then they were asked to return to their original seats. The researcher then requested them to estimate the seconds of MEC that they had with each other group member during the immediately preceding 15-minute meeting.

Estimations of MEC from all members of each group were combined in matrix format on a single index card. The researcher then encircled the dyad or dyads having the greatest MEC estimate discrepancies and also the dyad or dyads showing the least discrepant estimates. At the subsequent general class meeting, one week later, each participant received a feedback form that displayed all MEC estimates attributed ("given") to each partner as well as those assigned by (received from) partners in addition to the total estimates "given" by each individual. This

informed each participant of all discrepancies between his/her own MEC estimates and those of all training group partners. A general discussion of these data and a review of factors that might have contributed to these discrepancies followed. The participants were then advised that similar MEC estimates would be collected toward the end of some of the regular 90-minute sessions of their small groups. They were not told, however, which sessions would be selected for this purpose.

Data Collections

MEC estimates were later collected from all seven interpersonal groups, each of which met for about 20 sessions. At the end of an early session, the fourth or when each group had met for about six hours, the researcher administered the EMECS and collected these forms. The same process was repeated at the end of a middle session, perhaps the tenth, or when each group had met for about 28 hours. This process was again repeated at the end of a late or near-final session, perhaps the 18th, or when each group had met for about 49 hours. So the EMECS was administered to each group on three occasions.

General Data Analysis Scheme

Ratings of how much the group members liked each other were collected on two other occasions: (1) following each group's first postmarathon I session (after about
$22\frac{1}{2}$ -hours of group participation), and (2) again after each group's first postmarathon II session (after about $43\frac{1}{2}$ -hours of group participation). The latter set of liking ratings was based on fuller acquaintance and knowledge of each other, since the prior ratings had been discussed within each group. Thus, only the second set of liking ratings was used to identify pairs of members within each group who displayed high or moderate mutual ratings of liking or disliking. The instructions used with each administration of the Liked-Disliked scale had specified that these ratings were to be based on the ratee's "actual behavior within the group sessions up to now," implying a 22¹/₂-hour base for Time I ratings and a partly overlapping 43¹/₂-hour data base for Time II ratings. In contrast, MEC estimates were exclusively based on behavior during those 90-minute group sessions that immediately preceded their collections at 6-, 28-, and 49-hours.

Dyads representing different degrees of liking were identified as follows:

1. The researcher examined the second set of <u>Liked-Disliked</u> ratings which each group member completed for every other member of that group. As an illustration, Appendix B shows the ratings of one participant (Mark) in Group D.

2. These data were next assembled in a matrix that displayed how each partner of all possible dyads rated the other member (see Appendix C). The dyadic partners were arbitrarily designated X and Y. Thus, each pair had two ratings, namely, X's rating of Y, and Y's rating of X. For example, Appendix C shows that Mark's (X's) rating of John (Y) = 7 (the second value in the first row), while John's (Y's) rating of Mark (X) also = 7 (the first value in the second row).

3. Within this matrix, all male-male, male-female, and female-female dyads were identified and rearranged into three columns, Partners' liking ratings were summed to yield a single aggregate value for each pair. These sums were then used to rank-order the pairs within each column (see Appendix D).

4. Within each column, the researcher selected dyads with the highest, middle, and lowest liking ratings. The "middle" rating was defined by the median. If two or more pairs fell at the median point, the pair with the least interpartner discrepancy was selected. For example, column three of Appendix D shows a median with two different pairs: Suzi and Marie (5 + 8 = 13), and Leslie and Lisa (6 + 6 = 12). The latter was chosen since the partners' ratings had zero discrepancy. If two or more dyads again formed a tie on this respect, one pair was selected

by a random method. For example, Appendix D column one shows three different dyads which were at median point: Mark and John (7 + 7 = 14); Mark and Paul (8 + 6 = 14); John and Paul (7 + 7 = 14). The discrepancy criterion eliminated the middle dyad. One of the remaining two was selected randomly.

5. This process was repeated in the remaining six groups, resulting in a total of 21 dyads.

MEC estimates of the selected 21 dyads were analyzed, using 3 \underline{x} 3 \underline{x} 3 ANOVA technique, over three time periods (early, middle, and late), to determine whether time period, degree of personal liking, and sex had any statistically significant effect on perceived MEC estimates. The SSPS computer program was employed to calculate all pertinent Pearson product-moment correlation coefficients.

Level of Significance and Post-Hoc Measures

Since this was an exploratory study, an alpha level of .05 was used to test the significance of an <u>F</u> ratio. To check which means were significantly different from one another, the Least Significant Difference (LSD) technique was employed using the following formula: LSD = t a/2 Sd

- where Sd = standard error of the mean difference(2MSE/J)²
 - $\underline{t} = t$ -distribution table
 - a = a chosen two-tailed alpha level
 - MSE = denominator used to calculate \underline{F}
 - J = number of observations in each mean

This method of multiple comparison were chosen because:

- In it, comparisons need not be orthogonal (independent)
- It works well with no more than four comparisons
- LSD sets the Type I error rate around each contrast (Winer, 1971).

FINDINGS

Table 1 gives the mean and the standard deviation of partner's raw MEC estimates by each group for the three data collections. Thus, the 6-hour MEC estimates of Group D's partners X and Y averaged 64 and 46 seconds, respectively, with dramatically different standard deviations of 111 and 50. This group showed the largest discrepancy between partners' 6-hour MEC estimates. Group G's 6-hour estimates had the smallest mean discrepancy. The same-time differences of \bar{X} 's and \bar{Y} 's among these seven groups showed much intergroup MEC variability. Their relatively large standard deviations revealed much variation of partner's MEC estimates within each group, especially at 6-hours.

Table 1 also shows that 6-hour raw MEC estimates consistently exceeded those made subsequently. Thus, Group A's 6-hour estimates were quite high (17 and 51) as compared to those at 28-hours (means = 6 and 4). In other words, the correlation between the total mean raw MEC estimates and the total number of hours of group experience that preceeded the data collections was somewhat curvilinear. In all remaining groups, the relationship between the sum

Raw MEC	Estimates of A	0 11	yadic Pa	rtner	s (X &	Y) Wi	ithin Each	n Group on Eac	ch Occasion
Group	N of Pairs	μI	ime	×	(sp _x)	ans V	(sd) Mean	Discrepancy	Group Mean
٨	21	6 28 49	hours hours hours	17 6 11	(11) (6) (9)	51 4	(81) (4) (8)	47.8 4.8 9.0	34.0 5.1 10.0
В	01	6 28 49	hours hours hours	32 12 7	(18) (15) (2)	22 22	(15) (2) (5)	16.5 9.8 3.1	26.5 8.7 6.1
U	15	6 28 49	hours hours hours	53 31 22	(49) (20) (12)	25 14 18	(31) (10) (11)	46.9 21.3 14.5	38.9 20.8 19.8
D	28	6 28 49	hours hours hours	64 21 8	(111) (12) (12) (14)	46 18 7	(50) (14) (6)	59.3 13.4 3.6	55.3 19.2 7.1
ш	21	6 28 49	hours hours hours	က အ အ က	(50) (6) (3)	35 9 6	(74) (5) (4)	36.9 6.8 3.4	36.5 8.6 5.7
LL.	21	6 28 49	hours hours hours	10 7 8	(5) (4) (9)	2 2 2 2 2 2	(23) (4) (5)	10.8 2.3 5.7	13.5 6.8 7.6
IJ	28	6 28 49	hours hours hours		(15) (10) (5)	13	(13) (9) (4)	6.7 7.5 4.8	14.9 10.5 11.3
L L A	144	6 28 49	hours hours hours	33.0 13.4 10.0	(1.8) (0.5) (0.4)	30.6 10.2 8.8	(2.0) (0.3) (0.3)	32.8 9.0 6.0	31.8 11.7 9.5

Table 1

of MEC estimates and hours of prior group experience was generally negative. So was the correlation between the sum of respective standard deviations and the number of hours the group had met.

Table 1 also shows that some groups' means were consistently high, while others were consistently low. Thus, Group C's means at 6-, 28-, and 49-hours were quite high while Group F's same-time means were relatively low. These differences suggested a strong group effect over time.

Table 2 shows the correlations among all dyads within each group for both raw estimates and transformed estimates representing the percent of each individual's total MEC attributed to each dyad. These percentage MEC estimates will be discussed later. The number of pairs had no apparent effect on these correlations. Thus. although each group contained 21 dyads, 6-hour raw MEC estimates correlated .05, .15, and .55 within groups A, E, and F. Four groups (B, D, F, and G) showed consistently positive raw MEC correlations. Only group C's dyadic correlations were consistently negative, while Groups A and E had mixed positive and negative correlations. The size of these correlations revealed very limited agreement between the raw MEC estimates of dyadic partners. Of these 21 within-group correlations, only one (G at 28-hours)

Correlé	itions of MEC Estimat	tes within	ı Pairs by Gr	oup: Rav	v and Percentag	ze (%) of	Data
		6-Hot	SJI	28-Hc	ours	0H-67	ITS
Group	N of Pairs	Raw	%	Raw	%	Raw	%
A	21	.05	. 50 ^c	.07	.40 ^c	04	.66 ^a
В	10	. 28	.44	.12	.15	.60	.18
C	15	02	.37	14	.17	17	.32
D	28	.29	03	.23	.10	.24	.36
ы	21	.15	.35	03	.26	.13	.38
٤	21	.55	.31	.58	.70 ^a	.13	.34
U	28	.27	07	• 38 ^c	.15	.29	.48 ^c
	144 Overall <u>r</u>	= .18 ^c	.26 ^b	.32 ^a	.22 ^b	.29 ^a	.44 ^a

Table 2

 b_p < .01 by two-tailed test $c_{\rm D}^{\rm c} < .05$ by two-tailed test

 $_{\rm p}^{\rm a}$ < .001 by two-tailed test

identifies median correlation(s) within this column.

was statistically significant, although the total set of 144 dyadic partners correlated significantly on each occasion. Overall, there was little stability in partners' raw MEC estimates within or across these time periods.

Table 2 also shows correlation coefficients derived from the conversion of raw estimates into percentages. Each percentage represented the portion of his/her total MEC estimates that a person reported giving to each partner in that group. Most of these correlations (16 of 21) exceeded those derived from the raw MEC estimates. For example, using raw data, the correlation coefficient of group G at 49-hours was .29, whereas using percentage estimates, the same dyads' estimates correlated .48 (p < .05). The percentage data also showed more stability among mutual (pairs') estimates with increasing contact over time, especially at 49-hours. The raw estimates did not show this tendency. However, even these percentage data showed quite limited stability for 6- and 28-hour estimates, but modest stability at 49-hours.

Despite these limitations the percentage data had several advantages over raw MEC estimates. The raw estimates had many large interpartner discrepancies that tended to markedly lower their Table 2 correlations. These extreme differences were reduced by converting the raw estimates into percentages. As a result, the

correlations between partners increased. In three cases, correlations which had not been statistically significant increased sufficiently to achieve this significance. For example, using raw data, Group A at 49-hours had a -.04 correlation, but this correlation for percentage data increased to .66 (p < .001). Thus, the percentage data yielded several significant correlations between partners when raw estimates had not. These increased correlations demonstrated that this conversion of individual's raw estimates into percentages yielded greater interpartner consistency. Percentage data also showed increasing stability of mutual estimates at 49-hours. In addition, to get some sense of what was going on in individual groups, the median correlations were also considered. Within each time period, the percentage data yielded a higher median group correlation than did raw MEC estimates.

How correlations between individuals' estimates shifted over time is shown in Table 3. For raw MEC, the low stability of individuals' estimates was shown by the following mean correlations: 6- vs. 28-hours = .19 [(.28 + .10) \div 2], 6- vs. 49-hours = .01; and 28- vs. 49-hours = .32. The comparable percentage correlations were: 6- vs. 28-hours = .28; 6- vs. 49-hours = .39; and 28- vs. 49-hours = .30. These latter data showed more stability among individuals' MEC estimates over time.

Table 3 shows that raw data yielded relatively lower correlations than percentages, reflecting lesser stability among individual's estimates over time. On the other hand, percentage data yielded relatively higher correlations. These several advantages of percentage data over raw estimates led the researcher to adopt the former as more promising for the purposes of this study.

The correlations between the summed pairs' <u>Liked</u>-<u>Disliked</u> ratings of partners (<u>N</u> = 63) from Times I to II was .63. This accounted for about 40% of the total variance of liking ratings.

Table 4 shows the summary of the ANOVA findings. The most powerful main effect was for liking and a lesser, but statistically significant, main effect concerned sex. There were not significant effects for time, which is not surprising because the use of percentage MEC estimates eliminated this finding so evident in the raw MEC scores. None of the interactions were significant.

The Range of Means

Among the nine selected pairs per group, the mean percentage MEC estimates over time were: 6-hours = 31.78; 28 hours = 28.57; and 49 hours = 31.57. So the overall correlation between time (i.e., hours) and MEC estimates

		rable 3			
orrelations	Between	Individuals'	Estimates	Over	Time

			Raw	Estimates				Pe	rcentag	e Estim	ates	
	-9 1 1 1 1 1 1 1 1 1	ours	<u>28-1</u>	hour s	<u>49-1</u>	hour s	<u>6-hc</u>	<u>T</u>	<u>28-h</u>	T	<u>49-1</u>	T
X		18 ^c	28 ^a	19 ^c	16 ^d	07	35 ^a	20 ^c	07	10	14 ^d	15 ^d
	18 ^c		14 ^d	10	03	-17 ^c	11	36 ^a	$24^{\mathbf{b}}$	04	60	60
78-built	28 ^a	14 ^d		32 ^a	38 ^a	13	23 ^b	13	61 ^a	14 ^d	60	10
A Nor	19 ^c	10	32 ^a		01	25 ^b	- 00	07	16^{d}	21 ^c	-02	08
X	16 ^d	03	38 ^a	01		29 ^a	25 ^b	-04	29 ^a -	-01	62 ^a	21^{b}
	07	-17 ^c	13	25 ^b	29 ^a		00	15 ^d	- 07	00-	20 ^C	38 ^a
	35 ^a	11	23 ^b	00-	25 ^b	00		26 ^b	32 ^a	14 ^d	28 ^a	22 ^b
6-hours T	20 ^c	36 ^a	13	07	-04	15 ^d	26 ^b		12	24 ^b	20 ⁰	50 ^a
ŝ	07	24 ^b	61 ^a	16 ^d	29 ^a	07	32 ^a	12		22 ^b	27 ^a	24 ^b
T L	10	04	14 ^d	21 ^C	-01	00-	14 ^d	24 ^b	22 ^b		22 b	33 ^a
S	14 ^d	60	60	-02	62 ^a	20 ^c	28 ^a	20 ^c	27 ^a	22 ^b		44 ^a
	15 ^d	60	10	08	21 ^b	38 ^a	22 ^b	50 ^a	24^{b}	33 ^a	44 ^a	
**/11 docimal												

All decimals omitted.

 ^{a}P <.001 using two-tailed test

bp_c.01 using two-tailed test

 $\frac{d}{P}$ <.10 using two-tailed test

 $^{\rm c}{}_{\rm P}$ <.05 using two-tailed test

Source	df	MS	F	Probability
Main Effects				
Time	2	202.89	1.29	.279
Sex	2	721.59	4.58	.012
Liking	2	1402.05	8.90	.001
Two-Way Interactions				
Time x Sex	4	159.69	1.01	.402
Time x Liking	4	22.10	.14	.967
Sex x Liking	4	1 77.2 5	1.13	.346
Three-Way Interactions				
Time x Sex x Liking	8	151.54	.96	.468
Total	188	174.56		

Table 4. Summary of Three-Way ANOVA of Percentage MEC Estimates

was slightly curvilinear for these selected dyads. The mean percentage of male-male MEC estimates among the 63 selected pairs was highest (34.51); that of female-female estimates was somewhat lower (29.19); and that of malefemale estimates was the lowest (28.22).

There was a strong positive relationship between percentage MEC estimates and the increasing degrees of liking. At low, medium, and high degrees of liking, the mean percentage estimates were 25.83, 30.84, and 35.25, respectively.

Level of Significance and Post-Hoc Measures

In each significant main effect, the Least Significant Difference (LSD) technique was employed to identify means which were significantly different from one another. The critical value was found to be 4.61 for all comparisons.

Regarding liking, only two comparisons were significantly different. These were: medium liking (30.84)versus low liking (25.84) = 5.0 > 4.61 and high liking (35.84) versus low liking (25.84) = 9.41 > 4.61. The third comparison, high liking (35.25) versus medium liking (30.84) = 4.41 < 4.61, closely approached significance.

Regarding sex-pairing, only two comparisons differed significantly. These were: male-male (34.61) versus

female-male (28.22) = 6.29 > 4.61, and male-male (34.61) versus female-female (29.19) = 5.32 > 4.61. Thus, malemale mean MEC estimates differed significantly from the other two means (female-male and female-female).

DISCUSSION

Nearly all prior studies of eye contact or gaze have been conducted in laboratories under experimental conditions. The present work departed sharply from this tradition in being conducted within a more naturalistic setting while individuals interacted rather freely. In this study no variable was deliberately manipulated, including the degree of liking. There was no continuouslystaring confederate or interviewer, as in the traditional type of eye contact study. In a way, Vine's (1971) suggestion that "observers need only be able to distinguish FGs (Facial Gazes)" was accommodated in this study. Another notable difference was that the amount of EC has traditionally been recorded by an "objective" observer, whereas in the present work participants' own MEC estimates were used. Thus, the present study dealt with estimates, rather than with objectively rooted measures of MEC. Subjective MEC estimates may well be more meaningful than objective estimates, especially in naturalistic settings, because it is the interactants themselves who can best say whether or not they had maintained MEC. This seems true when one considers the particularly elusive

character of MEC. For example, one individual may maintain EC with her partner in the hope that the other person is doing the same, only to later discover that the other was just trying to give the impression of fixing his eyes on the former's, with his true attention being elsewhere.

Another point of departure was that the times of the collection of liking and MEC estimates data did not only differ but also overlapped. These discrepancies and overlaps were an added special feature of the present study. They extend the existing body of knowledge because such data have traditionally been related to behavioral data collected in close temporal proximity. For example, Kleinke and Pohlen (1971) collected MEC data and then immediately administered their liking preference tool to participants. Similarly, Jones and Cooper (1971) administered a self-liking questionnaire and photographic ratings immediately after gathering MEC data from the participants.

"Objective" MEC reports may often be even less reliable because of the inherent difficulty of judging whether partners, at any moment, have MEC or are just looking at each other's eyebrows, midnose, etc. Subjective MEC estimates have some similar limitations because an estimator may not always be aware that he/she has maintained MEC with a partner. Even when aware, she may sometimes underor over-estimate her reports and/or forget moments of

genuine MEC. So the present work departs in two major ways from the more traditional and conventional approaches to the study of MEC. The only evidence of the validity of the subjective MEC estimates used here resides in two factors: (a) agreement between partners about the extent of their mutual eye contacts; (b) evidence that this subjective MEC measure related in reasonable ways to independent measure of personality or behavior, as represented by the Liked-Disliked ratings.

Partners' raw MEC estimates often differed sharply, indicating that this measure yielded little dyadic agreement and high variability. These raw data also showed relatively large differences among the seven groups within each period and also among grand means at different times. Thus, these grand means at 6-, 28-, and 49-hours were, in seconds, 31.78, 11.67, and 9.46, respectively. Raw estimates also evidenced little stability over time, as the correlations of individuals' MEC estimates from one observation to the next for a given partner were generally quite low (mean r = .17). The mean raw MEC estimates of groups were also quite variable, as group C's estimates were consistently high, while Group F's three means were low. These differences not only suggested the influence of important effects of both groups and/or experience, but also highlighted the instability of raw estimates over time. At 6-hours,

these group means ranged from 13.5 to 55 seconds. Thus, the raw MEC estimates proved problematic.

To achieve a more stable measure, these raw estimates were transformed into percentages which yielded notably less variability among individuals and dyads as well as being intrinsically more stable across groups and times. These percentages preserved differentiations among the estimates that individuals assigned to each of their part-The correlations of individuals' percentage MEC ners. estimates over time averaged modestly higher (mean r = .32) than the corresponding raw estimate value of .17. These percentages were also analyzed at the level of the mean percentage estimate received by each individual from all others. These 6-hour means correlated .60 (p < .001) with mean 28-hour MEC, and .57 (p < .001) with mean 49-hour MEC. The latter two MEC estimates correlated .44 (p < .01). These percentage MEC estimates were more stable over time than their raw estimate counterparts: 6-hour means correlated .50 (p < .001) with 28-hour MEC, and .14 (p < .05) with 49-hour MEC. The two latter MEC estimates correlated .51 (p < .001). Thus, the average of these correlations was .54 for percentages versus .38 for the raw estimates.

Before discussing the input of <u>Liked-Disliked</u> ratings at Times I and II, it seems important to again note the discrepancies between the time of their administration and

that of the MEC data collections. The liking data were collected after about 22¹/₂-hours (Time I) of group participation and again (Time II) after about 43½-hours (Time II) of group interaction. MEC estimates, however, were collected toward the end of each of the three selected 90minute group sessions: 6-, 28-, and 49-hours. In addition to these temporal differences at their points of administeration, they also had different base periods. Thus, each MEC collection was based only on behaviors during the 90 immediately preceding minutes while Liking I data were based on a much longer period (22½-hours) of group participation and Liking II data had the even more extended 43¹/₂hour base period. The instructions had specified that Liking ratings were to be based on the ratee's "actual behavior with the group sessions up to now," implying a 22¹/₂-hour base for the Time I ratings and an overlapping 435-hour data base for Time II ratings. Linkages observed between such divergently grounded sets of data would appear especially meaningful.

The means of dyads' Liking ratings at Times I and II were 13.50 and 14.11, respectively. The total Liking ratings of partners correlated .63 (p < .001) from Time I to Time II. Both findings indicate that pairs' liking held reasonably stable while modestly rising over the intervening four-week period that included about 21 hours of active

group participation. Despite the restricted temporal stability of both the MEC and Liking measures, a strong positive linkage held between partners' percentage MEC estimates and partners' liking. This agreed with Exline and Winter's (1965) report that persons tend to increase eye contact while talking to preferred interviewers. It also seemed congruent with Rubin's (1970) observation that dating couples strongly in love manifested more MEC than did less attracted couples.

A lesser, but statistically significant, main effect concerned sex. The mean percentage of male-male MEC estimates among the 63 selected pairs exceeded that of both other pairs (male-female and female-female). This showed that males maintained more MEC with other males than with females or than did females to other females. This finding might be a chance deviation since it barely exceeded .05 significant level. It also seems incongruent with the outcomes of related studies. Kendon and Cook (1969), like Argyle and Winters (1965), "found that women look more and were looked at more" (p. 492) by other participants in their study. Exline and Thibaut (1961) found that in verbal or nonverbal dyadic interactions, women engaged in more MEC than men. This observation agreed with Exline, Gray, and Schutte's (1965) findings. In daily life, then, females seem to engage in more EC and possibly depend more on visual feedback than males do.

Although time did not emerge as a significant effect from the variance analysis, this is obviously attributable to the use of percentage MEC estimates that totally suppressed this factor. The raw estimates showed that time was highly pertinent. Thus, the raw grand means at 6-, 28-, and 49-hours were 31.78, 11.67, and 9.46, respectively. The ANOVA findings permitted no valid statement about the effect of time for it was based on the percentage MEC measure that precluded the possiblity of any time effect. This happened because the transformation of the raw data into percentages created the same common base (100%) for each respondent on each occasion. It is also true that the effect of time on the raw MEC data was confounded with the participants' experience in the usage of Estimation of Mutual Eye Contact in Seconds (EMECS) instrument.

The groups' shifts of mean raw MEC estimates (see Table 1) suggest that the general pretraining MEC estimation session that all class members received early in this term was quite limited in its effectiveness. It is also known that, at the beginning of their respective data collections, these groups received nonuniform instructions for MEC estimation. Thus, just before making each of their MEC estimates, Group B received the described 5second MEC estimation exercise. This likely played a role in the relatively low MEC estimates provided by this group

(means in seconds, of 26.5 at 6-hours, 8.7 at 28-hours and 6.1 at 49-hours). Compared to the means of other groups, Group B's were generally low and showed more stability over time. Although it is not known precisely what additional training was provided to each of the other groups, this training doubtlessly varied from group to group. Such differences may have played some role in the emergence of one group (B) as consistently low in MEC estimates while another group (C) was consistently high on all occasions.

The present study's character was relatively uncontrolled in the sense that the MEC measures were relatively crude and administered under somewhat irregular conditions that varied in terms of preparation and instruction from group to group; and also the MEC estimates were subjective in nature. Despite all this, the MEC estimates nevertheless related to liking at Time II in the expected way. These findings augment the tentative evidence of validity of these subjective estimates that rested on the agreement between partners' estimates. Consequently, these findings appear to be something of a breakthrough with respect to demonstrating the efficacy of subjective MEC estimates in relationship to naturalistic behaviors. They suggest that with further training and preparation, similar measures might be used to study a

variety of other social behaviors, instead of largely confining MEC studies to the relatively sterile and ecologically unrepresentative context of the laboratory. In addition, the present evidence suggests that feedback about initial incongruities in partners' MEC estimates assisted their stabilization.

One specific next step in this research would be to try to distinguish between the effects of training and feedback. The present feedback procedures appeared to have some appreciable impact in the sense that MEC estimates regularly declined and it is not clear that this would have happened without feedback. But in the present research design, this was confounded with both the amount of MEC estimation experience and also with increasing familiarity with partners and measures. It is unclear whether the MEC estimates would continue to remain about the same, or rise or fall, if these latter variables were controlled. Another area deserving research exploration concerns the broader behavioral correlates of MEC, as there is much evidence suggesting that MEC may relate to hostile versus affirmative behaviors. Another study might test the effect of training on subjective MEC estimates, where some groups may receive thorough practice in estimating MEC while control groups receive none. Training might be used as an independent variable with three levels: standardized, nonuniform, and none. Additional studies might separate

familiarity from training, and others might include different programs for different groups, e.g., groups equal in familiarity but different in training.

This study demonstrated that these apparently crude estimates yield meaningful information. Now the study can be extended to see how they relate to more general measures of interpersonal behavior, such as a more comprehensive set of behavior ratings, e.g., Hurley's measures of (1978) Acceptance vs. Rejection of Others and Self-Acceptance vs. Rejection, or other related measures like Benjamin's (1979) Structural Analysis of Social Behaviors, etc. Yet another approach might consider other nonverbal behaviors, such as facial expressions, gestures, etc. Another interesting avenue of research might be an attempt to answer the question: "What are the general characteristics of individuals who markedly appear to over-estimate their MEC versus those who markedly under-estimate it?"

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Estimates of Mutual Eye Contact in Seconds (EMECS)

Instructions:

Appendix A

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Terri								1	1	1	+		 	 			 							ļ			
Bob																											
Dave																											
Art																											
Anne																											
Bill																											
Karen I																											
Glenn																											
Karen II																											
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Ratings of Behavior in Groups*

Appendix B

Instructions:

On this minibooklet's last page note that all group members' names have been listed. Encircle your own name. Starting with the following page, encircle the letter between the extremes of each scale that best represents your personal impression of each members' actual behavior within the group sessions up to now. These ratings will be most useful if you use the full range of possible ratings for each scale.

Rate all group members, including self and leader(s). These ratings will be fully shared with all group members later. Complete all ratings on each page before turning ahead to the next. Unlike other scales which address behavior, the Liked versus Disliked scale solicits your personal responses.

(a) (b)	(c) (e)	(f) (g)	(h) (f)
Mark / John	Leslie Suzie Paul	Lisa Marie	Dan
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(see above) was used in this *These instructions constituted the first page of the 10-page minibooklets, given to each group, although only <u>the Liked-Disliked</u> scale (see above) was used in thi study.

Ratings of all dyadic partners (X & Y) within each group on the Liked (9) versus Disliked (0) Scale

			Rat	ees	or	Per	son	Х	
P	ERSON Y	Mark	John	Leslie	Suzie	Paul	Lisa	Marie	Dan
R	Mark	7	7	5	8	8	6	8	9
 A	John	7	7	6	7	7	5	7	8
— Т	Leslie	6	6	7	9	9	6	9	9
 ज	Suzie	3	2	8	8	9	4	5	9
R R	Paul	6	7	8	9	9	7	8	9
s	Lisa	6	6	6	7	8	6	6	8
J	Marie	7	7	6	8	8	5	7	9
	Dan	6	4	7	8	9	5	6	9

Appendix D

Descending Rank-Order of Dyadic Partners' (X & Y) Mutual Liking Ratings Within Group D

Column 1	Column 2	Column 3
<u><u>x</u> <u>y</u></u>	<u>X Y</u>	<u>X Y</u>
Paul & Dan 9 + 9 = 18	Suzi & Paul 9 + 9 = 18	Leslie & Suzi 9 + 8 = 17
Mark & Dan 9 + 6 = 15	Leslie & Paul 9 + 8 = 17	Leslie & Marie 9 + 6 = 15
John & Paul 7 + 7 = 14	Suzi & Dan 9 + 8 = 17	Suzi & Marie 5 + 8 = 13
Mark & John 7 + 7 = 14	Paul & Marie 8 + 8 = 16	Leslie & Lisa 6 + 6 = 12
Mark & Paul 8 + 6 = 14	Leslie & Dan 9 + 6 = 16	Lisa & Marie 6 + 5 = 11
John & Dan 8 + 4 = 12	Mark & Marie 8 + 7 = 15	Suzi & Lisa 4 + 7 = 11
	Marie & Dan 9 + 6 = 15	
	Paul & Lisa 7 + 8 = 15	
	Lisa & Dan 8 + 5 = 13	
	Mark & Lisa 6 + 6 = 12	
	John & Leslie 6 + 6 = 12	
	Mark & Suzi 8 + 3 = 11	
	John & Lisa 5 + 6 = 11	
	John & Marie 7 + 4 = 11	
	Mark & Leslie 5 + 5 = 10	
	John & Suzi 7 + 2 = 9	

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