TEMPORAL FACTORS OF TALK IN UNCONSTRAINED CONVERSATION: PERSONAL AND SITUATIONAL RELATIONSHIPS

By

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This dissertation is dedicated to my
mother and father and their support of learning.

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This investigation was concerned with the degree of activation of the speech channel in unconstrained conversation. Amount of speech channel activity was examined both in terms of the individual interlocutors, as well as in dyadic terms, i.e., units describing the combined action of the conversants. An extensive body of experimental literature was reviewed and the following four hypotheses were offered: (1) Amount of talk was viewed as an expression of internal states of interpersonal anxiety associated with the needs for inclusion and control. (2) Amount of talk was suggested as an index of certain situational factors of the interaction, i.e., the evaluative and dynamic attributions regarding the conversation and the conversational partner. (3) Interactional synchrony, a condition of a high density of talk and a low density of simultaneous talk, was hypothesized to be associated with the personal compatibility of

the two interlocutors. (4) The situational concepts (partner and conversation) and dimensions (evaluation and dynamism) were suggested as the basis of a taxonomy of conversation, reflecting the temporal structure of the interaction.

Tape recordings were made of 60 unconstrained conversations, involving 120 unacquainted peers (college students). Immediately subsequent to the interaction, the subjects completed scales describing their characteristic interpersonal orientation and their judgments regarding their conversation and their conversational partner. Six personality measures and four situational measures were derived for each of the 120 subjects, and by mathematical combinations of these measures, 16 compatibility measures and four composite situational measures were derived for each of the 60 dyads. The tape recordings were subjected to a chronographic procedure, resulting in five monadic conversational measures and seven dyadic conversational measures.

The results of the study indicated that an individual's density of talk bore no relationship to his characteristic interpersonal orientation. The results are discussed in terms of the characteristics of unconstrained conversation.

As to situational relationships, participants described as dynamic by their partners, participants in conversations described as dynamic by their partners, and participants who described their conversations as dynamic all exhibited greater densities of talk. Thus, the dimension of dynamism,

indicating perceived power and energy and representing a primary categorization of experience, is related to the talk densities of individual interlocutors in unconstrained conversation.

This study provided no supporting evidence for a conceptual model of conversation as an inter-dependence of meshing processes, describable on two levels (conversational synchrony and personal compatibility). The notion of interactional synchrony is reconsidered, as well as the amount of time necessary for the development of such synchrony.

Regarding the question of a taxonomy of conversation, Positive conversations, i.e., those characterized by a high degree of interpersonal attraction between the conversants, were associated with significantly increased total conversation times. Dynamic conversations, i.e., interactions mutually characterized by the interlocutors as powerful and energetic, were associated with greater densities of talk and simultaneous talk, an increased rate and longer mean duration of simultaneous talk, as well as longer total conversation times. It is concluded that interactions, experientially differentiated by the interactors, are associated with distinct temporal structures of talk.

CHAPTER I

INTRODUCTION

The field of sociolinguistics (Ervin-Tripp, 1969) is concerned with the relationship between characteristics of the speech channel and characteristics of the communicators and the communication situation. The speech channel, from the vocal tract of an encoder to the ear of a decoder, is one of six major channels of human "face-to-face" communication and includes both language and non-language sounds (Markel, 1969). A basic characteristic of this channel is that it is either activated or not activated, and the first major question posed in this investigation is directed toward an examination of individual psychological and situational correlates of the amount of activation of this channel.

As to psychological correlates, Argyle (1969), citing several studies, suggests that dominance and affiliation are the two major personality dimensions of consequence for social interaction style. In the present study, Schutz's (1966) FIRO (Fundamental Interpersonal Relations Orientation) theory is employed to tap these dimensions of personality. As to situational correlates, this investigation employs the constructs of "semantic space" (Osgood, Suci, and Tannenbaum, 1957) as a descriptive methodology.

This concern with correlates of speech channel activation directs one's attention to the phenomena of conversational interaction. Goldman-Eisler (1968) has pointed out that time in its various manifestations of succession, continuity, and duration is a basic datum of experience, and that in spontaneous conversation, speech is spread over time, thus revealing man's way of handling time. Time becomes a quantity to be shared. Markel (1973) and other students of human behavior have noted that the basic, most salient feature of conversation is the alternation of action and inaction. For a conversational interaction to occur, there must be co-ordination, synchrony, meshing, else the situation is that of two persons acting independently. Jaffee and Feldstein (1970) defined a conversation as a succession of sounds and silences generated by two interacting speakers. If there is a failure of co-ordination of action (vocalization, i.e., the production of sound) between the two interlocutors there will be increased simultaneous vocalization. To the degree that there is a failure of co-ordination of inaction, there will be decreased total dyadic vocalization. In Sear's (1951) terms, these measurements are dyadic units, i.e., units that describe the combined action of two persons.

Chapple and Lindemann (1942), and more recently Argyle (1969) have discussed these types of joint activity and inactivity in terms of the notions of conversational "adjustment" and "equilibrium." In addition to meshing on the level

of dyadic units of speech channel activation, meshing may be conceived of in terms of the personality characteristics of the two interlocutors (Argyle, 1969). The meshing of personality characteristics is the notion of compatibility, a central construct of Schutz's (1966) FIRO theory. A second major focus of this investigation involves the derivation of dyadic units of the amount of speech channel activity, and examines their relationship to the personal compatibility of the two interlocutors. In addition, the semantic situational data of the two interlocutors is combined and questions are raised regarding the relationship of these dyadic units of speech channel activity to the notion of conversation type.

Amount of Speech Channel Activity: A Review of the Experimental Literature

The amount of speech channel activity has been examined in two ways; as reflected by the duration of time spent in speech production and as reflected in the total number of words produced, i.e., verbal productivity (Mahl and Schulze, 1964). This operational distinction has been employed to classify the extant experimental literature. There then follows a section reviewing studies involving dyadic units of speech channel activity.

Duration Measures of Speech Channel Activity

Eliot Chapple (1939) was among the first investigators to isolate the time dimension for analysis as a method of studying interactional behavior. Actually, Chapple's work had been preceded by Norwine and Murphy (1938), in their

preliminary, voice-actuated machine analyses of the temporal structure of telephonic conversation. Chapple was responding to a felt need for objective measures in the description of individuals, and his early work (Chapple, 1940; Chapple and Arensberg, 1940) described personality differences as the observed invariant properties of individuals in interaction. His technique of interaction chronography assessed the properties of frequency, duration, and patterning in time of periods of action and silence. Action was taken to include any form of message sending, thus subsuming vocalization. For the assessment of these variables and combinations thereof, Chapple (1949) developed the Interaction Chronograph, a computer which is activated by a concealed observer during the interaction. Chapple (1953) went on to devise a standardized interview for the employ of his Interaction Chronograph and extended his inquiries into the interview behavior of the mentally ill (Chapple, Chapple, Wood, Miklowitz, Kline, and Saunders, 1960) and the relationships of interview behavior to certain personality dimensions (Chapple, Chapple, and Repp, 1954).

It was not until a decade later that the import of Chapple's (1939) beginning became apparent to other investigators. Verzeano and Finesinger (1949) reported the development of their Automatic Speech Analyzer, thus removing the observer from the system. Verzeano (1950, 1951) went on to report time patterns of speech in normal subjects and Lorenz and Cobb (1952) successfully applied the Automatic

Speech Analyzer in the differentiation of normal and psychiatric patient populations. Goldman-Eisler (1951), following Chapple's (1949) procedure, examined normal conversational behavior. Other speech analyzers were developed and reported by Kasl and Mahl (1956), Whittier (1959) and Hargreaves and Starkweather (1959). Starkweather (1959) reported data derived from role-playing situations and Hargreaves (1960) examined data gathered from real-life situations.

An excellent review of Chapple's work is presented by Matarazzo, Saslow and Matarazzo (1956), and this article represents the beginning of the most sustained and systematic inquiry into the temporal aspects of speech in interaction. Saslow and Matarazzo (1959) reported details of five separate reliability studies which indicated that an interviewee's durations of speech and silence were highly reliable, despite large individual differences. Matarazzo and his colleagues then embarked upon an extensive series of validity studies involving planned changes in the interviewer's behavior, which produced pronounced changes in the speech behavior of the interviewee. These planned changes of interviewer behavior included increases and decreases in his own average speech durations (Matarazzo, Weitman, Saslow and Wiens, 1963); increases and decreases in his own speech latencies (Matarazzo and Wiens, 1967); increases and decreases in his speech interruptions of the interviewee (Wiens, Saslow and Matarazzo, 1966); saying Mm-hmmm, Mm-hmmm

(Matarazzo, Wiens, Saslow, Allen and Weitman, 1964) and nodding his head (Matarazzo, Saslow, Wiens, Weitman and Allen, 1964). Over the years, a number of studies have attempted to describe the relationship between content and non-content speech variables (Kanfer, Phillips, Matarazzo and Saslow, 1960; Phillips, Matarazzo, Matarazzo, Saslow and Kanfer, 1961; Matarazzo, Weitman and Saslow, 1963; Matarazzo, Wiens, Jackson and Manaugh, 1970a; Manaugh, Wiens and Matarazzo, 1970; Matarazzo, Wiens, Jackson and Manaugh, 1970b). In addition, concurrect validity studies involving normal and deviant groups (Matarazzo and Saslow, 1961) and personality correlates (Matarazzo, Matarazzo, Saslow and Phillips, 1958) have been reported. Matarazzo, Wiens and Saslow (1965) present a fairly complete review of the first eleven years of this research program.

Another research program, described and summarized by Jaffee and Feldstein (1970), grows out of the Chapple tradition and, while lacking in seniority and extensity, the level of methodological sophistication is comparable to the work of the Matarazzo group. Their research program has been implemented by the employ of the Automatic Vocal Transaction Analyzer (Cassotta, Feldstein and Jaffee, 1964). In contrast to the Interaction Recorder of Wiens, Matarazzo and Saslow (1965), which is operated by a human observer, the Automatic Vocal Transaction Analyzer has been electronically designed to reproduce perceived temporal patterns without the monitoring of the interaction by a human

observer. The investigations reported by Jaffee and Feldstein (1970) have essentially replicated the findings of Matarazzo et al. (1965), i.e., conversational behavior, in terms of the on-off sequence of vocalization, is a stable characteristic of the individual and is capable of modifying and of being modified by the temporal patterning of other individuals. The work of Jaffee and Feldstein (1970) represents one major departure, i.e., an attempt to examine conversational behavior in the absence of role differences between the interlocutors. Only recently, Matarazzo, Wiens, Matarazzo and Saslow (1968) turned their attention to the more naturalistic context of clinical psychotherapy, as opposed to the standardized interview context of their previous research efforts.

This long and grand research tradition, beginning with Chapple (1939), has emphasized the more microscopic structural aspects of the patterning of vocalization and silence, but some investigators have concerned themselves with the significance of the relative amounts of vocalization and silence. Recently, Matarazzo, Wiens, Matarazzo and Saslow (1968), have taken recourse to the more macroscopic measures of amount of vocalization in an attempt to interpret their findings regarding their datum of mean utterance duration. Their data, from seven series of psychotherapy sessions, indicated that the mean percentage of session time used in talking was approximately 67% for patients and 24% for therapists.

Goldman-Eisler (1952, 1954), following Chapple's (1949) methodology with speech samples from psychiatric interviews, derived the datum of action time (total action time as a percentage of total interaction time). Goldman-Eisler (1952) reported that, for interviewers, the amount of action time depends on the type of patient interviewed, but that, while interviewers adjust their action time, their relative talkativeness remains. Patients, however, did not show adjustment to different interviewers. Goldman-Eisler (1954), re-analyzing this data, reported a significant positive correlation between patient action time and the content variable of self-reference. Re-analyzing data from an earlier study of more natural conversational behavior (Goldman-Eisler, 1951), Goldman-Eisler (1954) included action time in a measure of speaker dominance.

Cervin (1955a, 1955b, 1956) employed a similar measure which he termed the participation quotient (total time spent talking as a percentage of total interaction time), and examined its relationship to solidarity (agreement/disagreement by an experimental confederate) in a discussion situation. The results indicated a higher participation quotient of Ss under conditions of solidarity. These findings are generally consistent with the results of interview investigations by Kanfer and McBrearty (1962), Simkins (1963) and Kanfer (1964) which examined the effects of various forms of reinforcement on time spent in talking. Prebor (1972) demonstrated that the participation quotient for

unconstrained conversation (.36) fell between the participation quotients for solidarity (.40) and dissolidarity (.25) reported by Cervin (1956).

Markel and Long (1974) examined the situational variable of sex-of-listener and reported that both males and females spoke more to female partners. Carment (1961) examined another situational variable, strength of opinion regarding topic discussion areas, and found a positive relationship between this factor and the participation quotient. One of the most interesting and novel examinations of the effects of situational factors on amount of speech channel activation is that of Soskin and John (1963). The investigators collected their data from two married couples at a weekend resort via radio transmitter, and derived a measure, S%, i.e., the ratio of S total talking time to the total talking time. The authors report data from one subject whose S% varied from a low of 36% at breakfast with three other people to a high of 69% in a situation of planning with his wife.

Several investigators have examined the relationships between organismic/personality factors and total duration of time spent in talking. Cervin (1957), in the discussion situation, found that Ss who scored high on a scale of emotional responsiveness exhibited a greater participation quotient. Carment, Miles and Cervin (1965), employing psychometric measures of intelligence and extroversion, found that Ss who scored high on both dimensions spoke the

greatest proportion of the interaction time. Levin, Baldwin, Gallwey and Paivio (1960) indicated that children who scored high on a measure of self-consciousness exhibited a more drastic reduction in duration of speaking when the communication was addressed to an audience, as compared to a single target person. Axtell (1969), in an interview situation, found that repressors, as measured by the R-S scale, exhibited a lower duration of speaking. Kanfer, Bass and Guyett (1963), examining the effect of social orientation on talking time in a laboratory condition of interaction without visual access, found that self-oriented Ss took the most time in talking while interaction-oriented Ss exhibited the least talking time. Markel, Bein, Campbell and Shaw (in press), employing monologue speech samples, observed that Ss with high speaking times had significantly higher scores on the personality dimension of expressed inclusion than did Ss with low speaking times.

Studies by Mahl (1956, 1961), Eisenman (1966), and Pope, Blass, Siegman and Raher (1970) have been concerned with the effects of anxiety. Mahl (1956) found that the silence quotient (number of seconds of silence/number of seconds available to patients for talk) increased in anxious phases of psychotherapy sessions. This finding was not replicated in a second study (Mahl, 1961). Pope et al. (1970) derived a variation of the silence quotient from monologue speech samples. They noted that speech samples, recorded on days when patients were rated highly anxious, were

characterized by a lower silence quotient. By contrast, the authors report that "high-depression speech" was characterized by a high silence quotient. Eisenman (1966) recorded speaking times in group psychotherapy and noted that more speech occurred among high anxious Ss (from the Taylor Manifest Anxiety Scale) and also among first born subjects.

Carnes and Robinson (1948), employing a talk ratio (client talk/total talk), made some interesting observations in the context of the counseling interview. They noted no difference in the talk ratio for experienced/inexperienced counselors and positive correlations of the talk ratio to scale ratings of growth in insight, working relationship, and client responsibility for the interview. Anderson (1960) reported that the interviewer talks more in employment interviews with applicants he accepts than in interviews with those he rejects. Simmons (1971) observed the interaction of mother-child pairs and noted that mothers of stutterers talked more than mothers of non-stutterers.

Word Count Measures of Speech Channel Activity

Research involving word count measures, i.e., verbal productivity (Mahl and Schulze, 1964), finds its most intensive focus in relationship to various constructs of anxiety. It has been reported that high anxious subjects (Taylor Manifest Anxiety Scale) exhibit a greater number of words in the projective test situation (Benton, Hartman and Sarason, 1955; Sauer and Marcuse, 1957) and in a structured interview (Siegman and Pope, 1965b). For high anxious

subjects (Taylor Manifest Anxiety Scale), Westrope (1953) reports a greater number of Rorschach responses and Davids and Eriksen (1955) report a greater number of word associations. A series of investigations on the experimental induction of anxiety in the structured interview (Siegman and Pope, 1965a; Pope and Siegman, 1965; Pope, Siegman and Blass, 1970) has indicated that anxiety is associated with increased verbal productivity. Incidentally, Siegman and Pope (1968) have also reported that the imposition of a screen between the interlocutors results in decreased productivity for the interviewee. Krause (1961), examining segments from psychotherapy sessions, found a positive significant relationship between the number of words produced and the verb-adjective ratio. Elsewhere, Miller (1951) reports that the verb-adjective ratio bears a positive correlation to emotional instability. Preston and Gardner (1967), employing monologue speech samples, observed that women tended to exhibit a greater verbal productivity and that this seemed to be associated with an increased need for social approval and an increased audience anxiety.

On the other hand, there is some evidence for the association of anxiety with decreased productivity. Eichler (1951) and Wharton (1953) present data which indicates decreased Rorschach productivity when the Ss were made anxious by threat of physical punishment. However, Eichler's (1951) and Wharton's (1953) measures of

productivity are not directly comparable to word count measures. Still, Lerea (1956) found that Ss exhibited a lower verbal output when they reported considerable stage fright, as compared to when they reported minimal stage fright. West (1953), in an attempt to manipulate anxiety, reported no differences in verbal output under conditions of overt and covert tape recording.

Relationships between diagnostic status and verbal productivity have been examined in studies by Feldstein (1962) and Aronson and Weintraub (1967). Feldstein (1962), in a structured interview situation, observed no differences in verbal productivity between groups of schizophrenics and medical students, but noted increased productivity for both groups when the topic was affective and interpersonal. Aronson and Weintraub (1967), analyzing monologue speech samples, noted that divergencies from the "normal" number of words decreased with improvement and increased with deterioration, as measured by the depression scale of the MMPI. Hawthorne (1934) and Moore, Soderberg and Powell (1952) examined the relationship between verbal productivity and stuttering. Both investigations reported a positive relationship between the variables.

Olson and Koetzle (1936) examined nursery school children under conditions of free play and Winitz (1959) observed kindergarten children in the projective test situation. Both investigators reported that the number of words employed by the girls was significantly greater, as

compared to the boys, and that older children spoke more than younger children. Studies by Toman (1953) and Krauss, Ruiz, Mozdzierz and Button (1967) asked Ss to tape record statements of life history. Toman (1953) reported a mean of 675 words and Krauss et al. (1967) reported a median of 436 words.

Mehrabian (1965) found that written communications about liked objects were longer than communications about disliked objects. Wiens, Jackson, Manaugh and Matarazzo (1969) replicated Mehrabian's (1965) findings, and concluded that the written channel may be as sensitive as the spoken channel. Hirshman (1953), also exploring the written channel with groups of psychotics and non-psychotics, observed a significant rise in productivity for both groups in reaction to interpersonal involvement.

Dyadic Units of Speech Channel Activity

The studies reviewed thus far have been concerned with the relationship between various personal and situational variables and the amount of speech channel activity of an individual speaker. A second major focus of the present investigation involves the explication of certain dyadic units of the amount of speech channel activity and, in as much as the former concern is reflected in a long and grand research tradition, the latter concern represents somewhat of a terra incognita. Dyadic units describe the combined action of two persons (Sears, 1951). In the context of dyadic interaction, dyadic units of amount of speech channel

activity would appropriately represent two distinct states, i.e., a state of either interlocutor vocalizing (dyadic vocalization time) and a state of both interlocutors simultaneously vocalizing (simultaneous vocalization time).

Investigators have given these dyadic units of speech channel activity scant attention. Anderson (1960) reported that there is a greater amount of speech in employment interviews with applicants who are accepted than in interviews with those who are rejected. Data from the psychotherapy series of Matarazzo et al. (1968) indicated that dyadic vocalization represents about 87% of the total session time. Markel and Long (1974) reported that dyadic vocalization represents about 74% of the total interaction time in unconstrained conversation. Soskin and John (1963), in their "stream of talk" study reported total vocalization proportions of interaction time ranging from .93 during breakfast with four persons to .25 in a situation of husband and wife making plans. Prebor (1972) observed that the amount of talk per interval is lower in the beginning of a conversation and that male-male dyads exhibited less speech per interval.

As to simultaneous vocalization, Chapple and Lindemann (1942), in comparison with data from psychiatric patients, characterized a normal conversation as the complete absence of double action and double silence, i.e., a smooth give and take between the interlocutors. Chapple (1949) included the frequency and duration of interruptions in the

interaction chronograph variables of "dominance" and "adjustment." However, Chapple purposefully confounded his measure of action to include both vocal and gestural activity. On the individual level, Wiens, Saslow and Matarazzo (1966) reported that interruptions of the interviewer by the interviewee occurred in about one of every five interviewee utterances, that this was a highly stable measure and was capable of being modified by changes in the interviewer's speech behavior. Shaw and Sadler (1965), with data from a discussion situation, observed that women interrupted their partner more frequently than did men.

The Shaw and Sadler (1965) study also employed a dyadic level of analysis, observing that more intimate couples were less likely to interrupt each other. Argyle, Lalljee and Cook (1968) reported more interruption behavior in dyads when both members wore dark glasses, indicating the importance of patterns of eye contact for interactional synchrony. Markel and Long (1974) observed that simultaneous vocalization represented about 1.9% of the total interaction time in unconstrained conversation. Varying the distance between conversants, they noted that the dyadic rate of simultaneous speech was greatly increased for male-male dyads conversing at a far distance (12 feet). Prebor (1972) indicated the existance of more simultaneous vocalization in female-female dyads. The only other known reference to dyadic units of simultaneous vocalization appears in the psychotherapy series of Matarazzo et al. (1968). Correlation coefficients

were computed between therapist and patient for the percentage of each interlocutor's utterances which were interruptions of his partner. As such, these coefficients are also dyadic units, and indicated the existence of a striking degree of correspondence or tracking between the participants.

There is one other obvious dyadic unit, total conversation time, and, while not representing a state of speech channel activity, it defines the unit of time into which the above two states of speech channel activity must be distributed, and is defined by the combined action of the two participants. The literature review disclosed that Anderson (1960) had examined this variable, reporting no differences in total conversation time between employment interviews in which the applicant was accepted and interviews in which the applicant was rejected. Prebor (1972) reported that opposite sex dyads exhibited a greater total conversation time than did same sex dyads.

Impressions from the Literature Review

The amount of speech channel activity has been operationalized as the number of words produced and as the duration of time employed. Words are units of language, but speech channel activity consists also of non-language sounds (Markel, 1969). Eisenmann (1966) reported a correlation of .76 between the number of words spoken and the amount of time spent in speech. Presumably, the variance unaccounted for represents this distinction. The time dimension

represents a more accurate measurement of speech channel activity. Furthermore, the context of dyadic interaction aligns this investigation with the Chapple (1939) methodology of interaction chronography.

Chapple's (1939) basic unit consisted of the duration of individual actions, under which he included both vocal and gestural activity. The extensive research program of Matarazzo et al. (1965) took its impetus from Chapple's beginning. These investigators confined their unit of action, the utterance, to vocal activity, but there is a confounding of speech and silence in the unit, as pauses are included in the duration of a single utterance when the context indicates that the speaker is not finished (Wiens, Molde, Holman and Matarazzo, 1966). As such, the utterance does not represent a pure measure of speech channel activity. Jaffee and Feldstein's (1970) unit, the vocalization, appears a more appropriate index. They define a vocalization as a segment of continuous sound, by one speaker, that is bounded on each end by either silence or a vocalization of the other speaker. The investigators designed a voice-actuated machine (Cassotta, Feldstein and Jaffee, 1964), the output of which is perceived temporal patterns of dialogue. Such a system is a highly complex and expensive undertaking. The system employed by Wiens, Matarazzo and Saslow (1965), less electronically sophisticated in that it requires monitoring of the interaction by an observer, costs $15,000 and requires approximately

$4,000 per year for data processing.

For the more macroscopic purposes of this investigation, exploring the significance of amount of speech channel activity, an adaptation of a simple human-operated device, described by Kasl and Mahl (1956), meets the needs. The vocalization (Jaffee and Feldstein, 1970), a segment of perceived continuous sound by one speaker, is taken as the basic datum. Boomer (1965) has indicated that the minimal discontinuity in sound production perceivable by human listeners is .20 seconds. This pause, or the simultaneous cessation of vocalization by one speaker and onset of vocalization by another speaker, demarcates the basic unit. The sum of such units for an individual speaker is a satisfactory operationalization of the amount of speech channel activity, i.e., talking time. The literature review suggested consideration of three different measures of talk density, i.e., talking time as a percentage of total interaction time, e.g., Cervin (1956); individual talking time as a percentage of total talking time, e.g., Soskin and John (1963); talking time as a percentage of time available for talk, e.g., Mahl (1956).

As to substantive knowledge regarding relationships between amounts of speech channel activity and personality factors, various constructs of anxiety have been the most heavily researched, e.g., Pope, Siegman and Blass (1970). Studies involving predispositional anxiety, experimentally induced anxiety and naturalistic variations in anxiety

under clinical observation have all concurred in indicating an activating effect of anxiety on the amount of speech activity. The present study proposes to amplify the meaning of this relationship through a consideration of Schutz's (1966) FIRO theory.

Situational aspects which have been explored in relation to the amount of speech channel activity include threat, reinforcement, sex-of-listener, various naturalistic settings and topic type. The present investigation intends a phenomenological approach, employing participant descriptions of the situation derived from the constructs of semantic space (Osgood et al., 1957).

The literature review indicated a paucity of studies which had examined dyadic units, i.e., units describing the combined action of two persons. Amount of speech channel activity, in temporal dyadic units, indicates the amount of time spent in the state of either interlocutor vocalizing or the state of both interlocutors simultaneously vocalizing. A third dyadic unit, total conversation time, demarcates the segment which is partitioned by the above two states.

As to dyadic vocalization time, some data has been reported for employment interviews (Anderson, 1960), psychotherapy (Matarazzo et al., 1968), conversation (Markel and Long, 1974), and various naturalistic settings (Soskin and John, 1963). Prebor (1972), and also Markel and Long (1974) explored the relationships to dyadic sexual composition. As to simultaneous vocalization time, relationships with

intimacy (Shaw and Sadler, 1965), interpersonal distance (Markel and Long, 1974), disruption of visual access (Argyle, Lalljee and Cook, 1968) and dyadic sexual composition (Prebor, 1972) have been examined. Anderson (1960) and Prebor (1972) have examined the variable of total conversation time. The present study explores these dyadic units as indices of interactional synchrony (Argyle, 1969; Chapple and Lindemann, 1942), reflecting synchrony on another level, that of the personal compatibility of the interlocutors, i.e., Schutz's (1966) FIRO theory.

The review of the literature also indicated a near absence of research involving unconstrained conversation. Many of the studies have employed monologue speech samples, most of the studies have employed data from interview situations with its atypical roles and goals, and a few studies have involved task orientations between peers. Studies involving interaction orientation between peers have been reported only by Olson and Koetzle (1936), Goldman-Eisler (1951), Hargreaves (1959), Soskin and John (1963), Prebor (1972) and Markel and Long (1974). Jaffee and Feldstein (1970) have indicated that it is not necessary to provide topics for a lively conversation to ensue. This investigation purports a more human ethological approach, i.e., the descriptive study of human interaction in more or less natural habitats and/or circumstances (Argyle, 1969). Taxonomy is a prime concern in any unexplored area. The present investigation examines the above described dyadic

units of speech channel activity as reflecting a taxonomy of conversation based upon participant description of the situation. The following sections briefly review and apply FIRO theory (1966) and the theory of "semantic space" (Osgood et al, 1957) to these concerns.

The Person: Fundamental Interpersonal Relations Orientation

Schutz's (1966) FIRO theory is based on the postulate that each individual has three interpersonal needs, i.e., conditions of the individual that are satisfied through the attainment of satisfactory relations with others, and the satisfaction of which is necessary to avoid undesirable consequences (anxiety). These needs are as follows (Schutz, 1966):

> (1) Interpersonal need for Inclusion (I): the need to establish and maintain a satisfactory relation with people with respect to interaction and association.
>
> (2) Interpersonal need for Control (C): the need to establish and maintain a satisfactory relation with people with respect to control and power.
>
> (3) Interpersonal need for Affection (A): the need to establish and maintain a satisfactory relation with people with respect to love and affection.

Schutz (1966) developed the FIRO-B questionnaire, consisting of six nine-item Guttman scales, to measure orientations to each of these three need areas. The procedure relies on the self-report of individuals regarding the behavior they express (e) to others and the behavior they want (w) from others.

Schutz (1966) describes, for each need area, individuals whose behavior is consistently directed toward the

satisfaction of that particular need. The oversocial is characterized by excessive inclusion behavior, i.e., behavior designed to focus attention on the self, to be noticed, to be listened to. The interpersonal behavior of the autocrat tends toward the dominating, is manifested as the desire for excessive power, authority, control over others. The behavior of the overpersonal is excessively directed toward being liked, toward becoming extremely close to others.

The above conditions of excessive striving are taken as representing discrepancies from an ideal state of need satisfaction. In FIRO theory, this defines the presence of interpersonal anxiety. The foregoing literature review had indicated that "anxiety" was observed to have an activating effect on the amount of speech channel activity. The present investigation proposes to amplify this relationship by considering the amount of talking as an index of this internal state of discrepancy between conditions of actual and ideal interpersonal need satisfaction. Talking is viewed as means of relieving certain internal states. For the inclusion and control areas, the implied relationships seem quite apparent. If a person has strong unsatisfied needs for inclusion, he may deal with this anxiety by gaining attention through talking. If a person has strong, unsatisfied needs for control, one obvious way of dominating the other is to talk a great deal of the time.

Compatibility

Central to Schutz's (1966) theory is the notion of compatibility, a property of a relation between two or more persons that leads to mutual need satisfaction and harmonious coexistence. Schutz (1966) states that the term is best explicated sociometrically by the relation, "works well with." Schutz (1966) describes three types of compatibility based upon the individuals' expressed (e) and wanted (w) scores in each of the three need areas of Inclusion (I), Control (C) and Affection (A).

Reciprocal compatibility (rk). A comparison of a's description of how he likes to be acted toward with b's description of how he likes to act toward people, and vice versa, yields a measure of mutual need satisfaction or reciprocal compatibility. Thus, $rk_{ab}=|e_a-w_b|+|e_b-w_a|$. Absolute measures are used as the concern is with the size of the difference; the lower the score, the higher the compatibility.

Originator compatibility (ok). Originator compatibility is based upon each individual's preference for initiating, as opposed to receiving, inclusion, control or affection behavior. A measure of this preference (originator score) is the difference between the expressed and wanted aspects of a given need area, i.e., (e_a-w_a). The measure of originator compatibility is obtained by adding the two originator scores, i.e., $ok_{ab}=(e_a-w_a)+(e_b-w_b)$. If there is a preference for originating, the sum of the scores will be

positive, indicating competitive incompatibility. If there is a preference for receiving, the sum of the scores will be negative, indicating apathetic incompatibility.

Interchange compatibility (xk). Agreement as to the general context or atmosphere of a relationship is described by xk. The amount of interchange a person desires in a given need area is described by combining his scores on the expressed and wanted scales of that need area, i.e., ($e_a + w_a$ = interchange score). The more similar two persons' scores are, the more compatible, e.g., agreement as to the degree of intimacy desired. To measure compatibility, one score is simply subtracted from the other, i.e., $xk_{ab} = |(e_a + w_a)| - |(e_b + w_b)|$. The direction of the difference is not important, so the absolute value of the difference is sufficient; the smaller the value of xk, the greater the interchange compatibility.

The present investigation examines the relationship of these various formulations of dyadic compatibility to dyadic units of speech channel activity, i.e., dyadic vocalization time (DVT) and simultaneous vocalization time (SVT). In a general sense, compatibility is taken as meaning "works well with." In the context of an interaction orientation, "works well with" is assumed to indicate a high DVT, i.e., nearly all the time is filled with talk, and a low SVT, i.e., there is little simultaneous vocalization (Chapple and Lindemann, 1942; Argyle, 1969).

As to evidence for FIRO theory, Schutz (1966) reports

satisfactory coefficients of stability for FIRO-B measures and concurrent validity studies based on political attitudes, occupational choice and conformity behavior. In the preface to the second edition, Schutz (1966) notes that the compatibility construct has been successfully applied in marriage counseling, and as a method of group composition for teaching teams, therapy, training and task groups. Furthermore, Schutz (1966) reported the results of seven large scale experiments which indicated that compatibility was significantly related to sociometric choices, dyadic productivity and group cohesiveness. Schutz (1967) presents a complete bibliography which indicates the present evidence for reliability and validity. Shaw and Constanzo (1970), reviewing FIRO theory, concluded that the general experimental evidence for the theory is supportive, that the theory is internally consistent and the predictions amenable to testing.

The Situation: Evaluative and Dynamic Dimensions of Conversation and Partner

From the point of view of an individual, the situation of conversational interaction may be viewed as consisting of two concepts; a partner and their subsequent interaction, the conversation. Following Osgood, Suci and Tannenbaum (1957), the description, i.e., the connotative meaning, of these concepts can be conceived of as their location on experiential continua which are defined by a pair of polar terms. Osgood et al. (1957) provide satisfactory evidence from numerous factor analytic investigations which indicates

that the essential characteristics of "semantic space" are described by a dimension of evaluation and a dimension of dynamism. As such, these dimensions are taken as representing the natural and spontaneous experiential continua that people employ in describing their experience. The studies reported indicate the possibility of as many as seven dimensions, but the authors note that when the measurement technique of semantic differentiation is applied to people, the potency and activity factors coalesce into a factor most appropriately labeled dynamism, and the additional factors (stability, tautness, novelty, receptivity) are much less clearly defined.

Osgood et al. (1957) present evidence that the evaluative dimension is a most satisfactory measure of generalized attitude. In Jungian terminology (Jung, 1968), the evaluative factor is isomorphic to the third psychological function, feeling, i.e., the process of giving value. The evaluative dimension when employed by the individual to describe the concepts of conversation and partner may be construed to represent measures of interaction satisfaction and interpersonal attraction, respectively. A suggestion that these dimensions are relevant to talk density is contained in the findings of Mehrabian (1965); that communications about liked objects are longer than communications about disliked objects.

The dynamism factor, including potency and activity, represents a measure of strength and power, as well as a

measure of energy and excitement. Carment's (1961) findings, that opinion strength regarding discussion topic was related to talk density, suggests the significance of the dynamism factor. While evaluative ratings of conversation and partner suggest a relationship to an individual's talk density, the dynamism dimension, at least as applied to the concept, partner, suggests a relationship between a partner's talk density and the description of him by the individual. Thus, in the present study, the relationship of an individual's talk density is examined with respect both to the situation as described by the individual, as well as to the situation as described by that individual's partner.

There is a third apparent aspect of the situation worth exploring. As to the concept, partner, his interpersonal orientation (from the FIRO-B) might also be expected to bear a relationship to an individual's talk density. The question posed is whether or not the particular personality structure of a conversational partner is related to the talk density of an individual. Markel and Long (1974) have demonstrated that an individual's density of talk bears a relation to the sex of the partner.

There is an interesting isomorphism between the proposed critical dimensions of the person, i.e., dominance and affiliation (Argyle, 1969), and the proposed critical dimensions of the situation, i.e., dynamism and evaluation. As the FIRO-B scales require subject responses in terms of frequency, it seems wise to maintain this conceptual

consistency by employing the positive polar term, of representative evaluative and dynamic adjective pairs, and anchoring it to a similar seven-point scale of frequency.

Conversation Type

The semantic situational data of the two individual interlocutors can be combined and questions raised regarding the conversation and its relationship to the three dyadic units of speech channel activity. The literature review had indicated that the phenomena of unconstrained conversation remains virtually unexplored. The question of taxonomy is an obvious initial one. Conversations can be described as positive or negative, based either on the factor of interpersonal attraction (partners' evaluations of each other) or interaction satisfaction (partners' evaluations of the conversation). The dynamism ratings, both for partner and conversation, can be employed to characterize conversations as dynamic or static.

Summary and Propositions

This investigation is intended as a contribution to the field of sociolinguistics. The amount of speech channel activity is examined in the context of unconstrained conversation, i.e., an interaction orientation between peers. The amount of speech channel activity is described, in individual units, by three temporal indices of talk density, and in dyadic units, by the proportions of total conversation time spent in the states of either interlocutor vocalizing (dyadic talk density) and both interlocutors simultaneously

vocalizing (simultaneous talk density). The following relationships are suggested: (1) Individual talk density is an index of a speaker's characteristic interpersonal orientation. Talking is viewed as a means of relieving states of anxiety associated with the interpersonal needs for inclusion and control (Schutz, 1966). (2) Individual talk density is an index of the situational meaning. The situation is examined from the perspective of each interlocutor, in terms of the evaluative and dynamic attributions regarding the concepts, partner and conversation. The relationship of talk density to the interpersonal orientation of the partner is also examined. (3) Dyadic talk density and simultaneous talk density are construed as indices of interactional synchrony, in the sense of a synchronous conversation being one in which nearly all the time is filled with talk and in which there is very little simultaneous talk, i.e., there is a smooth give and take between the interlocutors (Chapple and Lindemann, 1942; Argyle, 1969). Synchrony on this level of interaction is proposed to be accompanied by synchrony on the level of the personal compatibility (Schutz, 1966) of the two interlocutors. (4) The dyadic units of total conversation time, dyadic talk density and simultaneous talk density are suggested as reflecting a taxonomy of conversation based on participant descriptions of the situation.

CHAPTER II

METHOD

Subjects

Sixty male and 60 female subjects were drawn from introductory psychology courses at the University of Florida. Their participation in the experiment fulfilled one of the requirements of the psychology courses. Their ages ranged from 17 to 39 years, with a mean of 20.1 years.

Prospective subjects were advised that the experiment was concerned with certain aspects of how people talk to each other. The sign-up procedure for the experiment was arranged so that 60 dyads were formed; 20 male-male, 20 female-female, and 20 male-female dyads. The mixed sex dyads were collected last so as to prevent the operation of a selection bias. Subjects were requested to form dyads on the sign-up sheet with persons with whom their acquaintance was no more than that of a casual classroom basis. Dyad members were requested to report to separate rooms at the specified time to preclude the initiation of conversation before the actual experiment had begun.

Procedure

When the subjects arrived they were received by the experimenter or his assistant and, again, each person was questioned about the level of his aquaintance with his

prospective partner. A short form of biographical information was then filled out for each subject, and subject numbers were assigned. When both dyad members had arrived and the forms were completed, they were conducted from their separate meeting rooms to the experimental room.

The experimental room was a 10' X 16' seminar room with a 3' X 6' rectangular table and two chairs. Subject A of each dyad was seated at one end of the table, and his partner, Subject B, was seated to his/her right, on the side of the table, at a distance of approximately three feet. Sommer (1965) has indicated that this is the most natural spatial arrangement for casual conversation. A microphone was placed on the table between the subjects, and so oriented that the recorded quality of Subject B's voice was different from Subject A's. This was done to facilitate subject identification from the tape recording. The microphone was coupled to an Ampex AG-600 tape recorder which was remote from the subjects. The biographical forms, previously filled out, were placed on the table in front of each subject.

The following instructions were then read to the subjects:

> This experiment is concerned with how people talk to each other. Your task is simply to engage in conversation with your partner for as long as you like, and on whatever topics you like. Your conversation will be tape recorded. To facilitate voice identification, I would like each of you to read sentences one and two

on the top of the form.

These sentences indicated each subject's number and the current date. When each subject had been recorded, the recorder was turned off, the forms collected, and the following instructions read to the subjects:

> Now we're ready to begin. Please remain seated until you've completed your conversation and please do not touch the microphone. Talk as long as you like, and about whatever you like. When you've completed your conversation, please return to the rooms you were in before to fill out some more forms. Questions?

If there were no questions, the tape recorder was turned on and this final sentence read to the subjects:

> Remember you can talk about anything you like for as long as you like.

The experimenter then left the room. Upon conclusion of their conversation, the subjects returned to their respective rooms and completed semantic differential scales, describing their conversation and their partner, and the FIRO-B (Schutz, 1967) scales. Copies of the semantic differential scales and the FIRO-B scales appear in Appendix A.

Raw Conversational Measures

The tape recordings of the conversations were then subjected to a chronographic procedure by the experimenter and an assistant. For this purpose, an apparatus was constructed which consisted of an electric stop watch (Precision

Scientific Instruments), an electric counter (Veeder-Root), and a hand-held micro-switch. The counter-timer was designed such that a depression of the micro-switch recorded one unit on the counter and accumulated time until the switch was released. This represents a simplified version of an instrument described by Kasl and Mahl (1956).

The tape recordings were monitored via headphones in a quiet, distraction-free room. Following the advice of Kasl and Mahl (1956), the chronographers fixed their eyes on a neutral object in the room while monitoring the tapes, and attempted to maintain a mental set of "responding to speech as an irregular, intermittent auditory stimulus, rather than to such linguistic units as phrases and sentences (p.390)."

Initially, a conversation was monitored for the period of time necessary for the chronographer to become familiar with the voices of the two interlocutors. Once this was established, one of the subjects was targeted for first monitoring. Each time this subject vocalized, the chronographer depressed the micro-switch and released it when the vocalization was terminated. This operation defined the basic conversational unit of the study, the vocalization. When the conversation was concluded, the chronographer recorded the number of vocalizations (AN for Subject A) and the total time of vocalization (AT for Subject A), and then on a second monitoring obtained these measures for the other participant (BN and BT for Subject B). On the third and final monitoring, the chronographer targeted those instances

when both participants were talking simultaneously and obtained the number of simultaneous talks (SN) and the total duration of the simultaneous talk (ST) in the conversation. Also, on the third monitoring, the total time of the conversation (TCT), i.e., from the beginning of the first vocalization to the end of the last vocalization, was recorded by means of a second stop watch.

Inter-chronographer Reliability

After the two chronographers had become familiar with the apparatus and procedure, nine conversations were randomly selected from the sample of 60 conversations. Each chronographer performed the chronographic operations on the nine conversations, and then their respective results were compared. Correlation coefficients of .87 for vocalizations and .99 for vocalization time were obtained. Coefficients of $r = .85$ and $r = .84$ were observed, respectively, for the number of simultaneous talks and the total duration of simultaneous talk. When all conversations had been chronographed, another reliability check was performed on the final eight conversations. Reliability was observed to have risen to $r = .93$ and $r = .99$, respectively, for vocalizations and vocalization time. Reliabilities for frequency and duration of simultaneous talk had increased to .97 and .93, respectively.

Derived Conversational Measures

Upon conclusion of the chronographing, the raw conversational measures were transferred from the data sheets to

computer punch cards. A computer program was devised which calculated and printed five derived monadic measures and seven derived dyadic measures.

Monadic Conversational Measures

The monadic measures consisted of three indices of talk density; i.e., vocalization time as a percentage of total conversation time (TD1); as a percentage of time available for talk (TD2); and as a percentage of the total vocalization time of the conversation (TD3). The remaining two monadic measures were vocalization rate per minute (VR), and mean vocalization duration (VD), reported in seconds.

Dyadic Conversational Measures

The dyadic measures consisted of total conversation time (TCT); the percentage of total conversation time used in vocalizing by both interlocutors, dyadic talk density (DTD); mean duration, in seconds, of simultaneous talk (STDU); two measures of simultaneous talk density, i.e., total simultaneous talk time as a percentage of conversation time (STD1); and as a percentage of total vocalization time (STD2); and two measures of simultaneous talk rate, i.e., the number of simultaneous talks per minute of total conversation time (STR1) and the number per minute of total vocalization time (STR2). The 12 conversational measures and their computational formulas appear in Table 1.

Table 1

Conversational Measures

Description	Abbreviation	Formula[a]
A. Monadic Measures		
1. Vocalization time as a percentage of total conversation time (talk density)	TD1	AT(BT)/TCT
2. Vocalization time as a percentage of time available for talk (talk density)	TD2	AT(BT)/TCT-BT(AT)
3. Vocalization time as a percentage of total vocalization time (talk density)	TD3	AT(BT)/AT+BT-ST
4. Vocalization rate per minute	VR	AN(BN)/TCT x 60
5. Mean duration of vocalization in seconds	VD	AT(BT)/AN(BN)
B. Dyadic Measures		
1. Total conversation time in seconds	TCT	
2. Total vocalization time as a percentage of total conversation time (dyadic talk density)	DTD	AT+BT-ST/TCT
3. Mean duration of simultaneous talk in seconds	STDU	ST/SN

Table 1 - continued

Description	Abbreviation	Formula[a]
4. Simultaneous talk time as a percentage of total conversation time	STD1	ST/TCT
5. Simultaneous talk time as a percentage of total vocalization time	STD2	ST/AT+BT-ST
6. Simultaneous talk rate per minute of total conversation time	STR1	SN/TCT x 60
7. Simultaneous talk rate per minute of total vocalization time	STR2	SN/AT+BT-ST x 60

a. T= vocalization time in seconds

N= number of vocalizations

A= interlocutor A

B= interlocutor B

S= simultaneous speech

Measures of Person and Situation

Monadic Measures

The FIRO-B protocols were hand-scored in accordance with directions of Schutz (1967), resulting in six measures; expressed and wanted inclusion (Ie and Iw); expressed and wanted control (Ce and Cw); and expressed and wanted affection (Ae and Aw).

The semantic differential scales, used to describe the conversation and the conversational partner, consisted of the same ten adjectives, and each adjective was anchored to a seven-point frequency scale (see Appendix A). Following Osgood, Suci, and Tannenbaum (1957), five of the adjectives were selected for their high and pure loading on the evaluative dimension and the remaining five represented high and pure loadings on the dynamism dimension (two potency, three activity). By summing the ratings for each group of five adjectives, four measures of the situation emerge; conversational evaluation (CE), conversational dynamism (CD), partner evaluation (PE), and partner dynamism (PD).

Thus, five conversational measures (TD1, TD2, TD3, VR, VD), six personality measures (Ie, Iw, Ce, Cw, Ae, Aw), and four situational measures (CE, CD, PE, PD) were obtained for each of the 120 subjects.

Dyadic Measures

By performing the mathematical operations described by Schutz (1966), the FIRO-B scores of dyad members may be combined to produce 16 distinct measures of dyadic compatibility.

A computer program was devised which calculated and printed these 16 measures for each dyad. The measures included indices of reciprocal (rk), originator (ok), and interchange (xk) compatibility in each of the three areas of inclusion (rkI, okI, xkI), control (rkC, okC, xkC), and affection (rkA, okA, xkA). The rationale and computational procedures for each of these nine measures was described in the preceding chapter. General measures of compatibility in each of the three need areas (KI, KC, KA) were obtained by summing the rk, ok, and xk scores for that specific need area, e.g., KI = rkI + okI + xkI. Measures of total reciprocal (rkT), originator (okT), and interchange (xkT) compatibility represent sums for each type of compatibility over all need areas, e.g., rkT = rkI + rkC + rkA. Total compatibility (K) is obtained by combining either area compatibilities or compatibility types, e.g., K = KI + KC + KA = rkT + okT + xkT.

In addition, the four semantic differential scores of each dyad member (A) were combined with the similar measures of his partner (B) to produce dyadic descriptions (PED, PDD, CED, CDD) of the evaluative and dynamic dimensions of the two interlocutors (PED = PEA + PEB; PDD = PDA + PDB) and their conversation (CED = CEA + CEB; CDD = CDA + CDB).

Thus, seven conversational measures (TCT, DTD, STD1, STD2, STR1, STR2, STDU), sixteen indices of compatibility (rkI, okI, xkI, rkC, okC, xkC, rkA, okA, xkA, KI, KC, KA, rkT, okT, xkT, and K), and four composite situational measures (PED, PDD, CED, CDD) were obtained for each of the 60 dyads.

CHAPTER III

RESULTS

Temporal Factors of Talk: Inter-Correlations and Normative Findings

The inter-correlations of the five monadic conversational measures and the inter-correlations of the seven dyadic conversational measures are presented in Appendix B. Monadic talk density has been computed as both a percentage of interaction time (TD1) and as a percentage of total vocalization time (TD3). The high positive correlation (r=.91) of the two measures suggested that this distinction was superfluous and accordingly, TD3 was dropped from the analysis. Simultaneous talk density and simultaneous talk rate had also been computed with respect to both interaction time and total vocalization time, and for similar reasons, the indices based on vocalization time were dropped from further analysis. The measures employing interaction time as the common denominator were preferred in consideration of comparability with previous research findings in the area.

The over-all means and standard deviations of the remaining four monadic measures and five dyadic measures are presented in Table 2.

Table 2

Norms for Conversational Measures[a]

Measures	Mean	Standard Deviation
A. Monadic Measures		
1. TD1	.41	.12
2. TD2	.68	.15
3. VR	11.16	3.05
4. VD	2.34	1.01
B. Dyadic Measures		
1. TCT	1807.08	822.20
2. DTD	.80	.09
3. STDU	.40	.09
4. STD1	.015	.010
5. STR1	2.14	1.11

a. The measures are described in Table 1.

Monadic Conversational Measures

Talk Density and the Person

Pearson correlation coefficients were computed between the six indices of interpersonal orientation and the four conversational measures of each subject over the sample of 120 subjects. Of the 24 computed coefficients, only one was significant at the .05 level, a result to be expected by chance alone. These coefficients of correlation appear in Appendix C.

Talk Density and the Situation

Interpersonal orientation of partner. Pearson correlation coefficients were computed between the four conversational measures of each subject and the six indices of interpersonal orientation of his partner. Of the 24 computed coefficients, again only one was significant at the .05 level, a result not exceeding that expected by chance. These correlation coefficients appear in Appendix D.

Situation-for-speaker. Each speaker's ratings of conversational dynamism, conversational evaluation, partner dynamism and partner evaluation were correlated with his/her four conversational measures. Employing the .05 level as a cut-off, four of the 16 computed coefficients of correlation were found to be significant (correlation coefficients ranged from .20 to .39). These coefficients of correlation appear in Appendix E.

These results suggested that further information might be garnered by an analysis of variance, exploring the

effects of both the ratings of the conversation and the ratings of the conversational partner. Accordingly, subjects were first assigned to one of four groups on the basis of their dynamic and evaluative ratings of the conversation. These ratings were employed to categorize subjects for whom the conversation was static (below the dynamism median), dynamic (above the dynamism median), positive (above the evaluation median) and negative (below the evaluation median). The normative findings regarding these four situational measures are presented in Appendix F. Four possible combinations (groups) emerge: Positive-Dynamic, Negative-Dynamic, Positive-Static, Negative-Static. After randomly removing subjects to equalize cell frequency, the four groups of N=21 each were subjected to 2-way analyses of variance (Winer, 1962) for each of the four monadic conversational measures.

For both TD1 and TD2, the dynamism factor was significant beyond the .01 level ($F=9.34$, $df=1/80$ and $F=20.92$, $df=1/80$, respectively). Summaries of these analyses appear in Tables 3 and 4.

Further statistical analysis, by way of the t-test, indicated that TD1 of the Negative-Dynamic group was significantly greater than that of the Negative-Static group ($t=2.07$, $p<.05$), and that TD1 of the Positive-Dynamic group was significantly greater than the Positive-Static group ($t=2.17$, $p<.05$) and the Negative-Static group ($t=2.42$, p .02). With regard to TD2, the Negative-Dynamic group was

Table 3

Analysis of Variance Summary for TD1
in Relation to Conversation-for-Speaker

Source	SS	df	MS	F
Evaluation	.002	1	.002	.18
Dynamism	.126	1	.126	9.34*
Interaction	.000	1	.000	.00
Error	1.081	80	.014	

*$p < .01$

Table 4

Analysis of Variance Summary for TD2
in Relation to Conversation-for-Speaker

Source	SS	df	MS	F
Evaluation	.014	1	.014	.84
Dynamism	.340	1	.340	20.92*
Interaction	.015	1	.015	.91
Error	1.299	80	.016	

*$p < .01$

significantly greater than the Negative-Static group ($t=2.58$, $p<.02$) and the Positive-Static group ($t=2.61$, $p<.02$). The Positive-Dynamic group was observed to have a TD2 significantly greater than the Positive-Static group ($t=3.94$, $p<.01$) and the Negative-Static group ($t=3.91$, $p<.01$). These results are portrayed in Figure 1.

The remaining aspect of the situation-for-speaker explored in this investigation involved the dynamic and evaluative attributions the subject recorded with regard to their conversational partner. Similar to the above analysis, subjects were grouped according to whether they described their partner as Positive-Dynamic, Positive-Static, Negative-Dynamic or Negative-Static. After equalizing cell frequency, the four groups of N=16 each were subjected to 2-way analyses of variance (Winer, 1962) for each of the four monadic conversational measures. No significant effects were observed in any of the analyses of variance.

Situation-for-partner. Pearson correlation coefficients were computed between the four conversational measures of each subject and the dynamic and evaluative attributions made by the subject's partner with respect to the subject and their conversation. Employing the .05 level as a cut-off, three of the 16 coefficients of correlation were found to be significant (r ranged from .31 to .36). A table of these coefficients appears in Appendix G.

These results suggested the existence of a relationship between a speaker's conversational measures and the

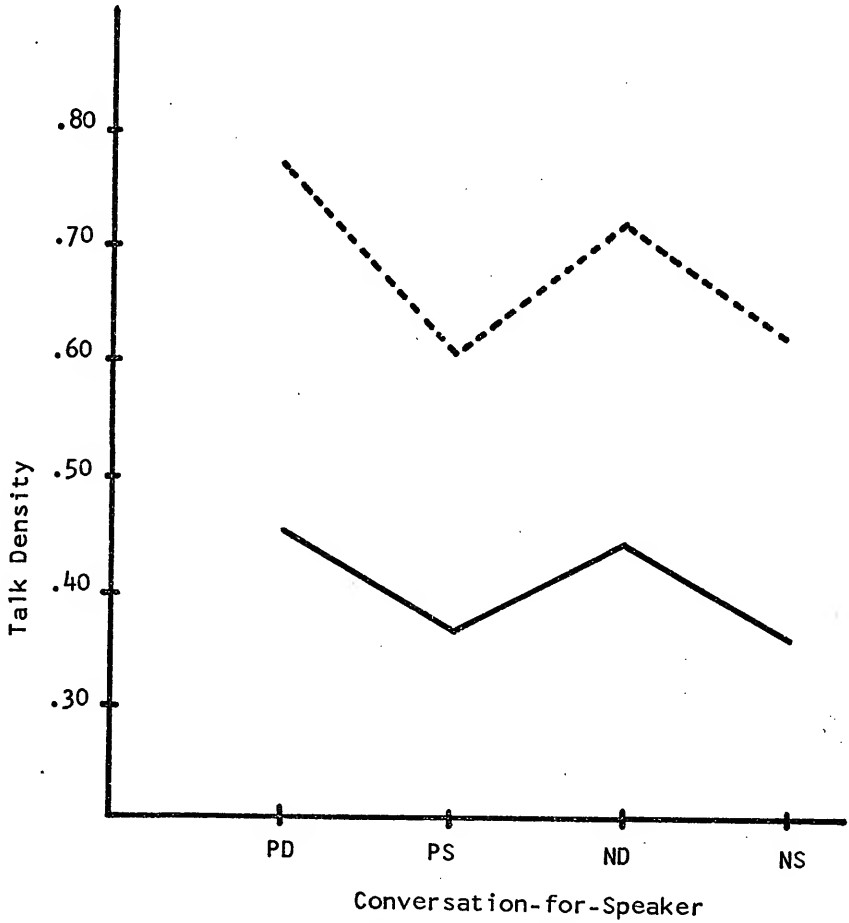

Figure 1. A Graphic Representation of TD1 and TD2 Across Conversation-for-Speaker

PD= Positive-Dynamic
PS= Positive-Static
ND= Negative-Dynamic
NS= Negative-Static

TD1 ————————
TD2 - - - - - -

situation-for-partner, and further information was pursued by means of analysis of variance. Subjects were first assigned to one of four groups (as in the above, employing the respective sample medians as cut-offs); subjects whose partners described their conversation as (1) Positive-Dynamic, (2) Positive-Static, (3) Negative-Dynamic or (4) Negative-Static. After randomly removing subjects to equalize cell frequency, the four groups of N=21 each were subjected to 2-way analyses of variance (Winer, 1962) for each of the four conversational measures.

The dynamism factor was observed to be significant beyond the .05 level ($F=4.57$, $df=1/80$) for conversational measure, TD2. A summary of this analysis appears in Table 5.

Further statistical analysis, by way of the t-test, indicated that the Positive-Dynamic group had a significantly greater TD2 than did subjects of the Positive-Static group ($t=2.73$, $p<.01$). These results are presented in Figure 2.

Similar 2-way analyses of variance of the conversational measures were performed with regard to the dynamic and evaluative attributions accorded to the speaker by his partner. Four similarly derived groups of N=16 each were employed in separate analyses for each of the four monadic conversational measures.

The dynamism factor was observed to be significant beyond the .01 level in relation to TD1 ($F=7.23$, $df=1/60$). A summary of this analysis appears in Table 6.

Table 5

Analysis of Variance Summary for TD2
in Relation to Conversation-for-Partner

Source	SS	df	MS	F
Evaluation	.001	1	.001	.06
Dynamism	.085	1	.085	4.57*
Interaction	.058	1	.058	3.13
Error	1.481	80	.019	

*$p < .05$

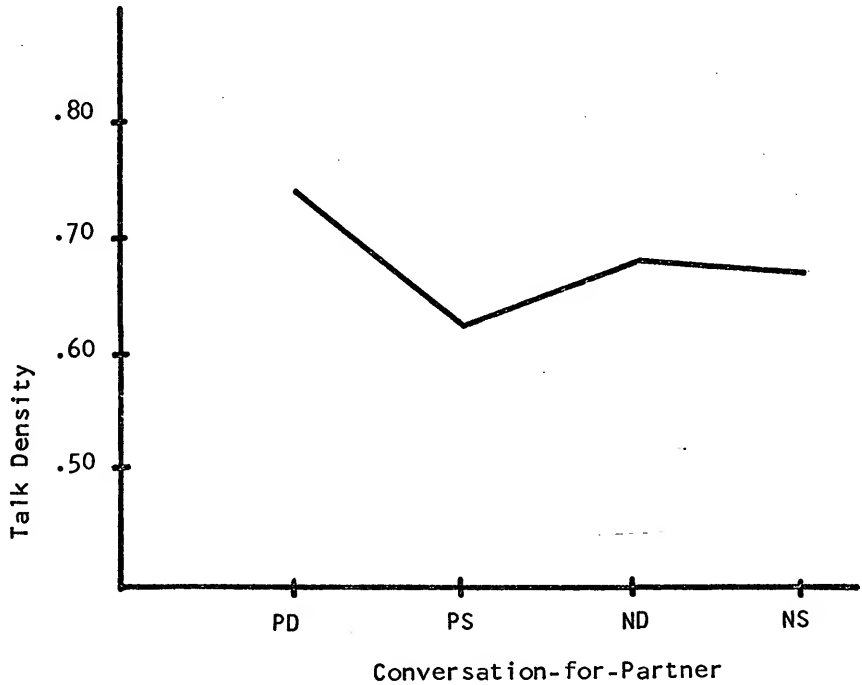

Figure 2. A Graphic Representation of TD2 Across Conversation-for-Partner

PD= Positive-Dynamic
PS= Positive-Static
ND= Negative-Dynamic
NS= Negative-Static

Table 6

Analysis of Variance Summary for TD1
in Relation to Speaker-for Partner

Source	SS	df	MS	F
Evaluation	.029	1	.029	2.08
Dynamism	.100	1	.100	7.23*
Interaction	.033	1	.033	2.35
Error	.831	60	.014	

*$p < .01$

Further statistical analysis, by way of the t-test, indicated that Negative-Dynamic subjects had a TD1 which was greater than Negative-Static subjects ($t=2.97$, $p<.01$), greater than the Positive-Static subjects ($t=2.91$, $p<.01$) and greater than the Positive-Dynamic subjects ($t=2.09$, $p<.05$). These results are shown in Figure 3.

Dyadic Conversational Measures

Dyadic Compatibility

Pearson correlation coefficients were computed between the 16 compatibility measures and the five conversational measures of each dyad, over the sample of 60 dyads. Of the 80 computed coefficients of correlation, only two coefficients attained a .05 level of significance, a result to be expected by chance alone. These correlation coefficients appear in Appendix H.

Conversation Type

Pearson correlation coefficients were computed between the four composite situational measures (CED, CDD, PED, PDD) and the five dyadic conversational measures over the sample of 60 dyads. Employing the .05 level as a cut-off, 11 of the 20 computed coefficients were found to be significant (the coefficients ranged from .27 to .46). These coefficients of correlation appear in Appendix I.

The observed relationships between the composite situational variables and the dyadic conversational measures suggested that a more focused analysis, in terms of conversation type, be performed. The evaluative and dynamic

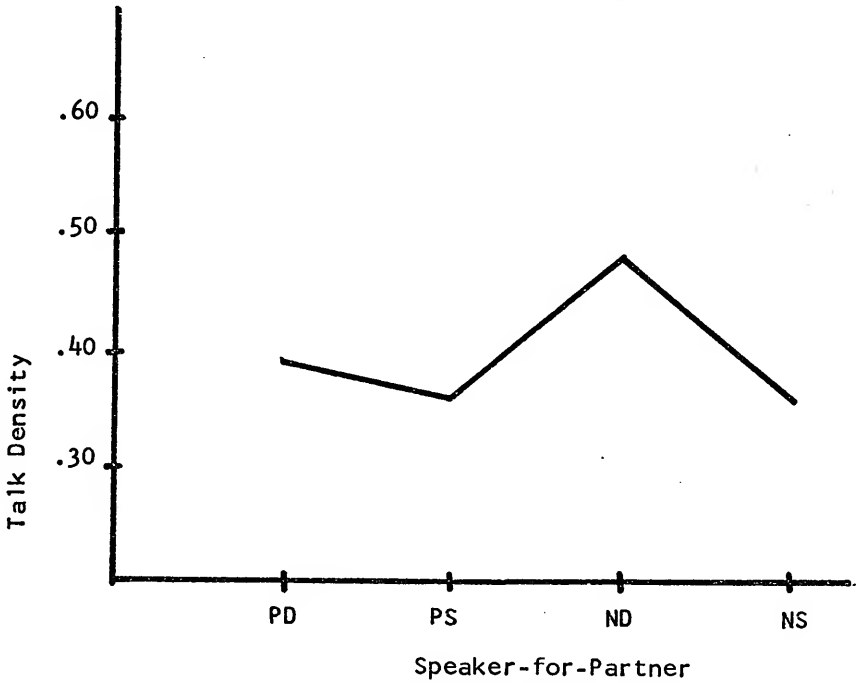

Figure 3. A Graphic Representation of TD1 Across Speaker-for-Partner

PD= Positive-Dynamic
PS= Positive-Static
ND= Negative-Dynamic
NS= Negative-Static

dimensions were each examined separately, both in relation to the concepts, partner and conversation.

Evaluative dimension. With respect to the concept, partner, conversations were classified as (1) Positive if both members rated each other above the sample median for partner evaluation, (2) Negative if both members rated each other below the median, and (3) Ambivalent Evaluation if one participant was rated above the median and the other participant was rated below the median. After randomly removing dyads to equalize group sizes, these three groups of N=19 each were subjected to one-way analyses of variance (Winer, 1962) for each of the five dyadic conversational measures.

Partner evaluation was observed to be of significance only with respect to total conversation time (TCT). For this variable, partner evaluation was significant at the .05 level ($F=3.29$, $df=2/54$). A summary of this analysis appears in Table 7. Further statistical analysis, by way of the t-test, indicated that Positive dyads exhibited a significantly greater total conversation time than did Negative dyads ($t=2.55$, $p<.02$). These results are presented in Figure 4.

Considering the concept, conversation, the sample conversation evaluation median was employed to characterize conversations as (1) Positive, i.e., both members rating the conversation above the sample median, (2) Negative, i.e., both members rating the conversation below the sample

Table 7

Analysis of Variance Summary for TCT in Relation to Partner Evaluation

Source	SS	df	MS	F
Between Groups	4099230.0	2	2049615.0	3.29*
Within Groups	33594032.0	54	622111.7	
Total	37693248.0	56		

*$p < .05$

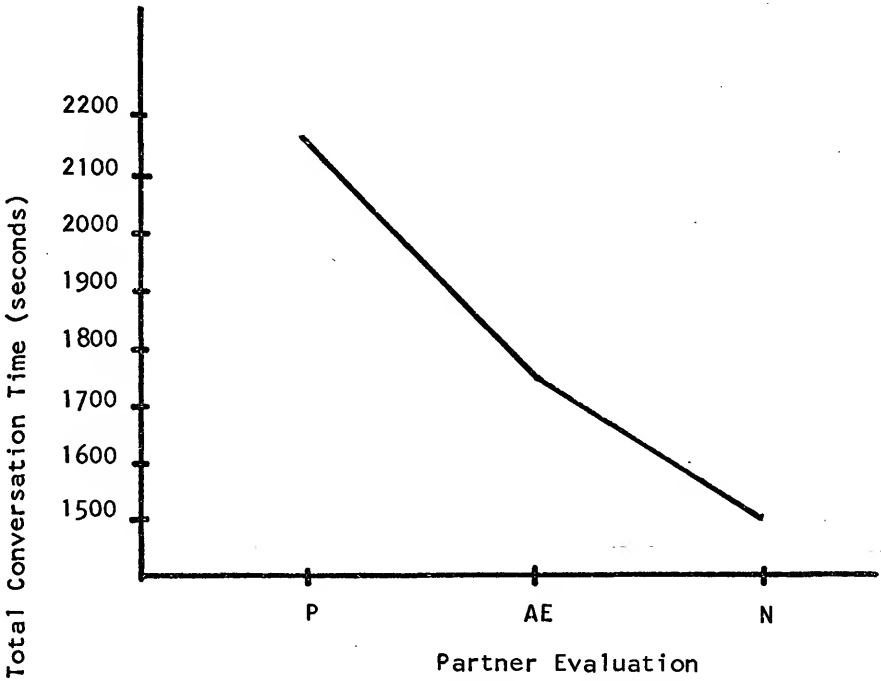

Figure 4. A Graphic Representation of TCT Across Partner Evaluation

P= Positive
N= Negative
AE= Ambivalent Evaluation

median and, (3) Ambivalent Evaluation, i.e., one member rating the conversation above the median and one member rating the conversation below the median. Dyads were randomly removed to equalize group sizes (N=19 each) and then separate one-way analyses of variance were performed for each of the five conversational measures. Conversation evaluative type was not observed to be a significant factor with respect to any of the conversational measures.

Dynamic dimension. Regarding the concept, partner, conversations were classified as (1) Dynamic if both members rated each other above the sample partner dynamism median, (2) Static if both members rated each other below the sample partner dynamism median, and (3) Ambivalent Dynamism if one participant was rated above the sample dynamism median and one was rated below the median. The groups were equalized for sample size and then the three groups of N=14 each were subjected to one-way analyses of variance for each of the five dyadic conversational measures.

Partner dynamism type was a significant factor only in relation to total conversation time (TCT). For this variable, partner dynamism type was significant at the .05 level ($F=3.44$, $df=2/39$). A summary of this analysis appears in Table 8. Further statistical analysis, by way of the t-test, indicated that Dynamic dyads had a significantly greater total conversation time than did Static dyads ($t=2.62$, $p<.02$). These results are presented in Figure 5.

Table 8

Analysis of Variance Summary for TCT in Relation to Partner Dynamism

Source	SS	df	MS	F
Between Groups	4230377.0	2	2115188.0	3.44*
Within Groups	23995360.0	39	615265.6	
Total	28225728.0	41		

*$p < .05$

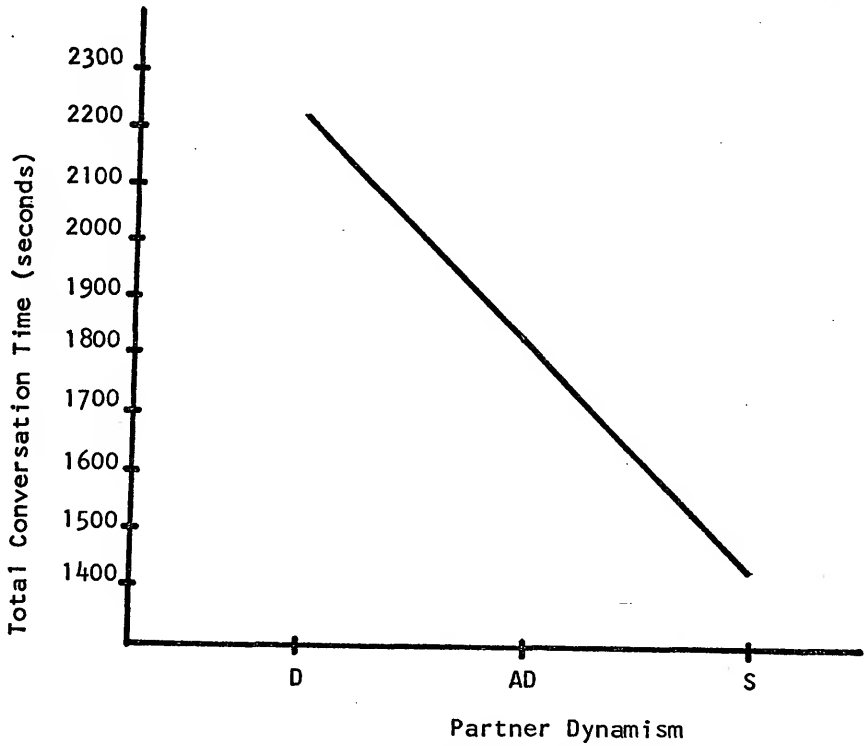

Figure 5. A Graphic Representation of TCT Across Partner Dynamism

D= Dynamic
S= Static
AD= Ambivalent Dynamism

As to the concept, conversation, similar to the above, the sample conversation dynamism median was employed to characterize conversations as (1) Dynamic, i.e., both members rating the conversation above the sample median, (2) Static, i.e., both members rating the conversation below the sample median and (3) Ambivalent Dynamism, i.e., one member rating the conversation above the median and one member rating the conversation below the median. Dyads were randomly removed to equalize group size (N=18 each), and then the effect of conversational dynamism type was explored by means of separate one-way analyses of variance for each of the five dyadic conversational measures.

Conversational dynamism type was observed to be of significant effect with respect to each of the five conversational measures. Regarding total conversation time (TCT), dynamism was significant at the .05 level ($F=4.39$, $df=2/51$), and t-tests indicated that both the Dynamic group and the Ambivalent Dynamism group had greater total conversation times than did the Static group ($t=2.32$, $p<.05$ and $t=2.76$, $p<.01$, respectively). As for dyadic talk density (DTD), dynamism type was significant at the .01 level ($F=6.42$, $df=2/51$), and t-tests indicated that the talk densities of the Dynamic and Ambivalent Dynamism groups were both greater than that of the Static conversation group ($t=3.57$, $p<.01$ and $t=2.04$, $p<.05$, respectively). Concerning simultaneous talk density (STD1), dynamism type was significant at the .05 level ($F=4.66$, $df=2/51$), and the Dynamic

conversations had a significantly greater proportion of simultaneous talk than did the Ambivalent Dynamism conversations ($t=2.01$, $p<.05$) and the Static conversations ($t=2.99$, $p<.01$). Conversation dynamism type was significant at the .05 level for simultaneous talk rate (STR1) ($F=4.71$, $df=2/51$), and t-tests indicated Dynamic conversations to have a rate of simultaneous talk significantly greater than both the Ambivalent Dynamism group and the Static group ($t=2.33$, $p<.05$ and $t=2.89$, $p<.01$, respectively). As to simultaneous talk duration (STDU), conversation dynamism type was significant at the .05 level ($F=4.48$, $df=2/51$), and t-tests indicated that both the Dynamic conversations and the Ambivalent Dynamism conversations exhibited a mean duration of simultaneous talk which was significantly greater than that of the Static conversations ($t=2.56$, $p<.02$ and $t=2.62$, $p<.02$, respectively). Summaries of these analyses of variance appear in Tables 9-13 and the results are portrayed graphically in Figures 6-10.

Table 9

Analysis of Variance Summary for TCT in Relation to Conversation Dynamism

Source	SS	df	MS	F
Between Groups	5192704.0	2	2596352.0	4.39*
Within Groups	30149328.0	51	591163.25	
Total	35342032.0	53		

*$p < .05$

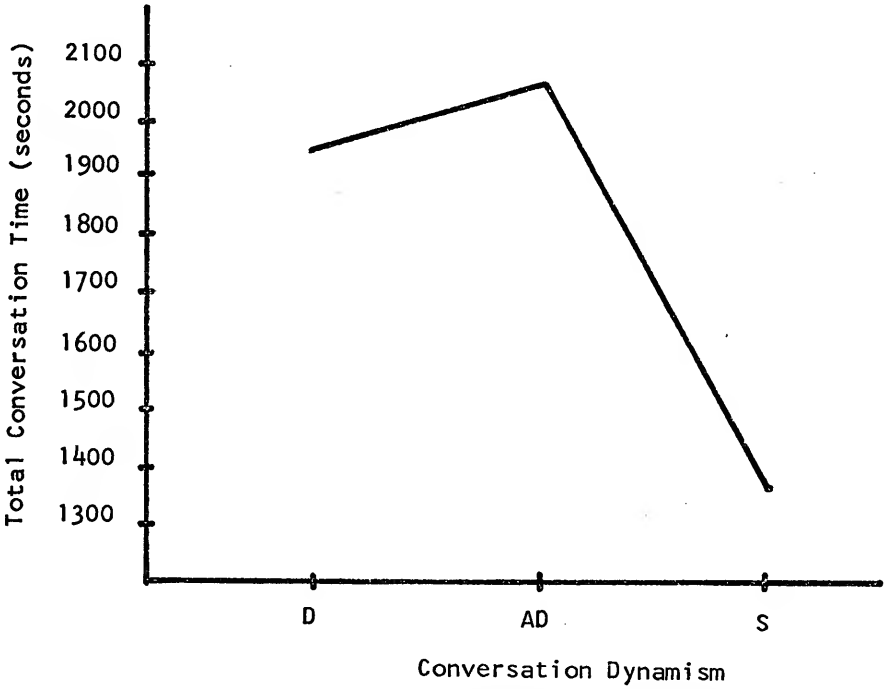

Figure 6. A Graphic Representation of TCT Across Conversation Dynamism

D= Dynamic
S= Static
AD= Ambivalent Dynamism

Table 10

Analysis of Variance Summary for DTD in Relation to Conversation Dynamism

Source	SS	df	MS	F
Between Groups	.0910	2	.0455	6.42*
Within Groups	.3613	51	.0071	
Total	.4523	53		

*$p < .01$

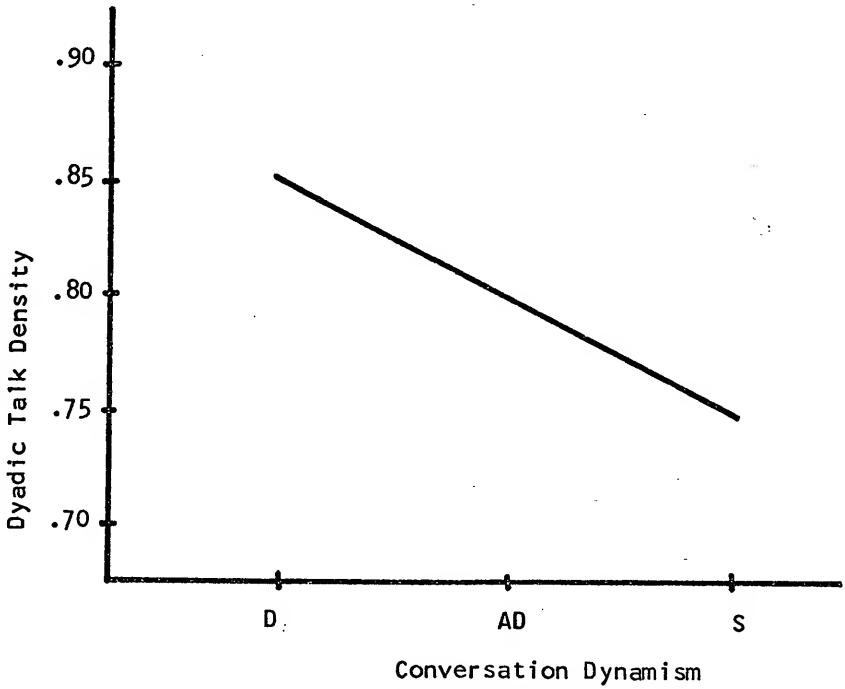

Figure 7. A Graphic Representation of DTD Across Conversation Dynamism

D= Dynamic
S= Static
AD= Ambivalent Dynamism

Table 11

Analysis of Variance Summary for STD1
in Relation to Conversation Dynamism

Source	SS	df	MS	F
Between Groups	.0009	2	.0004	4.66*
Within Groups	.0048	51	.0001	
Total	.0057	53		

*$p < .05$

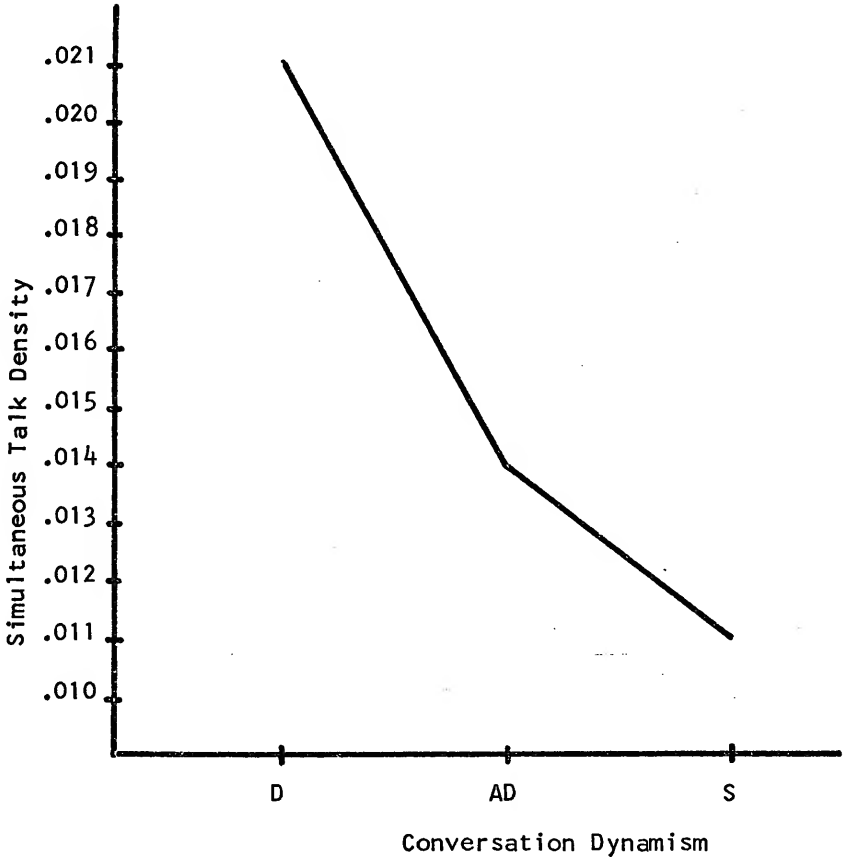

Figure 8. A Graphic Representation of STD1 Across Conversation Dynamism

D= Dynamic
S= Static
AD= Ambivalent Dynamism

Table 12

Analysis of Variance Summary for STR1
in Relation to Conversation Dynamism

Source	SS	df	MS	F
Between Groups	10.7105	2	5.3552	4.71*
Within Groups	57.9888	51	1.1370	
Total	68.6992	53		

*$p < .05$

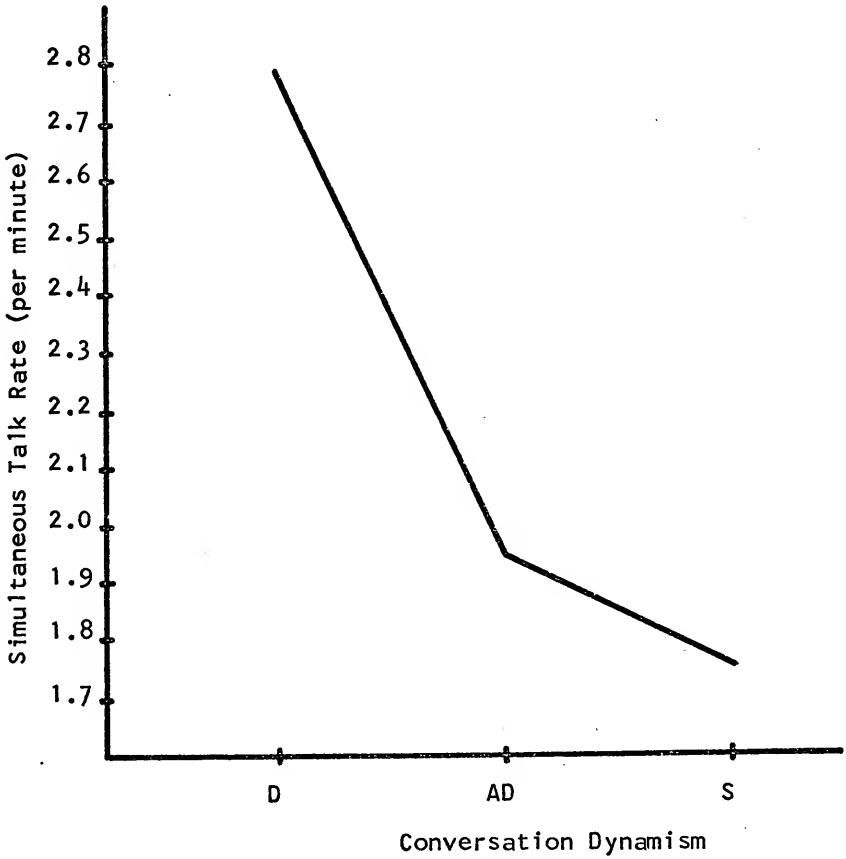

Figure 9. A Graphic Representation of STR1 Across Conversation Dynamism

D= Dynamic
S= Static
AD= Ambivalent Dynamism

Table 13

Analysis of Variance Summary for STDU in Relation to Conversation Dynamism

Source	SS	df	MS	F
Between Groups	.0590	2	.0295	4.48*
Within Groups	.3359	51	.0066	
Total	.3949	53		

*$p < .05$

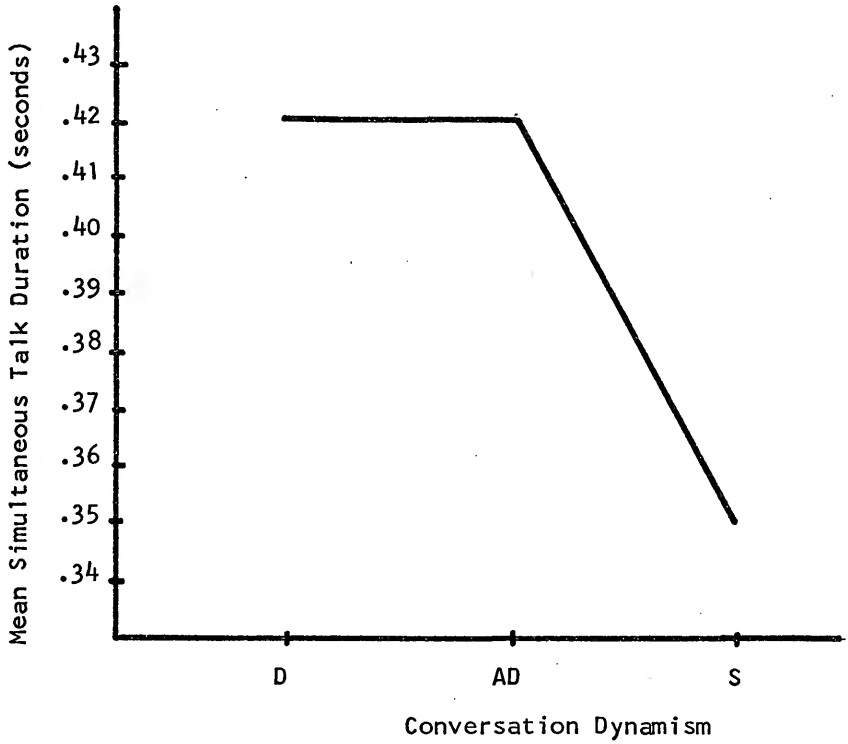

Figure 10. A Graphic Representation of STDU Across Conversation Dynamism

D= Dynamic
S= Static
AD= Ambivalent Dynamism

CHAPTER IV

DISCUSSION

Two major concerns are posed in this investigation. The first involves an explication of the psychological and situational significance of individual talk density. The second focus explores the significance of dyadic units of amount of speech channel activity.

Individual Talk Density

Talk Density and Interpersonal Orientation

No relationship was observed between the indices of talk density and the interpersonal orientation of the speaker. This analysis had been proposed as a means of differentiating and amplifying the reported association of anxiety with increased verbal/vocal output, through examination of the concept of interpersonal anxiety. Following Schutz (1966), anxiety is construed as the anticipation of the non-satisfaction of a need. Two particular states were hypothesized as being manifested in increased talk density; the anticipation of being ignored (inclusion anxiety) and the anticipation of not being influential (control anxiety). Individuals may respond to the state of inclusion anxiety with behavior designed to focus attention on them, i.e., the oversocial (Schutz, 1966), and individuals may respond to the state of control anxiety with

dominating behavior, i.e., the autocrat (Schutz, 1966), but this investigation disclosed that a heightened density of talk is not a reliable behavioral indication of these states.

Assuming the validity of the FIRO theory and measurement (Shaw and Costanzo, 1970), and the demonstrated activating effect of anxiety, e.g., Pope, Siegman and Blass (1970), one is led to speculation regarding the activating effects of interpersonal anxiety upon other channels of face-to-face communication. A tentative hypothesis might be that interpersonal anxiety is associated with an increased density of kinesic (body movement) channel behaviors, with the social significance of facial movements being a likely area in which to focus analysis. For example, looking behavior has apparently strong components of both inclusion and control motivation. One may look, hoping to "catch the eye" of the other, thus satisfying inclusion needs of feeling attended to. Argyle (1967) suggests that people who are more concerned with being attended to, look more. This observation speaks directly to the concept of inclusion anxiety. As to control components of looking, Argyle (1967) further suggests that A may feel he has B under his power when he is watching him, perhaps a transformation of passive to active, regarding the child's experience of being watched over by adults. Other communication channels (Markel, 1969), i.e., proxemics (body placement, as in the forward lean), observation and odor (as in the wearing of startling,

unconventional clothes or potent perfumes) and touch might represent avenues of lesser resistance for the expression of interpersonal anxiety, and thus, be pre-potent over speech channel activation.

That other communication channels might be pre-potent for the expression of anxiety is suggested by a consideration of an apparent difference between the speech channel and the other channels of communication. Jaffee and Feldstein (1970), noting the low incidence of simultaneous speech in interaction, advance the idea of the operation of "territoriality" with regard to speech channel behavior, i.e., speech by one interlocutor suppresses speech by the other interlocutor. Simple reflection suggests that territoriality may not be such a prime characteristic of the other channels of communication, where temporally concurrent behaviors may be the rule, rather than the exception. In this sense, other channels of communication might represent avenues of decreased resistance for the expression of anxiety. One may speculate that the extremes of inclusion pathology (manic depressive psychosis, manic type) or control pathology (psychopathic personality) are necessary to overcome the territorial imperative of the speech channel, while lower levels of interpersonal anxiety are expressed by an increased activation of other channels. Such an explanation does not rule out the possibility that interpersonal anxiety is expressed on the speech channel in ways more subtle than sheer volume, i.e., startling remarks as

expressions of inclusion concerns or patterns of voice quality (loudness, tempo) for control concerns.

The experimental data, establishing the activating effect of anxiety on speech, has been collected exclusively in monologue or interview situations. In such situations, the task of the subject is simply to fill a segment of time with information, whereas, the "task of conversation," as explored in this investigation, equally involves a gathering of information. This implicit instructional set, as well as the territoriality of speech channel behavior, would seem to be operating to inhibit the effects of interpersonal anxiety on the individual density of talk. One may conclude that the relationship between talk density and anxiety is dependent upon laboratory conditions of reduced reciprocity and speech channel territoriality, and that the activating effect of anxiety on speech is not of sufficient intensity to overcome these stipulations in unconstrained two-person interaction.

Talk Density and the Situation

While the first hypothesis directed attention to an examination of the relationship between interpersonal anxiety level and talk density, a second proposition suggested a relationship between the talk density of a speaker and the specific situational significance of the interaction. The situation was construed as two-faceted, i.e., a partner and a conversation, and two dimensional, i.e., evaluation and dynamism, and was explored in three

separate ways, i.e., the situation-for-speaker, situation-for-partner, and the interpersonal orientation of the partner.

Regarding the situation-for-speaker, talk density is related only to the dynamic attributions made by the speaker about the conversation itself, i.e., subjects who described their conversations as dynamic, in comparison with participants describing their conversation as static, spoke a significantly greater proportion of the interaction time (TD1) and used a significantly greater proportion of the time available for them to speak (TD2). This finding indicates that the amount of power and energy perceived in a conversation is related to the perceiver's degree of participation regarding speech channel behavior. What is surprising is the apparent irrelevance of the evaluation dimension. It had been hypothesized that evaluative ratings of the partner (interpersonal attraction) and evaluative ratings of the conversation (interaction satisfaction) would reflect a speaker's density of talk in that conversation. This relationship had been suggested by Mehrabian's (1965) findings that the factor of like-dislike was related to the length of written communications. Again, this may be understood as the result of contextual restraints. In the Mehrabian (1965) study, persons were presented with an unlimited space in which to behave (write), whereas in conversation, the size of the behavioral space is partially delimited by the conversational partner. Other channels of

communication might be expected to permit freer expression of such attitudinal concerns. The results of this study indicate that individual talk density is not an index of communicator attitude in unconstrained conversation.

As to the situation-for-partner, it had been hypothesized that individual talk density is an indication of the amount of dynamism attributed to a speaker by his partner. This hypothesis was confirmed, i.e., speakers who were described as dynamic by their partners spoke a significantly greater proportion of the interaction time (TD1), in comparison with speakers described as static. It may be concluded that a heightened density of talk is one of the behavioral correlates of those persons perceived as dynamic by their conversational partners. This is to say that the variable, talk density, is associated with the degree of power and energy that one person represents to another. This analysis also indicated that speakers, whose partners described their conversation as dynamic, spoke a greater proportion of the time available for them to speak (TD2), in comparison with speakers whose partners judged their conversation as static. Thus, the amount of power and energy attributed to a conversational interaction is positively related both to the speaker's density of talk and to the partner's density of talk.

In answer to the second hypothesis, it may be asserted that individual talk density does represent an index of the dynamic dimensions of the situation, but is unrelated to

the evaluative aspects of the situation. As such, the dynamism dimension, representing one of two basic responses to the environment, finds behavioral expression in the talk densities of interlocutors in unconstrained conversation.

A third investigated aspect of the situation, the interpersonal orientation of the conversational partner, provided no further information. The talk density of a speaker bore no relationship to the personality of his partner. This still remains an intriguing question, perhaps indicating, for example, if a particular kind of person would be more effective in promoting talk with reticent, withdrawn individuals. A suggestion comes from an observation by Markel and Long (1974); that speakers of both sex speak more to a female listener. Perhaps, listener personality dimensions more directly associated with sex roles provide the link to the talk density of a speaker.

Dyadic Units of Speech Channel Activity

Interactional Synchrony and Compatibility

The third hypothesis of the present investigation represents a direct test of a conceptual model of two-person interaction proposed by Argyle (1969). Two-person interaction is conceptualized as an interdependence of equilibrium processes describable at two distinct levels. On the level of the interaction, equilibrium is described by a condition of nearly all of the interaction time being filled with speech (dyadic talk density) and only a small proportion of the interaction time being occupied with

simultaneous speech (simultaneous talk density). The task of the interactors is to achieve this state of equilibrium. As such, this represents a condition of the two interlocutors working well together, i.e., establishing a synchronous interaction. On another level, equilibrium is describable in terms of the personal compatibility of the two interlocutors, with the condition of compatibility representing a steady state of harmonious co-existence and mutual need satisfaction. It was hypothesized that there was a relationship between these two levels of equilibrium, but the results of the present investigation do not support this contention.

The validity of Schutz's (1966) compatibility construct has been satisfactorily demonstrated. This state of equilibrium is simply and precisely defined by FIRO theory. Two possible explanations for the negative results are apparent. Either the notion of conversational equilibrium deserves reconsideration or such a condition of equilibrium is not achievable in initial interactions between strangers.

One of the specifications of conversational equilibrium is the near absence of simultaneous speech. Further consideration suggests a differentiation of simultaneous speech into supportive and interruptive types. Supportive simultaneous speech might consist of brief remarks of agreement or interest which have the effect of maintaining the partner's flow of talk. As such, this would not seem to indicate disequilibrium or poor meshing. However,

interruptive simultaneous speech, i.e., temporally concurrent remarks by one participant which result in the partner's cessation of talk, seem an appropriate index of dysynchrony. The present investigation confounded this distinction. Regarding the stipulation that nearly all the interaction time be filled with speech, there is an indication from the present investigation that an increased density of talk is actually associated with one particular type of incompatibility, rather than compatibility (total control incompatibility bore a significant, positive correlation with talk density). This suggests that Argyle's (1969) notion of conversational equilibrium is, perhaps, restricted to certain types of interlocutor compatibility.

It may be argued that the development of equilibrium requires more intensive exposure to the conversational styles of the participants. Evidence that this may be so comes from an investigation by Shaw and Sadler (1965). Of their experimental groups (married couples, dating couples, unaffiliated couples), the married couples exhibited a significantly smaller number of interruptions. Future research might focus on repeated conversational encounters between members of compatible and incompatible dyads. Perhaps, compatible dyads would develop this equilibrium with less exposure. In conclusion, there is no support for the contention that the compatibility of interlocutors is associated with a synchronous conversational interaction in the initial encounters of unacquainted persons.

Taxonomy of Conversation

A fourth and final major hypothesis suggested that the dimensions of dynamism and evaluation might further elucidate the psychological significance of the dyadic units of concern. Speech channel relationships to evaluative ratings were observed only insofar as they were applied to the ratings of conversational partners. Evaluative ratings of the conversation, implying interaction satisfaction, bore no relationship to any of the five explored dyadic units. The evaluative dimension, as applied to conversational partners, may be interpreted as a measure of interpersonal attraction, and the results of this investigation indicate that the length of initial conversational encounters between strangers is related to the degree of this interpersonal attraction. Positive conversations, those high in interpersonal attraction, were characterized by significantly greater total conversation times than were Negative conversations. Dynamism ratings, as applied to partners, also reflected the total conversation time. Dynamic conversations, in comparison to Static conversations, exhibited greater total conversation times. It may be concluded that the significance of one's conversational partner, i.e., both the joint attributions of power and energy as well as the degree of interpersonal attraction, is related to the total time of the conversation. In the writer's knowledge, this represents the only known explication of the psychological significance of the length of initial encounters between strangers.

Whereas, evaluative ratings of conversations did not indicate any differentiations in terms of the dyadic conversational measures, dynamic ratings of conversations indicated a clear cluster of relationships. Dynamic conversations, in comparison to Static conversations, exhibited significantly greater densities of talk and simultaneous talk, a significantly increased rate of simultaneous talk, a significantly longer mean duration of simultaneous talk, as well as a greater total conversation time. This indicates that conversations, experientially differentiated by the interlocutors, are associated with different temporal structures. The relationship is between perceived conversational power and energy and dyadic units of amount of speech channel activity.

The results of the present study provide normative criteria (Appendix F) for classifying conversations on a dimension which specifies at least one behavioral difference. As such, it represents an initial attempt at focusing and differentiating the largely unexplored phenomena of mundane conversation. Dynamic conversations may be construed simply as lively, energetic conversations. Alternatively, Dynamic conversations, in the sense of increased simultaneous talk, might be conceptualized as dysynchronous conversations. In the interests of specifying a holistic notion of communication processes, obvious future questions might focus on differences between Dynamic and Static conversations with regard to conversational content or the

characteristics of the other channels of face-to-face communication.

Minor Findings

The methodology and normative findings associated with the conversational measures deserves some comment. Regarding the frequency and duration of vocalization, the reliabilities reported in this investigation are appreciably higher than those reported by other investigators (Kasl and Mahl, 1956; Jaffee and Feldstein, 1970). This is clearly the result of the present chronographic technique, whereby each interlocutor was individually monitored. Thus, increased reliability of measurement is obtained at the price of increased time for data reduction. As to frequency and duration of simultaneous talk, Mahl (1959) had indicated that the frequency of interruption could be reliably obtained by listening to tape recordings. The present investigation substantiates this claim, as well as demonstrating that the duration of simultaneous talk is equally amenable to techniques of perceptual measurement. The reliabilities observed for frequency and duration of simultaneous talk in the present investigation are much higher than those reported by Jaffee and Feldstein (1970).

Two measures of talk density were retained for the final analyses in this investigation. TD1 is the obvious, most popularly employed measure of talk density, and the observed mean value of .41 corresponds very closely with that obtained in the Markel and Long (1974) investigation.

TD2 was suggested by Mahl's (1956) measure, the silence quotient. The findings indicate that persons in unconstrained conversation speak an average of 68% of the time available for them to speak, i.e., (TCT-partner vocalization time). The present investigation does not suggest any clear differential associations for these two measures, but their observed correlation (.66) indicates that their redundancy is not of sufficient strength to warrant the dismissal of either measure. For the present, both are considered viable operationalizations of talk density and future research might indicate their different significances.

The mean frequency and duration of vocalization were included in the final analyses, though they were of concern only for the derivation of the density measures. Still, they are of interest in terms of comparison with previous research findings. Verzeano (1950) examined monologue speech samples via voice-actuated machine analysis, in which a minimum pause of .5 seconds defined the speech unit. He noted an average speech unit duration of 2.82 seconds. The present study disclosed a mean vocalization duration of 2.34 seconds. Since the speech units become shorter as the size of the minimum defining pause is reduced, it may be concluded that the chronographers of the present study were responding to pauses of somewhat less than .5 seconds. The observed mean duration of vocalization is consistent with Hargreaves's (1960) finding (2.6 seconds) for friends in free discussion, but quite disparate from

Prebor's (1972) observed act duration of 1.15 seconds in unconstrained conversation. The chronographers in the Prebor (1972) study were apparently operating at a greatly reduced reaction time. This variability suggests that the highly reliable speech unit, described by Wiens et al. (1966), might be more appropriate for research focused on the analysis of individual speech acts, but the confounding of speech and silence is not appropriate for concerns with the total amount of speech channel activity.

Regarding the dyadic conversational measures, the present study indicated that the state of either interlocutor vocalizing represents an average of 80% of the total time of a conversation. This is somewhat higher than that observed by Markel and Long (1974) for unconstrained conversation, but appreciably lower than the dyadic density of talk reported for conversation constrained by role differences (Matarazzo et al., 1968; Soskin and John, 1963). The observed density of simultaneous talk (1.5%) is consistent with that reported by Markel and Long (1974). Jaffee and Feldstein (1970), employing an elaborately sophisticated voice-actuated machine analysis, reported an average duration of simultaneous speech of .4 seconds. The present investigation, employing a simple human-operated counter-timer, also disclosed an average simultaneous speech duration of .40 seconds.

One final comment involves Prebor's (1972) reported findings of an increased density of simultaneous talk in

female-female dyads and longer total conversation times for male-female dyads. The effect of dyadic sexual composition was examined in the present investigation by means of analysis of variance, but Prebor's (1972) findings were not replicated, nor was dyadic sexual composition observed to be related to any of the other dyadic conversational measures.

Summary and Conclusions

Four major hypotheses, dealing with monadic and dyadic units of amount of speech channel activity, were examined in the present investigation. Regarding the first hypothesis, a speaker's density of talk in unconstrained conversation bears no relationship to his characteristic level of interpersonal anxiety, as indicated by self-report of interpersonal orientation. Assuming the validity of the measurement of interpersonal anxiety (Schutz, 1966), and the demonstrated activating effect of anxiety on speech channel activity, an explanation is advanced based on the characteristics of unconstrained conversation. The activating effect of anxiety has been demonstrated only with monologue speech samples and speech samples derived from interview situations (e.g., Pope, Siegman and Blass, 1970). In contrast, the task of unconstrained conversation is characterized by an implicit demand for increased mutual speech channel activity, i.e., reciprocity. Thus, restrictions are imposed on the amount of talk in that the speech channel is characterized by territoriality, i.e.,

speech by one interlocutor suppresses speech by the other interlocutor. Given this situation, other channels of face-to-face communication might be expected to be prepotent for the transmission of anxiety, in that temporally concurrent behaviors of the interlocutors are the rule rather than the exception. It is concluded that the activating effect of anxiety on speech production is not of sufficient intensity to overcome these conditions of reciprocity and speech channel territoriality in unconstrained conversation.

A second hypothesis represented an examination of the relationship of individual talk density to certain situational factors of the interaction. It was observed that participants who described their conversations as dynamic, and who were described as dynamic by their conversational partner, exhibited significantly greater densities of talk. Furthermore, participants, in conversations described as dynamic by their conversational partners, exhibited significantly greater talk densities. It is concluded that individual talk density is an indication of the dynamic dimensions of the situation, but that it is unrelated to the evaluative aspects of the situation. The dynamism dimension (Osgood et al., 1957), reflecting perceived power and energy and representing one of two basic responses to the environment, finds behavioral expression in the talk densities of interlocutors in unconstrained conversation.

The present investigation provided no supporting

evidence for Argyle's (1969) conceptual model of two-person interaction, i.e., the compatibility of the interlocutors bore no relationship to the conversational measures of interactional synchrony (Dyadic Talk Density, Simultaneous Talk Density). The results are discussed in terms of a reconsideration of the notion of conversational synchrony, and in terms of the amount of inter-exposure required for the development of such an equilibrium.

A fourth and final hypothesis suggested that the dimensions of dynamism and evaluation (Osgood et al., 1957) might describe a taxonomy of conversation, reflecting differences in the dyadic conversational measures of concern. The results indicated that Positive conversations, i.e., those characterized by a high degree of interpersonal attraction between the interlocutors, were associated with significantly increased total conversation times. With respect to the evaluative dimension, the results imply that the length of initial encounters between strangers is related to the feelings the participants have about each other, but not to their feelings regarding the characteristics of their interaction. Dynamic conversations, i.e., interactions mutually characterized by the interlocutors as powerful and energetic, were associated with greater densities of talk and simultaneous talk, an increased rate and longer mean duration of simultaneous talk, as well as longer total conversation times. Thus, conversations, experientially differentiated by the conversants, are

associated with different temporal structures of talk. This represents an initial approach to the largely uninvestigated phenomena of mundane conversation.

In a general sense, it may be concluded that the degree of activation of the speech channel is of significance both on the level of the individual and on the level of the dyad. Future research directions are suggested.

APPENDICES

APPENDIX A

Semantic Differential Scales

FIRO-B Scales

DIRECTIONS

A list of ten adjectives appear on each of the following five pages. These adjectives are to be used by you to describe (A) the conversation you have just completed and (B) your conversational partner. For example, the ten adjectives are first used to describe the CONVERSATION in the following manner:

The CONVERSATION I just completed was:

1. FRIENDLY....Never-1 2 3 H 5 6 7 -Always

If you felt that the conversation was never friendly, you would circle the 1. If you felt that the conversation was always friendly, you would circle the 7. The remaining points on the scale describe a frequency of friendliness between these extremes. If you felt the conversation was friendly half of the time, you would circle the H; if slightly more than half of the time, circle the 5; if slightly less than half of the time, circle the 3; etc. Some of the adjectives may seem more relevant than others, but please circle a number next to each adjective. Do not omit any adjective.

There is no time limit, but do not debate long over any adjective. Do not worry or puzzle over individual adjectives. It is your first impressions, the immediate feelings, that we want. On the other hand, please do not be careless, because we want your true impressions.

Please turn to the next page and begin.

Subject No: _____

A. THE CONVERSATION

The CONVERSATION I just completed was:

1. FRIENDLY.....Never - 1 2 3 H 5 6 7 - Always
2. ACTIVE.....Never - 1 2 3 H 5 6 7 - Always
3. PLEASANT.....Never - 1 2 3 H 5 6 7 - Always
4. VIGOROUS.....Never - 1 2 3 H 5 6 7 - Always
5. INTERESTING.....Never - 1 2 3 H 5 6 7 - Always
6. STRONG.....Never - 1 2 3 H 5 6 7 - Always
7. HAPPY.....Never - 1 2 3 H 5 6 7 - Always
8. LOUD.....Never - 1 2 3 H 5 6 7 - Always
9. HONEST.....Never - 1 2 3 H 5 6 7 - Always
10. FAST.....Never - 1 2 3 H 5 6 7 - Always

B. MY PARTNER during the conversation

During the conversation MY PARTNER was:

1. FRIENDLY.....Never - 1 2 3 H 5 6 7 - Always

2. ACTIVE.....Never - 1 2 3 H 5 6 7 - Always

3. PLEASANT.....Never - 1 2 3 H 5 6 7 - Always

4. VIGOROUS.....Never - 1 2 3 H 5 6 7 - Always

5. INTERESTING.....Never - 1 2 3 H 5 6 7 - Always

6. STRONG.....Never - 1 2 3 H 5 6 7 - Always

7. HAPPY.....Never - 1 2 3 H 5 6 7 - Always

8. LOUD.....Never - 1 2 3 H 5 6 7 - Always

9. HONEST.....Never - 1 2 3 H 5 6 7 - Always

10. FAST.....Never - 1 2 3 H 5 6 7 - Always

FIRO-B (Schutz, 1967)

Subject No._____ Date_____

DIRECTIONS: This questionnaire is designed to explore the typical ways you interact with people. There are, of course, no right or wrong answers; each person has his own ways of behaving.

Sometimes people are tempted to answer questions like these in terms of what they think a person should do. This is not what is wanted here. We would like to know how you actually behave.

Some items may seem similar to others. However, each item is different so please answer each one without regard to the others. There is no limit, but do not debate long over any item.

For each statement below, decide which of the following answers best applies to you.

Place the number of the answer on the line at the left of the statement.

Please be as honest as you can.

1. usually 2. often 3. sometimes 4. occasionally
5. rarely 6. never

____1. I try to be with people.

____2. I let other people decide what to do.

____3. I join social groups.

____4. I try to have close relationships with people.

____5. I tend to join social organizations when I have an opportunity.

____6. I let other people strongly influence my actions.

____7. I try to be included in informal social activities.

____8. I try to have close, personal relationships with people.

____9. I try to include other people in my plans.

____10. I let other people control my actions.

____11. I try to have people around me.

____12. I try to get close and personal with people.

____13. When people are doing things together I tend to join them.

____14. I am easily led by people.

____15. I try to avoid being alone.

____16. I try to participate in group activities.

For each of the next group of statements, choose one of the following answers:

1. most people 2. many people 3. some people 4. a few people

5. one or two people 6. nobody

____17. I try to be friendly to people.

____18. I let other people decide what to do.

____19. My personal relations with people are cool and distant.

____20. I let other people take charge of things.

____21. I try to have close relationships with people.

____22. I let other people strongly influence my actions.

____23. I try to get close and personal with people.

____24. I let other people control my actions.

____25. I act cool and distant with people.

____26. I am easily led by people.

____27. I try to have close, personal relationships with people.

____28. I like people to invite me to things.

____29. I like people to act close and personal with me.

____30. I try to influence strongly other people's actions.

____31. I like people to invite me to join in their activities.

____32. I like people to act close toward me.

____33. I try to take charge of things when I am with people.

____34. I like people to include me in their activities.

____35. I like people to act cool and distant toward me.

____36. I try to have other people do things the way I want them done.

____37. I like people to ask me to participate in their discussions.

____38. I like people to act friendly toward me.

____39. I like people to invite me to participate in their activities.

____40. I like people to act distant toward me.

For each of the next group of statements, choose one of the following answers:

1. usually 2. often 3. sometimes 4. occasionally
5. rarely 6. never

____41. I try to be the dominant person when I am with people.

____42. I like people to invite me to things.

____43. I like people to act close toward me.

____44. I try to have other people do things I want done.

____45. I like people to invite me to join their activities.

____46. I like people to act cool and distant toward me.

____47. I try to influence strongly other people's actions.

____48. I like people to include me in their activities.

____49. I like people to act close and personal with me.

____50. I try to take charge of things when I'm with people.

____51. I like people to invite me to participate in their activities.

____52. I like people to act distant toward me.

____53. I try to have other people do things the way I want them done.

____54. I take charge of things when I'm with people.

	I	C	A
e			
w			

APPENDIX B

Inter-Correlations of Monadic Conversational Measures

Inter-Correlations of Dyadic Conversational Measures

Pearson's Correlation Coefficients for Monadic Conversational Measures[a]

	TD1	TD2	TD3	VR	VD
TD1	—				
TD2	.66*	—			
TD3	.91*	.34*	—		
VR	.17	-.11	.32*	—	
VD	.64*	.60*	.46*	-.60*	—

a. All measures are defined in Table 1.

*$p < .05$

Pearson's Correlation Coefficients for
Dyadic Conversational Measures[a]

	TCT	DTD	STD1	STD2	STR1	STR2	STDU
TCT	—						
DTD	.20	—					
STD1	-.08	.43*	—				
STD2	-.13	.29*	.98*	—			
STR1	-.17	.48*	.95*	.93*	—		
STR2	-.24	.28*	.92*	.94*	.97*	—	
STDU	.22	.17	.65*	.67*	.42*	.42*	—

a. All measures are defined in Table 1.

*$p < .05$

APPENDIX C

Correlation Coefficients Between FIRO Scores and Conversational Measures of Speaker

Pearson's Correlation Coefficients Between FIRO Scores and Conversational Measures of Speakers[a,b]

	Ie	Iw	Ce	Cw	Ae	Aw
TD1	.11	-.01	.01	-.11	.01	-.04
TD2	.13	.03	.07	-.08	.07	.04
VR	.09	.05	.03	.18*	.02	.05
VD	-.02	-.04	-.01	-.17	-.04	-.08

a. FIRO scores following Schutz (1967)

b. Conversational measures are defined in Table 1.

*$p < .05$

APPENDIX D

Correlation Coefficients Between FIRO Scores and Conversational Measures of Partner

Pearson's Correlation Coefficients Between FIRO Scores and Conversational Measures of Partner[a,b]

	Ie	Iw	Ce	Cw	Ae	Aw
TD1	-.05	.03	.09	.04	.05	.07
TD2	.03	.01	.11	-.08	.07	.05
VR	.09	.13	.09	.18*	.05	.15
VD	-.12	-.05	-.03	-.09	-.02	-.07

a. FIRO scores following Schutz (1967)

b. Conversational measures are defined in Table 1.

*$p < .05$

APPENDIX E

Correlation Coefficients Between Conversational Measures and Situation-for-Speaker

Pearson's Correlation Coefficients Between Conversational Measures and Situation-for-Speaker[a]

	CE	CD	PE	PD
TD1	.17	.20*	.08	-.02
TD2	.24**	.39**	.15	.27**
VR	.09	.11	.10	.05
VD	.05	.07	-.02	-.05

a. Conversational measures are defined in Table 1.

*$p < .05$

**$p < .01$

APPENDIX F

Norms for Situational Measures

Inter-Correlations of Situational Measures

Norms for Situational Measures

Measures	Mean	Median	Standard Deviation
1. CE	28.69	29.42	4.51
2. CD	20.06	20.50	5.61
3. PE	29.32	30.72	4.86
4. PD	20.31	20.17	6.10

Inter-Correlations of Situational Measures

	CE	CD	PE	PD
CE	—			
CD	.49*	—		
PE	.89*	.47*	—	
PD	.35*	.77*	.42*	—

*$p < .05$

APPENDIX G

Correlation Coefficients Between Conversational Measures and Situation-for-Partner

Pearson's Correlation Coefficients Between Conversational Measures and Situation-for-Partner[a]

	CE	CD	PE	PD
TD1	.01	.14	.04	.31*
TD2	.17	.36*	.13	.36*
VR	.08	-.01	.10	.08
VD	-.05	.09	-.03	.16

a. Conversational measures are defined in Table 1.

*$p < .01$

APPENDIX H

Correlation Coefficients Between Conversational Measures and Compatibility Measures

Pearson's Correlation Coefficients Between Conversational Measures and Compatibility Measures[a,b]

	TCT	DTD	STDU	STD1	STR1
rkI	-.06	.10	.07	.14	.13
rkC	.06	.10	-.14	-.02	.04
rkA	-.15	.10	.07	.13	.11
rkT	-.10	.16	.03	.15	.15
okI	-.15	.04	-.19	.15	.27*
okC	.11	.23	.04	.03	.06
okA	.02	.06	-.13	-.10	-.05
okT	.01	.19	-.12	.04	.14
xkI	-.02	.10	.04	.13	.12
xkC	.06	.19	.02	.10	.13
xkA	-.05	.09	.01	.10	.10
xkT	-.02	.18	.04	.16	.17
KI	-.10	.11	-.04	.19	.23
KC	.12	.27*	-.01	.06	.11
KA	-.07	.11	-.02	.05	.07
KT	-.04	.24	-.03	.16	.21

a. The conversational measures are defined in Table 1.

b. Compatibility scores following Schutz (1967)

*$p < .05$

APPENDIX I

Correlation Coefficients Between Conversational Measures and Composite Situational Measures

Pearson's Correlation Coefficients Between Conversational Measures and Composite Situational Measures[a]

	CED	CDD	PED	PDD
TCT	.18	.28*	.23	.33**
DTD	.27*	.46**	.18	.46**
STDU	.03	.30*	.05	.36**
STD1	.17	.41**	.13	.35**
STR1	.19	.40**	.13	.32**

a. Conversational measures are defined in Table 1.

*$p < .05$

**$p < .01$

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BIOGRAPHICAL SKETCH

Monte Francis Bein was born March 30, 1946, at Michigan City, Indiana. He was graduated from Stranahan Senior High School, Fort Lauderdale, Florida, in June of 1963. Mr. Bein entered the University of Florida in the Fall of 1963, receiving the degree of Bachelor of Arts, with College Honors in Psychology, in April of 1967. In September of 1967, he enrolled in the graduate program in clinical psychology at the University of Florida. Mr. Bein received the Master of Arts degree in June, 1970. In April, 1971, he was admitted to candidacy for the degree of Doctor of Philosophy, and dissertation research was begun in September of 1971. From September, 1972, to September, 1973, Mr. Bein served an internship in clinical psychology at the Emma Pendleton Bradley Hospital, Riverside, Rhode Island. Since January, 1974, he has been residing at Cloverdale Farm, Raphine, Virginia. Mr. Bein is presently employed as a staff psychologist at Western State Hospital, Staunton, Virginia.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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Professor of Speech, Anthropology, and Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the Department of Psychology in the College of Arts and Sciences and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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