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The effect of noninvolvement on dyadic communication

Payne, Jill Thomson, Ph.D.
The Ohio State University, 1989

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THE EFFECT OF NONINVOLVEMENT
ON DYADIC COMMUNICATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy in the Graduate
School of the Ohio State University

By

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The father, Stanley, is thinking about his son, who is 19. Stanley does not know yet that his son is schizoid and will need lengthy treatment for mental illness.

"I already knew that something was wrong, before I could think of any possible reasons. ... What had made it hard to listen to or sit through was nothing in the words themselves, not even the way he delivered them, which were lacklaidical enough but no more so than would have been natural for somebody rather bored at having to explain himself or merely ready for bed after a long walk. No, he just left out completely all the small movements of face and body and inarticulate sounds that you get from people talking, all the familiar signs of an interest in being understood. I would never have thought that a negative change could be so noticeable, and certainly not that having noticed it I was going to take something like half a minute making up my mind exactly what it was."


"Rose remembered a couple of buttons that had to be sewn on. She got out the garment and her housewife, and calmly set about the business. At her first movement Allnutt had thought some notice of his existence was about to be taken, and he felt disappointed when the purpose of her movement became apparent. 'Puttin' yer things to rights prop'ly, ain't yer, Miss?'; he said.

A woman sewing has a powerful weapon at her disposition when engaged in a duel with a man. Her bent head enables her to conceal her expression without apparently trying; it is the easiest matter in the world for her simulate complete absorption in the work in hand when actually she is listening attentively; and if even then she feels disconcerted or needs a moment to think, she can always play for time by reaching for her scissors. And some men - Allnut was an example - are irritated effectively by the attention paid to trifles of sewing instead of to their fascinating selves."

From The African Queen, by C.S. Forester, 1935, Random House, New York, pp. 91-92
To Professor Thomas W. Milburn

Who through his involvement in our conversations knew
the direction I was seeking and who provided
many of the insights and suggestions
needed for this dissertation.
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INTRODUCTION

The objective of this study is to investigate the effects of involvement in interpersonal communication. Involvement is viewed as important to the establishment and maintenance of intersubjectivity in communication with another. If intersubjectivity is disrupted, the potential for mutual understanding possible in communicative exchange is decreased. In psychological research, interaction involvement is described as a transactional phenomena reflecting a person's engagement or disengagement with his fellow man, his surroundings and his inner self (Singer, 1974). In communication research, interaction involvement has been viewed as the degree to which one interactant participates with another in conversation (Cegala, Savage, Brunner and Conrad, 1982a).

Involvement is a concept which is based on the intentionality of consciousness (Cegala, 1984). As long as one is conscious, one is more or less involved in something, whether in internal matters, as in ideation or emotional focusing, or in external matters as in involvement with music or sports. A phenomenological viewpoint would support the concept that the entire body is
an instrument of consciousness and that it does not "reside" in any one anatomical place. Thus, cognitive activity would not be the only reflector of consciousness, and body movement could also be such an indicator.

As an individual difference, interaction involvement is characteristic of those who are sensitive to the evolving situation and who integrate thoughts, feelings and behaviors during the course of an interaction (Cegala, Savage, Brunner and Conrad, 1982a). Interpersonal involvement "requires a focus of attention on both internal and external matters" (Cegala, 1984, p. 320). Thus, subjective experience must be directed to the other interactant and the situation, in order for a person to be involved in interpersonal communication.

As a state concept, interaction involvement has been studied through nonverbal concepts measuring arousal such as forward body lean eye gaze, head nodding, body orientation and distance; through specific physiological measures such as blood pressure, galvanic skin response and electroencephalography; and through self-reports of the state of involvement in interaction. The focus of the nonverbal studies has been on determinants of various nonverbal patterns and the consequences of manipulation of these behaviors. While these studies and the development of models of arousal have contributed to the understanding of such factors as mutual influence, intimacy and rapport,
they may have ignored a very basic aspect of involvement in interaction. The idea that involvement of an individual is based on responsiveness, attentiveness and perceptiveness (Cegala et al., 1982a) tends to suggest that these characteristics will be displayed in both verbal and nonverbal patterns. It is possible that certain indices of nonverbal bodily movement are very important indicators to another of presence or absence in the interactional situation. This study suggests that it is not only through speech that the involvement of another is noted. Components of body movement, specifically mobility, complexity of body movement and dynamic body activation are integral parts of a subject's alertness and of perceived human qualities and may provide a basis for the possibility of intersubjectivity. It is through the development and maintenance of intersubjectivity that the ultimate goals of an interaction, such as relationship development, information exchange, and the development of intimacy and rapport can be achieved. It is possible to suggest that interaction involvement plays a role in the development of social skills and communication competence.

While verbal communication is viewed as an important component of interaction involvement, a considerable amount of the expressive nature of communication is thought to be communicated through gestural activity. Infants communicate prior to the development of language with
responsive movement which illustrates quite different reactions to inanimate objects and to the mother (Trevathen, 1980). Complex patterns of movement of the infant reflect responses to a human environment. These responses can express "clear patterns of excitement, catching of interest, avoidance..." (Trevathen, p. 319) and regulate communicative purposes. After the development of language, research appears to focus on more verbal and relational aspects of communication and move away from the interest in the early role of movement as a purposeful orienting toward a subject. It is postulated that body movement continues to contribute to adult interaction in much the same manner as it does in infants and therefore is a component of the amount of the effort invested to be present with another.

Nature of the Problem to be Studied

The specific effects of nonverbal interaction involvement to be studied are the body movement behavior of high and low-involved individuals and the effects of those who are low-involved on a trait measure of interaction involvement on those who are high-involved. It is hypothesized that high-involved individuals will use more mobile, complex and dynamic movement when they interact with another high-involved individual and that low-involved individuals will exhibit the opposite. Furthermore, it is hypothesized that the communicative behavior of passive,
uninvolved interactants will limit the interaction involvement of a more highly involved counterpart because of the interactional message given by a low-involved individual. Lack of awareness of how nonverbal involvement levels influence communicative behavior, may cause suboptimal utilization of communication channels in areas where communication is an essential tool.

The study of dyadic communication traditionally has not concentrated on the effect of passive, less-involved behavior on the communication behavior of others who interact with them. The nature of an experiment itself, in calling for manipulation of the independent variable to produce an effect on the dependent variable, may have encouraged the direction of research. This may have occurred because of the belief that more involved interactants are more assertive and more powerful and the assumption that it is power that influences and not powerlessness. Communication, however, implies mutual influence. Communication skills were once thought to be oratory alone, but there is now a much greater emphasis on and appreciation of the interpersonal nature of communication. Failure to investigate the interactional effect of less involved interactants may have led to gaps in the understanding of the significance of the response to this communicative behavior and may also have impeded the teaching of interpersonal communication skills.
Significance of the Problem

Levels of nonverbal involvement in dyadic interaction are viewed as affected by characteristics or traits of individuals, by emotional and physical states of individuals and by the interactive situation. A subject's ability to display nonverbal involvement with another may be partially dependent on the ability to use body movement to support an active display of interest in communicating with another person. When someone who has a severe illness, such as Lou Gerhrig's Disease or a stroke, he or she may still have cognitive ability and be able to speak, but expression may be hampered by not being able to use body movement to display communicative intentions. It is suggested that low nonverbal involvement is disruptive to casual conversations, but may be even more important to helper-helpee situations, such as doctor-patient, psychologist-client, social worker-client, the elderly and the young, lonely-nonlonely and infant-mother interactions, because of the increased possibility that the helpee may be less state-involved in conversation.

Research with depressed patients shows a deficit in the expressive, nonverbal channels of communication (Prkachin, Craig, Papageorgis and Reith, 1977) which could lead to responsive behaviors that perpetuate a depressive social environment for the patient (Coyne, 1976). Medically ill patients also may suffer from deficits in the expressive
nonverbal dimension because of limitations imposed by their medical condition or anxieties surrounding an illness.

Informed consent requires the patient who signs to be legally competent, but the patient who is unable to actively respond to the demands of understanding the implications of a procedure and to ask questions, may not be giving "informed" consent. The elderly are noted to move and speak somewhat more slowly than their younger counterparts and may have vision and hearing deficits which could contribute to lack of other-responsive and involved behaviors. The premature infant, who may not be developmentally ready to interact with the human environment, may not display responsive movement to the mother, creating the potential for a relational problem between mother and infant. The lonely individual may perpetuate loneliness, by not acting involved in conversations, and cueing avoidance on the part of others.

Research which has investigated differences between helper-helpee subjects has tended to concentrate on socioeconomic, status and power differences, suggesting prescriptive solutions rather than uncovering why poor interactive communication occurs. Suggesting that in order for patients to participate in their treatment, they must interact more effectively, or that physicians should give more information does not solve the problem of how they must do this or or what must happen if one interactant does
not have the capacity for more effective interaction. Failing to consider that there may be a basic communication dimension, the lack of involvement in the interaction, may have lead to these prescriptive solutions. A helper may perceive lack of involvement in the helpee, but does he or she know how to react to it? Does the helpee "instruct" the helper in how to react? While many helpees complain about the lack of information they receive, few have suggested how the helpee could interact more effectively, if he or she is unable to demonstrate an interest in obtaining information.

While helper-helpee situations point to the importance of nonverbal involvement in interaction situations, these are role-defined situations in which there are many intervening variables, such as status and power differentials, which might interfere with finding a relationship between involvement levels and communication outcomes. A casual conversation will be used in this study because it is thought to be important to provide support for the importance of low involvement in a non-role defined situation. An individual's tendency to be low-involved as a regular feature of his or her communication should be reflected even in casual conversations. Study of a casual conversation could provide support for the idea that decreased body movement is a feature of low involvement and that low involvement of one interactant is reflected in the
behavior of the other, even when that interactant is highly involved individual. This evidence would only provide support for speculation about more role-defined situations, but it could contribute to theory development for helper-helpee situations in which the potential for a low state of involvement might be high. Since the particular parameters to be used in this study have only been used in role-defined situations, such as psychiatrist and depressed patient, it seems important to provide evidence that this phenomenon exists in less complex situations.

Low-involved persons, whether that be a characteristic style of interacting or a temporary style brought on by their situation, may find that others are unwilling to interact with them and may lack the social skill or the capability to expend the effort necessary to overcome this. Although highly involved persons may be socially skilled, responsiveness to the experience of lack of presence from an interactive partner may be aversive and lead to avoidant behaviors or to an emphasis on information seeking in order to relieve uncertainty. Decreased involvement of a high-involved person may lead to fewer behaviors which might lead to the development of a relationship. If one dyadic partner is focused internally or is unable to appear attentive or responsive to the communication of the other, it seems highly likely that this would negatively affect communication outcomes.
Definition of Terms

Passive behavior. The interactant does not react visibly to something which might be expected to involve the participant or to produce activity and/or manifestations of an emotion or feeling.

A passive role. The role taken by a person who does not participate readily in an interaction, is inactive, inert, or quiescent in interaction with another person.

Responsiveness. Responsiveness is a key factor in trait interaction involvement and is the individual's tendency to deliver verbal lines and nonverbal communication appropriate to the situation or to know what to do when. Fundamental functions of responsiveness are maintenance of the interaction, the development of attraction and the activation of schema which help the interactant to process information more readily and remember what has occurred in the interaction. Failure to be responsive shows lack of interest and indicates that no real interaction has taken place or relationship developed (Davis, 1983).

Responsiveness in dyadic interaction is defined in terms of four sequential response contingencies (Davis, 1983): the probability with which each person responds verbally and nonverbally to the communicative behavior of the other; the degree to which each response is perceived by the listener to directly address the content of his/her
preceding utterance; the extent to which each response falls within the appropriate time range (determined by culture, individual rhythmic preferences and rhythmic patterns established in particular dyads); and the extent to which the elaboration of the response matches the demand for elaboration that is implicit in the preceding communication of the other.

Responsiveness is facilitated by four general factors and by a variety of characteristics of the interaction context, the individual participants and the dyad which facilitate those four factors: attention to one's partner, accurate understanding of both verbal and nonverbal messages, adequate verbal and nonverbal response repertoires and the motivation to be responsive. (Davis, 1983).

State of Involvement in an Interaction. Behaviors which index the state of involvement have been though to be those of approach as shown in gaze, forward lean, and close interpersonal distance, (Cappella, 1983) and activity, as shown by gestural activity, facial expressiveness, speech rate and vocal variety (Mehrabian, 1972). Street and Wiemann, (1987) suggest that the state of interaction involvement is the "extent to which interactants are cognitively, emotionally, and behaviorally enmeshed with a topic or partner" (pp. 592-93). Thus, the state of involvement can be said to include cognitive actions, and
affective and behavioral responses. Interactional events are related to personal experience or thoughts and this sense of connectedness to the interaction is expressed through active responsiveness to the other interactant. Involvement implies commitment to the communicative exchange. Displays of active involvement may be viewed as that which occurs when uncertainty is reduced through the sharing of experiences and thoughts to which the other can relate. Involvement requires knowledge of how to interpret the communication of the other and a willingness to display that understanding.

**Trait Interaction Involvement.** Trait interaction involvement is the extent to which an individual has a tendency to participate with another in conversation. The components of trait interaction involvement are **perceptiveness** (the extent to which one is aware of the meanings others assign to his or her own behavior and the meanings one ought to assign to the behavior of others), **responsiveness** (the extent to which one reacts mentally to his or her social environment and adapts by knowing what to say and when to say it) and **attentiveness** (the extent to which an individual is cognizant of stimuli in the immediate social environment) (Cegala et al, 1982a). Those high in trait interaction involved are thought to focus attention on both internal and external matters and exhibit
a focus of conscious intent on self, other and the unfolding situation (Cegala et al, 1982a).

**High Interaction Involvement.** Those high in interaction involvement typically integrate thoughts, feelings and experiences during an interaction. The high-involved person is attentive and responds to information in such a way that he or she is viewed by others as a competent communicator (Cegala et al, 1982a). The high-involved person looks alert and interested and is more animated in conversation when he or she is displaying involvement with another (suggested by research of Freedman, 1972).

**Low Interaction Involvement.** Those low in interaction involvement typically are withdrawn or psychologically distanced from the ongoing interaction and may exhibit depressed nonverbal activity. Low interaction involvement is indexed by a disruption in intersubjectivity in which affective responses play a major role. Affective responses influence the ability to engage in complex cognitive processing and nonverbal displays of arousal. The person who is low-involved processes information poorly during an interaction and experiences poor recall of details after the interaction (Cegala et al, 1982a).

In all probability, there are ranges on the verbal and nonverbal measures used to study interaction involvement,
within which a person can be perceived as interactionally involved with a partner.

**Understanding.** Understanding is produced when both interactants perceive the meaning of the communicative exchange: the meaning for the individual participant, the meaning in what the other has said and the meanings others have applied to one's own communicative behavior. Understanding is to assign meaning to the character, nature and subtleties of the interaction.

**Intersubjectivity.** Intersubjectivity is the means by which 2 or more subjects share experience in conversation. Two humans mutually recognize that they are the focus of the other's intentional consciousness. This mutual intentionality recognition (Cegala, 1982b) provides the foundation for interpersonal intersubjectivity. Breaks in intersubjectivity occur when a subject is more concerned about internal emotions than the on-going flow of conversation. While occasional breaks in involvement may be tolerated, particularly among friends, an overall decrease in intersubjectivity would be expected to be detrimental to the interpersonal communication relationship.
CHAPTER 1

REVIEW OF LITERATURE

Introduction

Interaction involvement is the extent to which an individual participates with another in conversation (Cegala, 1981). The individual who is involved in conversation integrates thoughts, feelings and behaviors over the course of an interaction and is viewed by others as a competent communicator (Goffman, 1967). The state of involvement is thought to reveal communicative behaviors which indicate investment in the interaction rather than detachment from the interaction. Development of theory supportive of interaction involvement has not, for the most part, included the concept that body movement could be an important indicator of the level of involvement in conversation. This may have occurred because until recently there was no unified coding scheme which would provide the basis for reliable measurement of the body as it moves over time and in space.

Pioneering work on body movement by Birdwhistell (1970), Scheflen (1965) and Kendon (1972) is often considered impressionistic because of the lack of use
of a reliable and reproducible data base (Siegman and Feldstein (1987). Much research in the nonverbal area was concentrated on restrictive coding of nonverbal behaviors which could be measured such as facial expression, forward body lean, vocal behavior and proxemics. This strategy, while it does allow homogeneity of the data, can be described as "data reduction by ignoring" (Hirsbrunner, Frey and Crawford (1987). Restrictive coding does not allow assessment of complexity of body movement in face-to-face interaction.

While it was recognized, following Kendon, that body movement contributed to the coordination and regulation of human interaction, there was, and still is, more of an interest in categorizing body movement into such generic codes as gestures, illustrators, and forearm sweep. Even less generically defined codes than these could not describe how these behaviors were performed nor the psychological implications of the different ways in which they were performed. If the generic code needed to be redefined, researchers would need to return to the original videotapes and recode them, based on the new definition.

A third method of, direct evaluation, required transformation of observations into psychological dimensions. Coders determined to what degree the nonverbal behaviors of subjects fell into categories such as friendly, nervous, extroverted or dominant. Thus, the
rating of a psychological state was the link between the independent variable and the observable behavior and it was difficult to tell from these impressions what nonverbal behaviors established the connection.

The time-series notation system developed by Frey and Pool (1976) makes it possible to overcome the low resolution of previous labeling systems. Their system allows a coder to record the changes in the positional state of the speaker's head, trunk, shoulders, upper arm, hands, legs, feet, and neck over time. The position of each of these parts of the body is assessed using two or more dimensions. For instance, the head position is coded in sagittal, rotational and lateral dimensions that correspond to up-down movement of the head, left-right rotation of the head, and left-right tilting of the head. At any second in time, the position of the body can be noted from "reading" the string of recorded data. Once the data matrix is completed, parameters must then be defined for systematic quantitative analysis. Parameters can be defined with reference to a single data string representing the behavioral variation in one coding dimension or can incorporate a great variety of behavioral features represented by several coding dimensions. The various data strings representing interactants' complex behavioral patterns are all connected by a common time code, providing
the possibility of large-scale, quantitative analysis of dyadic interaction (Hirsbrunner, Frey and Crawford, 1987).

The manner in which body movement has been studied in the past may have obscured organizing principles behind body movement and how it contributes to social interaction. Frey and Pool (1976) state that movement implies change of position over time and that we see movement as continuous and not related to a sequence at several different points in time. While this present research effort does not nearly tap the potential of this new system, past research by Fisch, Frey and Hirsbrunner (1983) indicates that it may be possible to contribute to interaction involvement research by investigating specific parameters derived from coding body movement with time-series notation. The parameters to be studied will measure the complexity of body movement, or the average number of dimensions active at each point in time; the activation and deactivation of each movement string; and mobility over the time decoded, including the mean time spent-in-motion of each movement period and the occurrence rate of movement. These parameters are thought to assess the contribution of body movement to involvement and responsiveness in interaction. The extreme ends of the continuum of these measures could be thought to represent dysfunctional involvement patterns, such as the high involvement of delusional paranoid schizophrenics or the
low involvement of depressives. Within this continuum, however, there is, in all probability, a range which should display states of high and low involvement of normal subjects.

This brief introduction has been given so that the concepts discussed regarding both body movement and the measurement system of time-series notation could be kept in mind during the review of literature. Prior to discussing the role of body movement in interaction involvement, it is important to discuss how interpersonal involvement relates to the process of interpersonal communication and review theoretical concepts and current research in interaction involvement.

How is Interpersonal Communication Possible?

In a discussion of the role of involvement in interpersonal communication, it seems important first to consider how communication between individuals occurs. Considerable ambiguity exists about how interpersonal communication is possible. Views which come out of the psychological tradition encourage a focus on individual behavior and the social environment following Lewin's (1951) field theory. The formula, \( b = PE \), or behavior is a function of personality \( X \) environment, covers the contingencies in social behavior. Considerable differences exist as to which is more important, personality or environment. How much influence one social
interactant has on another is left out, for although "E" represents the situated context, it seems somewhat static within each social setting and not encompassing the ongoing influence of the behavior of two interactants. Since interpersonal communication implies there are at least two individuals who interact in a physical and social environment and affect each other during the evolving course of an interaction, a somewhat different formula seems more likely to predict interpersonal communication outcomes. The formula suggested is \( O = \{(P_1 \times b_1) \times (P_2 \times b_2)\} \times E \), where \( P \) is the personality of one interactant and \( b \) is the actual communication behavior of that interactant, \( E \) is the social-situational context in which the communication takes place and \( O \) is the outcome of an interaction. While an even more complex formula may be needed to indicate the influence of one interactant's behavior on another, this formula suggests that although a person may have the personality traits to be involved, he or she may not display behaviors which indicate involvement in interaction with certain individuals or in certain social situations. Conversely, it may be possible for those who are not characteristically involved to display involved behaviors when interacting with a person who is responsive to their unique needs. Interpersonal communication is, thus, a processual phenomenon which unfolds as the interactants communicate and is not a static
phenomenon in which outcomes can be fully determined by knowing the personality type of the interactant. How persons act in response to one another may be an important determinant of communication outcomes.

**Intersubjectivity and Human Understanding**

Deetz (1982) suggests that the nature of intersubjectivity and human understanding are of utmost importance in describing interaction. Intersubjectivity is based on the intentionality of conscious through which the time and space of lived experience may be shared. The basis for shared meaning, however, is found in the recognition that we are the focus of another's consciousness at the same time as they are the focus of our own consciousness. Intersubjectivity is defined not as a characteristic of one speaker, but as that which is revealed through social interaction in interaction involvement and synchrony of interactants (Cegala, 1982b). Cegala emphasizes that intersubjectivity is "by definition a function of two or more persons interacting in some way". Two levels of intersubjectivity appear to be at work in interpersonal communication: the first level focuses on the establishment of the communicative relationship; the second functions to maintain the relationship.

These levels seem reflective of what Trevarthen (1980) labels the primary and secondary intersubjectivity of infants. His research indicates that reaching and
orienting behaviors of neonates and infants show that they possess an integrated motoric system and the ability to perceive objects separate from the body at the correct exterior location and to know their approximately correct form and displacement. Trevarthen states that subjectivity in infancy is the condition of being a coordinated subject, motivated to act in relation to the world separate from the infant's body. Although an infant lacks a differentiated self-image and referential content, the face-to-face manner of expression of an infant in play with the mother has human or personal characteristics. These expressive displays and their orientation are indicative of infant motives to get the attentions of a human partner, which Trevarthen calls primary intersubjectivity, as it involves psychological adaptation of both mother and infant.

Both subjectivity and intersubjectivity are generated by motives or mental structures which underlie perception and action, according to Trevarthen. The motives underlying subjectivity are those which are appropriate for dealing with objects; the motives of intersubjectivity are appropriate to interaction with other people. Thus, it would seem important that human qualities which indicate presence and involvement could be important to the establishment of intersubjectivity and a communication environment.
Secondary intersubjectivity is possible, according to Trevarthen, when an infant comprehends the action of another as a sign to himself or recognizes simple signs or conventions between interactants. The psychological origins of language development are seen in the coordination of the acts of the infant with the interests of others and within the context of a situation. Trevarthen states, "Transmission of rules of conduct, of techniques of praxis, of meanings established in language and of manners in interpersonal expression all require reciprocal awareness of intentions between persons that accept one another's agency in a common field of experience and action" (p. 332). As language develops, the object, the situation, the motives and the example of other persons are recognized more easily. The child gives objects to other people because he or she recognizes that the person may do something with the object, whereas previously this type of cooperative interest was not seen. Therefore, objects are not just recognized for their perceptual and manipulative possibilities, but as entities of which others are aware also. Shared intentions provide the opportunity to jointly create "acts of meaning".

Language develops not only because an infant is developmentally ready to produce it, but because motivation to share conscious experience exists. These ideas about the development of language coincide with the
the theory of intersubjectivity proposed by Habermas (1970). Habermas suggests that it is intersubjectivity which makes mutual understanding possible. Following Habermas, intersubjectivity is generated and described in the minds of language users by "dialogue constituent universals". The interlacing of perspectives is enabled by universals found in personal pronouns such as I, you, his, her and we which allow understanding of meaning of a person's own and other's viewpoints and of the meaning for both interactants of communicative events. Articles and demonstrative pronouns are deitic expressions which are also dialogue constitutive universals. They specify time and space and link levels of intersubjectivity on which interactants converse and interact reciprocally.

The role of intersubjectivity and cooperative understanding in interpersonal communication can be contrasted to a current research findings in the field of aging. Dolph and Lopez (1988) taped conversations of nurse aides with nursing home residents over two, eight-hour shifts. They found that while an aide might spend 15 minutes grooming or bathing a resident, they might not initiate conversation beyond simple instructions such as "Turn over...sit up". When two aides worked in a room together they would talk to each other rather than the resident. Aides talked more to residents who were talkative and less to withdrawn or dysfunctional
residents. When residents used the names of aides, the conversations with aides were livelier, with residents assuming a more active and assertive role in introducing topics. When aides spoke to male residents, they did not use as many affectionate names as they did with women residents, preferring to use only the male resident's last name, if they did use a name. These findings seem to suggest that intersubjectivity was disrupted and that there was little cooperative understanding in interactions with withdrawn and unresponsive residents. Aides seem to be acting at more object-oriented levels in instances where residents were treated more like objects than persons who have a history and something interesting to impart. While it is easy to be critical of aides, they may not have seen conversation as a part of their duties. When one understands the cooperative nature of interpersonal communication, the difficulties of therapeutic interaction with an unresponsive other become more salient. While the nurse aide may feel that his or her job is only to take care of physical needs, it is interesting to note that when the resident is attentive to the aide as a person by using his or her name, the aide and the resident participate in more active conversation. The use of the name of the aide by the resident may also indicate to the aide that the resident is capable of functioning and wants conversation.
Dolph and Lopez provide suggestions of their student raters as to what might be "characteristics of therapeutic aides". Behaviors suggested by raters as those which would help to produce a more "conversationally therapeutic aide" are:

"The aide introduces topics from the personal history of the resident. The aide provokes resident initiative. The aide invites elaboration of the resident's part by repetition and queries. The aide discloses personal information. The aide invites and waits patiently for substantive resident statements. The aide is not too business-like or task-oriented. The aide stays on the same topic and does not abruptly switch topics" (p. 4).

While these suggestions are interesting, they overlook the fact that communication is intersubjective and that it may be very difficult for aides to achieve therapeutic communication on their own. Aides, as well as others, may have difficulty in overcoming the effect of a person who does not appear to be able to actively participate.

**Understanding in the Context of Interaction**

Understanding in the context of interpersonal communication is also not a singular concept where one interactant understands or does not understand the other. Deetz (1982) states that the interest in understanding in interpersonal communication is related to the development and unfolding of meaning which is not yet available to either interactant. Using this perspective, one concludes that no real interaction has taken place unless shared meaning is developed. In the hermeneutic tradition, this
meaning is much richer than simple motives, intents and personal histories of the interactants. Deetz is interested in a research tradition which traces the "interconnected, experiential possibilities gathered as the linguistic tradition is expressed" (p. 9). The multiple levels of meaning are reflected in content, perspectival, relational and affective dimensions of communication. Much research has overlooked the potential for shared meaning and instead focuses on the understanding of individual participants.

Cegala (1982b) states that the intentionality of consciousness and the recognition that we as humans are by nature intentional beings, forms a basis for interpersonal communication and shared meaning. Recognition that we are the focus of the consciousness of another takes communication out of the realm of simple observation of another person. "Mutual intentionality recognition allows for the possibility of sharing the lived experience of time and space" (p. 84).

**Maintenance of Interpersonal Communication**

While mutual intentionality recognition is a necessary condition for interpersonal communication, Cegala (1982b) is interested in how we maintain a sharing of consciousness through verbal and nonverbal language. Maintenance of communication is threatened by breaks in intersubjectivity where the meanings of self, other and the ongoing situation
cease to be the dominant foci of consciousness. Cegala suggests that interaction involvement is a second, necessary condition for the experience of interpersonal communication, the first being mutual intentionality recognition. Interaction involvement implies that individuals are partaking of the social environment around them. Involvement in interaction requires attentiveness to environmental cues and the behavior of other interactants, perceptiveness about the meaning of the immediate social environment and production of responsive verbal and nonverbal behaviors.

Theoretical Basis for Interaction Involvement

Engagement-Involvement: A Transactional Phenomenon

The fields of psychiatry and communication provide a theoretical grounding for interaction involvement. Singer (1974) defines the state of engagement-involvement as a transactional phenomenon that suggests a person "is locking into, actually investing in transaction, in its internal and external aspects" (p. 9). The integral components of engagement-involvement are alertness, activation, affect and changes in responsiveness. Singer states that there are short term changes in engagement-involvement levels which are shown in outward behavior with other persons, events and surroundings and in the level of responsiveness to inner states, memories and ideas. "Background levels of being" describe the person most of the time, while the
person falls above or below their average levels in states of engagement-involvement. Singer states that the rating of engagement-involvement requires notation of the extent or lack of newly turned on, invested and anticipatory alertness as the person engages inwardly with his inner thoughts or outwardly with a communication partner or events.

Several ideas of Singer about engagement-involvement are noteworthy to this discussion. First, she identifies that engagement is not simply outward towards the external world, but includes engagement with personal memories of events and ideas. Although Singer is interested in the psychiatric patient, her ideas have implications for communicative involvement in general. An interactant may trigger thoughts about past events in another interactant, but if this interactant is not engaged with these memories or invested in the conversation enough to share these memories, he or she will not display engagement-involvement to their partner. Kendon (1987) reinforces this idea when he discusses the display of gestures while a person remembers and relates an event. Gestures support both the recreation of the event for another and the personal investment in retelling a story as it occurred. Thus, it is not simply the outer world which determines the strength of response. Instead, there is an interweaving of internal
and external events which initiate responses, along with
the person's own tendencies to be involved.

Second, Singer reminds the reader that most people
informally note changes in their own levels of
engagement-involvement. We detect our own investment when
we return to "our regular level of being". By using the
term investment, Singer indicates that there is a
physiological cost to being engaged-involved. Thus, overly
engaged-involved individuals might be more likely to be
Type A individuals or certain other personality types.
She also notes that engagement-involvement can be
pleasureable or associated with worry or anxiety. Third,
Singer supports the idea that rating of the concept allows
a researcher to focus on current changes in behavior rather
than on habitual features of behavior, which are ingrained
and automatic. Thus, she thinks that "transactional
involvement with other people, rather than the sheer
content of what people talk about in interview" (p. 6) to
be the relevant variable to correlate with physiological
behavioral studies in psychiatry. Content may contribute
to facilitation or hinderance of transactional involvement,
but it is the actual involvement displayed in a "stylistic"
manner which should be assessed, according to Singer.

Singer also contributes a description of the person
who, because of personality traits and character traits,
gives minor indications of being engaged-involved. These
persons, whose traits are patterned in ways that allow them to remain chronically insulated, "seem especially underresponsive to taking up and responding in transactions in adequately committed ways to the intentions or implicit expectations of others" (p. 11). Content which might be expected to show emotion is expressed in very matter of fact ways. Singer explains that both the under and over talkative individual can be minimally involved. Impersonal citing of details may lead the dyadic partner to feel that he or she has to drag each statement out of the low-involved person. Singer associates this behavior with low cost to the individual who displays it.

The Interaction Involvement Concept in Communication

The idea that involvement is a central dimension in communication is supported by Bell (1987). He discusses social involvement as a trait and identifies the high-involved communicator as talkative, animated in gesture and expression, attentive, and responsive. Those who are typically passive in encounters are thought to give little feedback to the comments of others, make few conversational contributions of their own, communicate unemotionally and remain relatively still. Bell reviews extensive research and concludes that involvement implies a dimension of intensity rather than superficiality in conversation. The initial focus of Bell is on the dispositional nature of individuals, but he also discusses the theoretical basis
for mutual influence, which will be discussed in this paper at a later point.

**Trait Interaction Involvement**

To date, Cegala (1981, Cegala et al., 1982a, 1984) provides the most comprehensive treatment of interaction involvement. He operationalizes the concept as an individual difference or trait of communication competence. While there is evidence that involvement functions as a state concept as well as a trait concept, both approaches are probably necessary to any investigation of involvement. Cegala (1981) follows Goffman (1963, 1967) in that competence is defined as effective face-work. Interaction involvement is "the extent to which an individual partakes with another in a social environment (p. 112). The involved communicator typically integrates thoughts feelings and behaviors within the ongoing interaction. High trait involved communicators are thought to direct their consciousness "toward the evolving reality of the self, other and the topic of conversation" (Cegala et al., 1982a, p. 229). Individuals low in trait interaction involvement appear "preoccupied with other thoughts or goals, distracted, uncertain, and/or withdrawn from the immediate social context" (p. 229). Low-involved individuals appear to be less competent in conversations because they appear to be psychologically and communicatively removed from the situation.
In order to measure trait interaction involvement, Cegala developed a self-report measure, the Interaction Involvement Scale (IIS). The IIS is composed of 18 items which were constructed to be consistent with Goffman's (1976) discussion of attentiveness and perceptiveness (question examples: "My mind wanders during conversations and I often miss parts of what is going on. I am very observant during my conversations with others." (Cegala et al, 1982a, p. 232) Respondents to the IIS report the extent to which each item is an accurate self-description on a seven point scale. Initially, factor analysis of the responses of 700 subjects to the IIS resulted in three factors: perceptiveness, other-oriented perceptiveness and attentiveness. In 1982, Cegala et al analyzed the factor structure of the IIS with the responses of 1000 additional individuals. A three factor solution again was found but a new factor, responsiveness, emerged. Responsiveness is defined as "the tendency to react mentally to one's social circumstances and adapt by knowing what to say and when to say it" (1982a, p. 233). The second factor is labeled perceptiveness and includes both other-oriented perceptiveness items (those that assess an individual's knowledge of what meanings to assign to another's behavior) and self-oriented perceptiveness (those that assess the extent to which one is knowledgeable of the meanings that others assign to one's own behavior). The third factor is
attentiveness or the items which assess the extent to which an individual is cognizant of stimuli that comprise the immediate environment (Cegala et al, 1982a). Responsiveness is thought to have cognitive and behavioral components, while perceptiveness and attentiveness are thought to be cognitive constructs. Responsiveness is thought to be the most significant factor in determining overt communication behavior in the form of verbal face-saving strategies (1982a).

Initially, interaction involvement was found to be related significantly to high self-esteem, assertiveness, and even temperament. Subsequently, the relationship of personality characteristics to the three components of the IIS was examined by Cegala et al (1982a). Attentiveness was inversely related to neuroticism and impulsiveness, except that in females the relationship with impulsiveness fell just short of significance. Responsiveness correlated negatively with neuroticism and social anxiety and positively with sociability for both sexes. A negative correlation existed between responsiveness and communication apprehension in interpersonal contexts but not public speaking. An apparent sex difference in private and public self-consciousness between males and females was revealed by the data. Males' perceptiveness correlated significantly with private self-consciousness but not public self-consciousness. The opposite result was true
for females. Males' perceptiveness was also significantly negatively correlated to communication apprehension in all contexts: dyadic, group, and public speaking.

Cegala et al (1982a) also correlated all three IIS factors with the dimensions the Wiemann (1977) scale of communication competence to assess how involvement related to other aspects of communicative competence. This scale measures: behavioral flexibility, interaction management, affiliation/support, empathy and social relaxation. Cegala proposed that interaction involvement is fundamentally important to all five dimensions of communication competence. Cegala et al found that while all three IIS factors correlate positively to the competence dimensions, only perceptiveness is significantly related to all five competence dimensions and that the average correlation of perceptiveness is higher than the average correlations involving responsiveness and attentiveness.

Overall, the data on personality and competence correlates to interaction involvement tends to support the concurrent validity of the IIS. The correlations of the IIS factors with personality traits and communication competence components suggests male and female differences, especially in the area of perceptiveness. These differences may mean that males and females will also express interaction involvement differently in a communication setting.
Other studies with the interaction involvement concept indicate that highly involved individuals are more effective in eliciting sensitive information from a dyadic partner (Cegala, 1981). Cegala states this occurs because high-involved subjects are more effective in managing the flow of conversation. Low-involved subjects do not seem able to use effective techniques to gain information as they are more likely to use inappropriate, explicit and abrupt requests for sensitive information. Responsiveness emerged as a significant predictor in the discriminant equation and therefore is strongly associated with communication competence in this context. This finding is supported by the research of Davis and Perkowitz (1979) on responsiveness. A study of Redmon, Eifert and Gordon reported by Cegala (1984) used a similar design in an interview situation to obtain information about dating preferences. The confederate interviewee was trained to be evasive. The high-involved interviewer was more effective in managing topics and questions to gain the needed information than the low-involved interviewer. The finding of Cegala (1984), in a separate study, that those high in interaction involvement use more effective negotiation techniques than low-involved interactants supports the idea that high-involved individuals will be more effective in attaining conversational goals.
Somewhat conflicting findings have been reported in regard to perceptions of competence in interaction involvement. Brunner (1984) indicated that there were no significant interaction involvement effects between self-perceived competence (measured before the interaction) partner-evaluated competence (measured after the interaction) and observer-evaluated competence of high and low-involved interactants. Street and Wiemann (1986) found, however, in a study of the perceptions of patients and their physicians, that a patient's perception that a physician is involved may be more important than doctor warmth and friendliness to satisfaction with medical care.

More recently, Cegala (1984) has suggested that affect may be important to the concept of involvement. The finding that low-involved subjects have low self-esteem and are more anxious than high-involved subjects supports the contention of Cegala that negative affect or mood may be an important factor in the disruption of intersubjectivity of the low-involved individual. In studies of high and low-involved subjects in a conversation with a stranger and in a negotiation situation, Cegala (1984) investigated mood state, ego strength, and recall of information, a cognitive dimension of the interaction involvement concept. Cegala found that high-involved interactants experienced greater ego strength and positive affect, less negative affect and recalled more multi-fact thought units than low-involved
participants in the conversation with a stranger. In the negotiation situation, high-involved subjects had greater ego strength and positive affect, but the prediction that they would also remember more multi-fact units fell short of significance. Post-hoc tests indicated that low-involved subjects experienced greater anger and self-anger and were more tired than high-involved participants. It is difficult to say whether this means that low-involved participants experience frustration at not being able to express themselves or that high-involved participants, by virtue of their involvement, are able manage the conversation in such a way that they feel little frustration and experience more pleasure and enjoyment in conversation, even in a negotiation situation. While the definition of low-involvement includes the idea that these interactants are distracted from the ongoing conversation, it is possible that some who are low-involved do know what is going on, but have an expressive deficit. In this case, lows might be more able to recall thought units in an interaction with a communicative partner who is able to be expressive.

Cegala suggests that overall findings indicate a weaker association for cognitive variables than affective variables with interaction involvement. He also suggests that gender may somehow confound the relationship between interaction involvement and recall of fact units, because
females recalled significantly more multi-fact units than did males. Cegala himself questions whether frequency counts of recall of information units and facts are significant to conversation/negotiation. Intuitively, it would seem that if an individual were actively involved in the conversation, he or she would be able to remember more multi-fact units. If females were actually more state-involved in these conversations than males, as some of the data from this sample suggest, then it is possible that females' investment in the interaction helped them to remember more details. An additional finding, that the mixed-dyad condition resulted in more recall than the unmixed condition is difficult to explain and awaits more research on the interactional properties of involvement and cognitive variables. If, on the other hand, trait low-involved individuals do have more of an expressive deficit than a distraction-related deficit, then this might account for results in the mixed dyad.

Some difference of opinion exists as to whether the communication behavior of low-involved interactants is caused by a lack of understanding of the communication of another or by a deficit in the capacity to make responses. This deficit might have more to do with motivation to communicate than with any lack of understanding of the other interactant. Nonreactive interactants may understand the message, but their reaction to it may be subdued or
nonexistent. Christensen (1980) found that low-competence subjects observe and understand messages as well as high-competence subjects, but do not respond to the messages. While reasons for low-involved behavior may be as simple as physical disability, several explanations are suggested in the literature. Cegala suggests that characteristically low-involved individuals are preoccupied with other thoughts and goals and that their withdrawal and distancing causes their interactional behavior.

The literature on depression also suggests reasons for this interactive behavior. While depressives are not the same as those who are trait low-involved, the perception of the communicative behavior of depressives and the low-involved may indicate that the difference between their behaviors and the response to them is a matter of degree rather than being entirely different. Seligman (1972) developed the theory of "learned helplessness" to explain the behavior of depressed individuals. The depressed individual believes or expects that his or her behavior and its outcome are independent events, suggesting that in communication, depressed persons would not believe that another's behavior could be contingent upon their own. Research by Klein, Fencil-Morse, and Seligman (1976), since the development of the theory of "learned helplessness", suggests that the personal attribution of incompetence is
more important to the behavior of depressives than learned helplessness. They found that if a depressive feels that the task is difficult, performance is better than it is when the assumption is that he or she is personally incompetent.

Others have studied depressive behavior and have found that a depressed person may contribute to the existence of a depressive atmosphere in the communicative setting. Lewinsohn (1974) suggests that a lack of social skill is a major antecedent condition for the maintenance and possibly the genesis of depressive behavior. Prkachin et al. (1977) also did not find that a limited repertoire of observation underlies depressive behavior. Prkachin et al suggest that depressives use of ambiguous and nonresponsive interpersonal behaviors leads to a failure to acquire positive reinforcement in interpersonal situations, thus resulting in aversive social consequences. Klerman (1974) concurs in suggesting that the interpersonal style of depressives cues avoidance on the part of others.

These findings point to the fact that one cannot consider the behavior of one communicator in isolation and that mutual influence is important, even if one interactant is not particularly responsive or involved. Research in the area of depression helps to confirm that there may be several reasons for unexpressive communicative behaviors, some of which may be private, inner events or
monologue-like communication which preclude communication with another. Some reasons for unexpressive behavior may also relate to the communicative behavior induced by others.

Linguistic Variables and Interaction Involvement

Verbal immediacy and conversational coherence have been studied in relationship to interaction involvement (Cegala and Addlesperger, 1987 and Villaume and Cegala, 1988). Since both studies used the same population which will be used in the present research, it seems valuable to examine these findings.

Verbal immediacy is a concept developed by Wiener and Mehrabian (1968) to study word usage and behavior in negative affective states. Wiener and Mehrabian suggest that verbal non-immediacy is indicated by language usage which indicates separation or non-identity between the communicator, the addressee, the object of communication or the communication itself. Their coding scheme gives three categories: spatio-temporal: these people need help versus those people need help; denotative specificity: I smoke because I enjoy it versus one smokes because one enjoys it, or you (meaning I) smoke because you enjoy it; agent-action-object: I will go versus I must go, I ate the food vs. the food was eaten by me (Cegala and Addlesperger, 1987). In each case the first example is considered to be more immediate than the second. While examples such as
these may indicate a generalized distancing between interaction partners, they could also be indicative of distancing between specific topics and a subject. Wiener and Mehrabian indicate that verbal immediacy indicates the implied relationship between the communicator and the topic of communication. Sometimes the verbal immediacy concept seems somewhat tenuous. For example, if the book you are (or one is!) talking about is at home and you are conversing in a studio, it might seem logical to say that book is quite good, rather than this book is quite good.

Cegala and Addlesperger suggest that verbal immediacy has two theoretical connections to interaction involvement. The first is that low involvement implies a distancing and withdrawal from the topic of conversation and one's interlocutor and that involvement implies immediacy or "closeness". The second is that verbal immediacy is thought to reflect the direction and degree of affect of a speaker in conversation. Thus, high interaction involvement, which is negatively correlated with affective dimensions of communication apprehension, neuroticism, and social anxiety and positively correlated with positive mood states during conversation, should be associated with verbal immediacy, according to Cegala and Addlesperger.

In their study of 60 same-sex dyads, 20 unmixed high, 20 unmixed low, and 20 mixed high and low dyads, Cegala and
Addlesperger found that low-involved communicators demonstrated greater use of verbal non-immediacy per 100 words than did high-involved communicators. (Traditionally, the use of verbal non-immediacy is per number of thought-units, but since low-involved speakers used more, and shorter thought-units than high-involved speakers, and did not differ on the number of words spoken, verbal immediacy usage per 100 words was used as the unit of analysis.) Cegala and Addlesperger's findings suggest that in the H/L mixed-dyad, something more than a simple additive effect occurred, because the H/L dyad had more immediate word usage than did the H/H dyad, although the difference was slight. Lows in the L/L unmixed dyads used less immediate language than the lows in the H/L mixed dyads. "These results suggest that the presence of a high-involved speaker may stimulate more immediacy in their low-involved partners" (p. 16).

Villaume and Cegala (1988) studied the use of verbal conversational coherence and interaction involvement. They examined the use of grammatical cohesive devices to create explicit ties within conversation. Coherence in conversation is said to exist when there is internal consistency in conceptual relations in a text and there is external consistency with common knowledge of the world. Cohesion occurs in conversation "when one surface element in a text is dependent upon another surface element for its
interpretation" (p. 23). When a cohesive device is used in conversation, its use signals some prior portion of the conversation should be used to interpret some portion of the present conversation. Examples of cohesive devices given by Villaume and Cegala are: reference devices including pronoun forms, the definite article, demonstratives, and comparative forms; substitution devices employing a counter or marker word (such as ones or do so) instead of repeating a word, phrase, or clause; and ellipsis where there is no marker used at all. The explicit absence of needed syntactic structure signals that a word, phrase, or clause is to be repeated. Villaume and Cegala were also concerned with the interactional direction of cohesive devices and list three possible interaction directions:

1. "An interactive direction indicates that a cohesive device has its presupposed source in a prior (or subsequent) T-unit of the interlocutor.

2. A noninteractive-between direction indicates that a cohesive device has its presupposed source in a prior (or subsequent) T-unit of the same speaker.

3. A noninteractive-within direction indicates that a cohesive device has its presupposed source in the same T-unit in which the cohesive device is located." (p. 25)
Villaume and Cegala found that low-involved subjects employed more interactive ellipsis, used lower syntactic complexity and less mean utterance complexity than did the high-involved subjects. They discovered that the dyadic effect was strongest in the H/L dyad, in that there was no significant difference between the highs and lows in the H/L dyad. Furthermore, while there was no difference between the highs in the H/H and H/L dyads, the lows in the H/L dyad were significantly different from the lows in the L/L dyad. Lows in the H/L dyad used less interactive ellipsis, more noninteractive within reference, greater syntactic complexity and fewer utterances than the lows in the L/L dyad. Thus, low-involved subjects used a more elaborated verbal style when talking to a high-involved subject, which suggests accommodation of the low-involved rather than the opposite. Villaume and Cegala suggest that this finding might be due to speech accommodation, impression management and the need for social approval and different levels of certainty/uncertainty. They also theorize that the patterned use of cohesive devices may reflect differences between the use of a text-based strategy and a meaning-based discourse strategy. When a speaker has difficulty in interpreting the conversation, he or she can choose more reliance on the surface form of the text through the use of ellipsis, rather than responding to the "semantic import and pragmatic thrust of the
Perhaps, as they suggest, a text-based strategy is a compensation for difficulties in understanding and tracking the flow of conversation. In the mixed-dyad condition, it may be possible to suggest, based on this study, that the high-involved communicator is less difficult for the low-involved interactant to interpret.

Cognition and State Interaction Involvement

Cegala, Waldron, Ludlum, McCabe, Yost and Teboul (1988) studied the role of cognition in communication through a simulated recall procedure. Thoughts and feelings expressed in recall after conversation were related to a self-report measure of state interaction involvement administered after the conversation. The state interaction involvement scale is similar in concept to the trait measure developed by Cegala, but the questions are worded to reflect the state concept. High state-involved interactants had more conversation relevant thoughts and feelings of a positive nature about the conversation itself and the ability to maintain and direct it than did low state-involved interactants. High-involved subjects also gave a more positive assessment of the relational state of the dyad than did low-involved subjects. These findings support the idea that high-involved subjects are more cognitively and affectively engaged in the conversation. Low-involved subjects were preoccupied with thoughts and
feelings which were not related to the conversation and expressed detachment from the conversational context. These findings support Cegala's theoretical concept of low-interaction involvement in that lows are thought to be more preoccupied in conversation with the self and distracted from the ongoing conversation. Another suggestion which might be considered is what caused the distraction of the low-involved subject. The thoughts and feelings expressed by low-involved subjects suggest distraction, but it could be asked if distraction caused the low-involvement or lack of interest or anxiety in establishing rapport caused distractive thinking to occur.

The results of this study of the cognitive aspects of state interaction involvement more closely parallel the idea that state interaction involvement reflects the degree of presence in an interaction. The detachment of the lows is reflected by the low level of conversationally relevant thoughts. Cegala et al (1988) question whether lows intentionally avoid conversation relevant thoughts or whether they do so by habit. This question is at yet unresolved, but it seems possible to suggest many different reasons for low state interaction involvement: distraction by other cognitive and affective tasks, communication anxiety, disinterest in the conversation, depressed affect and disinterest in establishing rapport. A second question which cannot be answered at this time, but is of interest
in this study, is whether or not high-involved subjects contribute to the low-involved subjects continued detachment over the course of the interaction. High-involved subjects seem more certain and indicate a more positive attitude about the self, and it seems likely that they might change their conversational strategy if they were to interact with a low-involved subject. The high-involved participant might try to control responses of the low-involved participant and, thus, put more pressure on the low-involved to be verbally involved. Cegala et al (1988) suggest that future research examine the relationship between actual messages and thoughts and feelings generated after the interaction. This type of study might provide answers to the questions above, particularly when random assignment results in pairing high and low state-interaction involvement subjects.

Conversational Style and Interaction Involvement

Cegala et al (1988) note that friends appear more tolerant of "occasional misinvolvement", indicating that topics of talk between friends may be more familiar and allow for some non-conversationally relevant items whereas strangers would not be as tolerant of misinvolvement. Tannen (1986) also takes a linguistic perspective toward involvement in the analysis of talk among friends. She suggests that individual stylistic choices are not random, but constrained by overriding stylistic strategies that are
"conventionalized ways of serving identifiable universal human needs" (p. 11). Following Lakoff, she suggests that involvement is related to rules of politeness or rules of rapport: distance (don't impose), give options (deference) and be friendly (camaraderie). Following these rules in interaction results in a communicative strategy. Habitual use of linguistic devices motivated by these overall strategies results in conversational style. A characteristic style is modified or shifted in response to the situation, the people participating and the subject at hand.

Following Durkheim and Goffman in discussing deference as a rule of rapport, Tannen suggests that forms of deference can be both presentational and seeking involvement or negative and seeking avoidance or distance. These concepts are not bipolar opposites, but rather exist on a continuum with a "negative face" being the flip side of a "positive face". Tannen suggests that indirectness in conversation is the strategy of choice in those in a position of powerlessness because indirectness is the only way a subordinate can manipulate a relationship without redefining the relationship. Redefining a relationship would result in increasing the power of the manipulator and might decrease rapport. Thus, there can be a payoff inherent in an indirect conversational style.
Tannen states that discourse features which can be grouped under headings of integration vs fragmentation and detachment vs involvement grow out of and contribute to interpersonal involvement. These features are complexity of syntactic structure, discourse organization, degree of elaboration or ellipsis of necessary background information. She emphasizes that a focus on complex syntactical structures to lexicalize cohesive relationships or a focus on content or text conspires to ignore interpersonal involvement and is a way to honor needs to avoid the negative effects of involvement.

Tannen suggests that not all people value rapport. She notes that initially she had an instinctive feeling that talk and its value in establishing rapport had a positive value. Since involvement may help to establish rapport and closeness, involvement also may have a negative value for some interactants. "What we have then, is a paradoxical situation regarding the need for and dangers of interpersonal involvement, such that it entails both positive and negative values that are balanced, honored, and valued differently in different linguistic and cultural systems" (p.19). Communication must serve these conflicting needs according to the constraints made evident in a speaker's communicative style, according to Tannen. While one interactant may value rapport and seek to establish it, the other may not. The direction of
influence may depend on a variety of situational differences such as strangers vs friends, degree of commitment to the other or to the topic and the communication agenda.

Tannen notes in a quote from an Alaskan woman that it is important for people who are close to seek out "neat things" about each other to prevent hostility from developing. This writer questions whether "neat things" would be sought out by low-involved interactants, because that would seem to imply involvement or presence in the interaction. In addition, "neat things" offered by a high-involved interactant may be ignored by a low-involved interactant because they may be afraid of closeness implied by a response. Thus, while it does not seem that closeness and involvement are exactly the same thing as some research suggests, involvement may provide a basis for closeness. It seems important to note that both involvement and closeness imply costs to interactants. Involvement expended could imply physiological costs and closeness relational costs. While one interactant may value rapport and seek to establish it, the other may not. The direction of influence may depend on a variety of situational differences such as strangers vs friends, degree of commitment to the other or to the topic and the communication agenda.
Responsiveness and Interaction

Davis (1982) and Davis and Perkowitz (1979) have focused on the maintenance of the interaction in their research on responsiveness. Although Davis does not specifically discuss the term interaction involvement as dependent upon levels of responsiveness, she does focus on the aspect of competence in communication. Davis has explored responsiveness as an interaction process variable as both independent and dependent variables.

Responsiveness is defined in terms of three sequential response contingencies: "(1) the probability with which each person responds to the communicative behaviors of the other, (2) response relevance (i.e., the degree to which each response is perceived by the listener to directly address the content of his/her preceding communication), and (3) appropriateness of response elaboration" (Davis and Holtgraves, 1983, p. 2). Each of these contingencies make clear that studying the verbal communication of one person will not identify whether or not that person has been responsive. What the other person has said and how it has been said are necessary to determine the appropriateness and relevance of a response. For instance, Davis states that new topics can be introduced only after a related response, no matter how brief, is given to the communication of the other. Davis states that mutual responsiveness serves several functions which all have
implications for attraction and maintenance of the interaction. Virtually all interactions have occasional failures to respond, but repeated failure may lead to cessation of the interaction. In responsive conversation there is a certain amount of predictability and control, without which conversation could be stressful. Responsiveness allows feelings of control because we feel we can cause another to respond and that we can predict and determine general topic areas. Davis claims that responsiveness between interactants also reflects the relationship between them. In the case where one or both of the interactants are unresponsive, Davis states that one could say that no real interaction has taken place or relationship developed. Unresponsiveness communicates lack of interest in the other person and in what he or she has to say.

Responsiveness and Nonverbal Communication

Davis and Perkowitz (1979) have also expressed interest in responsiveness in nonverbal interaction, although their own research has been primarily in the area of verbal communication. Their comments on the research of Latane and colleagues on responsiveness and social attraction between rodents first alerted this writer to the possibility that arousal expressed through rates of movement might be important indicators of involvement to a human dyadic partner. Latane and Hothersall (1972) and
Werner and Latane (1974) demonstrated that static qualities of animals, (i.e., color, texture, smell) do not affect attraction in animals, but that attraction is strongly influenced by factors affecting the capacity for movement and response. Rats, for example, are relatively unattracted to caged, stuffed, or anesthetized rats and to unresponsive objects like tennis balls or warm water bottles. They are, however, quite attracted to a responsive human hand. When rats are injected with adrenaline or caffeine, attraction by other rats is enhanced. Conversely, when rats are made sluggish by injection of chlorpromazine or alcohol, attraction is diminished. These findings seem to be consistent with the idea that the probability of a response is important to the maintenance of interaction.

The finding that rodents are response to a moving hand but not to a "sleepy" rodent may seem far removed from human communication. This finding does, however, plant the idea that perhaps nonverbal movement has certain organizing principles which are perceived by interactants as alertness, focus of attention and animation which contribute to responsiveness and involvement.

**Models of Arousal and Links to Involvement**

Nonverbal arousal often has been equated with involvement in communication research and, therefore, there are indications that nonverbal measures may provide
a basis for studying involvement behavior. There are several theoretical models which have helped to explicate the form of theory and research in nonverbal exchange. Much of the early research focused on single channels of nonverbal communication, such as distance, gaze, touch, or smiling, or on the relationship of these behaviors to individual differences. This early research did not tell much about the dynamics of nonverbal exchange, according to Patterson (1984).

Research in social involvement as a feature of nonverbal exchange has focused on how involved people communicate and the responses to involvement. Cappella (1982) postulates that mutual influence takes two forms: reciprocity or matching and compensation or increasing or decreasing certain communication behaviors in response to another. When an increase of involvement is matched by an increase this would be a reciprocal response, whereas responses to decreases or increases in involvement responded to in the opposite direction would be compensating responses. Cappella proposes that approach is signified by increased in involvement, whereas avoidance is signified by decreases.

Several general theories of involvement have been developed. The majority of these models have assumed that involvement can be equated with intimacy. While it would seem that optimal levels of involvement might lead to
intimacy, this writer is more concerned with problems which might occur when optimal levels of involvement are not present in one or more interactants. Thus, involvement is viewed more as the grounds for the possibility of intimacy rather than viewing involvement itself as intimacy. One can be in a state of involvement and yet not be intimate with one's conversational partner. A somewhat oblique example of this is where a person is involved in driving a car and is attending more to traffic than to the person who sits next to them. The opposite case is seen in the situation where a daughter who visits after a long absence states that her mother is a terrible driver when she is in the car because she notes no turn signals applied when the mother changes lanes or turns left. The mother in this case is more involved with the daughter in conversation than with the driving conditions which require involvement with other drivers. One could say her intimacy with her daughter is greater than her intimacy with the drivers on the road, but it would seem to make more sense to talk about involvement with drivers or daughter is the more direct way to describe the situation. How close or intimate is one to other drivers? We can, however, be involved with other drivers, particularly when we need to attend to functions of driving which send messages to other drivers, signaling our intentions.
Involvement seems to function at a more basic level than intimacy - presence vs absence which may lead to perceptions of approach vs avoidance - which have implications for intimacy. When involvement and intimacy are used interchangeably, it may confound the study of basic interactional issues. Immediacy also seems to be a concept where involvement and intimacy have been intertwined. This intertwining may make it difficult to say whether immediacy implies involvement or intimacy or both.

Argyle and Dean's (1965) equilibrium theory of intimacy has been heuristic in the study of nonverbal interaction. They posit that the equilibrium levels of intimacy fluctuate over the course of an interaction because the levels of intimacy displayed are dependent on various individual, situational, and relational factors. Motivation to change the level of intimacy is based on rewards and costs. Affiliative behaviors are found in different levels of eye contact, physical proximity, topic intimacy, and smiling. Argyle and Dean state that there are optimal levels of intimacy in interaction and if intimacy rises or falls below this level of equilibrium, anxiety or arousal will occur. Too much intimacy or approach is associated with anxiety and too much avoidance makes affiliation needs difficult to satisfy. Thus, if one interactant increases or decreases intimacy, the model
predicts that the other interactant will restore equilibrium by a compensatory response.

According to Bell (1987), the equilibrium model is inadequate to explain matching responses and cannot explain individual differences that affect compensatory responses. Cappella and Greene (1982) suggest that equilibrium theory is not applicable to activity-related or involvement behaviors and that approach and avoidance forces have failed to provide a priori predictions. Patterson's (1983) and Cappella's (1982) work on nonverbal involvement tends to indicate that there is not an inherent connection between involvement behaviors and intimacy. A list of involvement behaviors has been generated by these researchers: interpersonal distance, gaze, touch, body orientation, facial expressiveness, speech duration, postural openness, interruptions, relational gestures, head nods, and various paralinguistic cues such as intonation, speech rate, and volume (Patterson); and talkativeness, self-disclosure, topic intimacy, speech latency, and laughing (Cappella, 1982).

Patterson (1976) initially developed the arousal-labeling model as a model of intimacy, but later generalized it to a model of involvement. He proposes that responses to involvement are dependent on changes in arousal and attachment of an emotional label to that change. He posits that no adjustment in involvement would
occur if changes in arousal are not large enough to cause a change of arousal in a communication partner and, therefore, no label is applied. If a change in arousal does result in the arousal of another and a negative label is applied, this will cause a compensatory response. Positive emotional labeling is presumed to elicit a reciprocal response.

Cappella and Greene (1982) suggest that arousal labeling theory cannot explain cyclical patterns of reciprocal and compensatory responses and note that it does not account for infant-adult interaction in which they follow Stern's theory that infant responses are due to stimuli which fail to conform to expectations based on schema. They also argue that the cognitive labeling processes require a longer reaction time than is compatible with rapid changes between speaker turns. Cappella and Greene developed the discrepancy-arousal model to explain mutual influence without reference to cognitive labeling. Arousal in this case may be the result of cognitive activity, but not be the trigger for activity (Patterson, 1984). Cappella and Greene theorize that interactants have cognitive expectations about expressive behavior. These expectations are derived from characteristics of the situation, social norms, individual preferences, and past experiences. A discrepancy in the expected level of involvement would result in affective arousal. In this
model, cognitions in the form of expectations precede the arousal-affect response. Small amounts of arousal require no behavioral adjustment; moderate arousal will result in matching; high amounts of arousal will be responded to negatively and will result in compensation.

Anderson and Anderson (1984) question the validity of the discrepancy-arousal model because they state that there is no empirical evidence that the discrepancy-arousal link actually exists. They state that other arousing conditions such as immediacy behavior, encountering a disliked other, environmental load and general trait anxiety should be evaluated relative to the discrepancy factor.

An additional factor which might be noted is that while a discrepancy may be noted in the case of low-involvement, it may be viewed as lack of presence and subsequently as the desire to avoid interacting. In deference to another, the perception of discrepancy may not lead to the expected response. In other words, compensation may not occur, because the low-involved person gives a message which effectively communicates that they wish to avoid situation, speaker or topic and their communication partner may obey this message by not seeking involvement.

Anderson and Anderson (1984) comment that the discrepancy-arousal model requires that perceptions of responses be noted and acted upon. They note research
which shows that some individuals are relatively oblivious to the immediacy and affect displays of others. The perception that an interactant is relatively oblivious, however, requires an assumption based on the behavior of an interactant and not on actual knowledge that responses went unnoted. An interactant may be aware of what is contained in a response, but not respond.

Patterson (1983) found all three models mentioned to be lacking because they did not give sufficient consideration to the social functions of involvement and personality and social scripts which affect involvement. Patterson identifies five functions of nonverbal involvement: provision of information, regulation of interaction, expression of intimacy, social control and facilitation of interactional goals. Patterson developed the sequential-functional model which goes beyond a stimulus-response model to examine how involvement is controlled by proactive factors. "It is important to distinguish between those interactions that are guided by relatively purposeful goals and those that are more casual and spontaneous and perhaps more affected by the partner's behavior" (p. 156, 1984). Patterson comments that subordinates increased gaze, smiling and head nodding toward a disliked superior may be consistent with negative affect but also may be very functional. In this case, neither intervening arousal levels or interpersonal
attributions would be useful in predicting high involvement. Knowledge of status differences and the utility of a positive self-presentation might be useful in predicting the strategy of high involvement.

Patterson's (1983) sequential-functional model starts with a set of antecedents which include personal-experiential and relational-situational factors. Preinteraction mediators act as links between antecedents and interaction behaviors. Mediators are behavioral predispositions, potential arousal change and cognitive-affective assessment. "These preinteraction mediators limit an individual's involvement and sensitize one to functional judgments about the interaction" (1984, p. 341). Patterson theorizes that state interaction involvement is a result of preferred involvement level, functional expectancies, and the perceived appropriateness of behavior. He suggests that when the discrepancy between expected and actual involvement is minimal, a stable exchange will occur. In a discrepancy between the expected and actual, cognitive instability results and leads to adjustments in nonverbal involvement, which may or may not be accompanied by functional reassessment.

The strength of Patterson's sequential-functional model is that it includes multiple functions for nonverbal involvement and is not focused solely on exchange of affect or immediacy. Individual differences are taken into
account as an antecedent condition. It also accounts for reassessment and shifts in the function of involvement in an interaction and as a result of interaction. The cognitive basis of the model is reflected in its recognition that individuals attempt to direct their behaviors toward individual purposes and aims. Patterson concludes that an individual's involvement behaviors are a part of the larger context of meaningful, coordinated behavioral sequences.

While the sequential-functional model contributes to theory development, Anderson and Anderson (1984) suggest that the complexity of the model makes it difficult to test and that it is still not comprehensive in terms of identifying all the functions of involvement.

Burgoon (1978) developed the expectancy-norm model of nonverbal interaction in which arousal is not a necessary determinant of subsequent behavioral adjustment. This model is based on the supposition that people have well-established expectations about interactional distances and thus it has been considered to be a model of personal space violations. Nonverbal expectancy violation theory holds that positive violations of normative behavior produce more favorable communication outcomes than conformity to expectations; negative violations produce less favorable ones. The primary difference between this and other models is that reward characteristics of the
communicator are thought to mediate the interpretation and evaluation of violations. Rewarding interactants will be perceived more positively if they deviate from the social norm, whereas a nonrewarding interactant will create the most positive impressions at the expected distance and less positive receptions at close or far distances. Burgoon and Hale (1988) claim that arousal results from the violation of expectations, communicator reward valence, behavior interpretation and evaluation, and communication outcomes. In a test of this model, Hale and Burgoon (1984) found that subjects' level of involvement and interest showed a negative relationship with his/her own perceptions of confederate detachment over time.

Burgoon and Hale suggest that the interrelationship of nonverbal immediacy behaviors in highly complex. While other models predict reciprocal responses in positive violations and compensatory responses with negative violations, Burgoon and Hale suggest that responses can be mediated by communication reward valence and evaluation and interpretation of the behavior. Burgoon and Hale show that individuals have little difficulty in arriving at a net expectancy of how others should behave and in recognizing violations of this expectancy. Deviations from expected levels of distance, gaze and sensory involvement have been shown to cause discomfort and to result in compensation. Expectancy norms are also thought to operate within a
range, so there is some degree of variability in the threshold that must be passed before deviation is noticed as a violation. They note that expectancies are not entirely norm-based, as relational histories and past observations are also factored into expectancies. For instance, physicians might, over time, develop expectancies that patients will be passive in interaction and, thus, passivity on the part of a patient might not violate the physician's normative expectation for patients. Once a relational history is established, as with friends or family members, expectancy violations take on a different context.

All models argue that violations produce arousal. Burgoon and Hale (1988) state that arousal change produces an alertness or orienting response that diverts attention away from the purpose or goal of the interaction and turns the focus to the source of the arousal. With a violation there is an intentional shift to the relational level, making communicator and message/behavior characteristics more salient. Thus, with a violation one might expect decreased involvement with conversational topics of one's own choosing and increased involvement with the violator, if the source of arousal is something other than self-initiated. It is interesting that none of the models seem to consider self-arousal, as when initiating the talk about a favorite topic.
Burgoon and Hale (1988) also suggest that a violation may be disregarded, when it is seen as externally caused or because it has no discernible meaning. In each case, the behavior is viewed as noncommunicative and is discounted, according to Burgoon and Hale. This "disregard" of violations may be a phenomena which operates in helper-helpee situations. For instance, if the patient has had a stroke, he or she may not be able to meet normative expectancies for nonverbal involvement. Since the cause of this violation would be viewed as externally caused, the behavior might not be noted as a violation. If efforts to communicate under these circumstances are ignored, extreme frustration could result for the patient.

While previous research on the expectancy violations model has primarily been concerned about distance violations, more recently (Burgoon and Hale, 1988) violations have been operationalized using more complex nonverbal behaviors. In a nonimmediacy condition confederates were instructed to gradually double the distance between themselves and the other, to adopt an indirect body orientation, lean backward, cross their arms and decrease eye contact. After a gradual onset of the condition, confederates were encouraged to maintain these body movements over the entire conversation. Confederates in the high-immediacy condition were instructed to do the opposite. Burgoon and Hale suggest that immediacy
communicates "greater involvement, interest, affiliation, trust, and caring and sometimes composure, relaxation, and dominance while nonimmediacy communicates the opposite" (p. 69). Burgoon and Hale confirmed that violators exhibited greater arousal than nonviolators. Since those in the nonimmediacy condition were the least composed, they suggest that violations did produce activation. Decreases in nonverbal immediacy were found to communicate detachment, nonintimacy, dissimilarity, and dominance, while increase in immediacy communicated more involvement, intimacy and similarity and moderate dominance. Non-immediacy violations produced more negative consequences than a nonviolation. This outcome was seen in lower ratings on competence, character, credibility and sociability for both friends and strangers. Since both friends and strangers reacted in a similar manner to nonimmediacy, Burgoon and Hale concluded that reward value can affect the violation labeling process only when the cue is ambiguous. Thus, reward valence alone does not determine whether a violation is a positive or negative one.

All of the models discussed have been heuristic in terms of the studies which have attempted to explicate the influence of interpersonal affect and in turn, nonverbal involvement. Few have considered the idea that levels of nonverbal involvement may influence the possibility for communicative exchange, and, in turn, the development of
intimacy, if indeed, that is the goal of the interaction. In many communication situations, intimacy may not be the uppermost goal. For instance, in a situation where information exchange is critical, arousal associated with intimacy might interfere with the communicative goal. In addition, mediating effects during the course of an interaction are important, but it may be important to consider the overall tone of an interaction as well as individual responses to behaviors of another. While many models predict that changes in involvement/intimacy/immediacy trigger arousal, and subsequently behavioral adjustments, what occurs when the levels of involvement do not change as a result of communication exchange, but are more static over the course of an interaction? Is change necessary to trigger arousal or is an overall consistent high or low level sufficient to establish arousal or expectancy violation? Another concept which is somewhat unclear is what is a reciprocal response and what is a compensating response. For instance, if one interactant is low-involved and their dyadic partner decreases their involvement to the level of the low-involved person, this could be perceived as a matching response in relationship to the level of the low-involved person, but as a compensating response when viewed in relationship to the previous behavior of the dyadic partner, who decreases involvement.
The need to discover mediating processes in communication is exceptionally important, but it seems that involvement, when it is not seen as an important concept in and of itself and only seen as it relates to those concepts it enables, is not viewed as having a basis interactive function. The relationship of involvement to intersubjectivity and to how interpersonal communication occurs is been leapt over to get to what has been thought to be more important to the development of a theory of communicative exchange.

**Body Movement Research**

**Intentionality and Object and Body-Focused Dimensions**

Piaget (1955) was one of the first to suggest that a distinction could be made between movements signifying interpersonal dialogue from those signifying monologue. Freedman (1972) developed the concepts of object and body-focused movement which he believes signify the intentional aspects of communication. Object-focused gestures are hand movements focused on objects of representation and directed towards the listener and are thought to be associated with the intent to communicate. Body-focused gestures are hand movements focused towards the body, including body touching, and are thought to signify low intent to communicate and a split in the speaker's intention. An internal focus on the self, without giving indication that the self is a focus of
another's attention, may create the interactive experience, common in extreme cases depression, of "no one out there", according to Freedman.

Freedman emphasizes that object-focused movement is the center of communicative activity, but movement in general has been noted to be associated with arousal. Russell and Mehrabian (1977) support the idea that nonverbal arousal is related to responsiveness. Their research findings support a three dimensional space to describe nonverbal expression of emotion: pleasantness-unpleasantness, degree of arousal and dominance-submissiveness. Their definitions of these states support the idea that emotion does not merely include passionate states, but that a person is in an emotional state at all times. Cappella (1981) follows Mehrabian (1972) in stating that many expressive behaviors function as indicators of affiliation or of activity or potency or both. Cappella concludes that expressive behaviors are the behavioral basis for interpersonal judgments about involvement. Cappella cautions that expressive behaviors are complex and that studying one factor may not provide answers to questions about mutual influence. He suggests that a general index of expressive behavior which could mark generalized involvement in interaction would be more satisfactory.
Cegala et al (1982) studied the nonverbal aspects of trait interaction involvement using the Freedman dimensions. Nonverbal behaviors which were coded were: object and body-focused movement, discrete movement of three seconds or less (posture changes, shoulder movement, leg movement, foot movement, eye gaze and body-focused movement), and continuous movement of three seconds or more (leg movement and foot movement). Object-focused movement was only assessed during speaking because it is viewed as related to speech. For males, Cegala et al found that high interaction involvement was best indexed by less overall body movement and more eye gaze during speaking, while for females, high interaction involvement was indexed by more object-focussed gesturing and discrete movement during speaking but less body-focused gesturing. While these findings, in particular, do not seem to be out-of-line with previous interaction involvement findings, subsequent conclusions made from correlations with the IIS factors may not be fully supported. For example, the suggestion that for males the extent of body movement appears to be an index of low interaction involvement seems not to be fully tested, because the full extent of body movement was not considered and the complexity and activation components involved in changing involvement over time were not measured. By lumping all hand movements, which are complex and tend to be highly expressive, into the two categories
of body and object-focused movement, much of the complexity of movement, which may be supportive of engagement-involvement may be lost. In addition, no head movement was coded which Frey (1984) suggests is important in the expression and perception of affect. While Freedman's idea of object-focused gesturing was based on speech-related aspects, it would seem that some object-focusing could occur during listening, especially when trying to get the attention of the speaker to regain the floor. For instance, the listener may partially raise a hand from a resting postion on the arm of a chair, indicating that he or she has something to say. This kind of movement would be overlooked in the coding scheme.

Since the original sample suggested sex differences, Cegala and Sillars (1988) conducted similar studies using a student population in one study and married couples in the other. Married couples were asked to discuss sensitive information, while the student sample was a casual conversation. There was support for a positive correlation between involvement and object-focused gestures, although the correlation in the student sample was small (.20). The results concerning body movement were generally weak, but somewhat supportive of a negative relationship between movement and interaction involvement. No support was found for the sex differences in body movement found in the original sample. Cegala and Sillars conclude that anxiety
may be a mediating factor in the display of nonverbal movement and that in situations where interactants are relaxed a strong relationship may not be found.

The Role of Body Movement

Dittman (1987) raises questions whether nonverbal behavior should be viewed as a "language" and encourages the belief that nonverbal messages do not make up any discourse in and of themselves, but rather contribute to the larger system of social interaction. Most movements, according to Dittman, "take as their organizing principles either the rhythmical structure of the concurrent speech, or their association with the state of being of the person, either long-term or situationally induced. We use less specific behaviors as cues to make inferences about those states in the person and the success of those inferences varies with a number of factors." (p. 62) After study of American Sign Language and Indian Sign Language, Dittman concludes that these languages are codes in much the same way as language is a code. In body movements that accompany speech, Dittman finds that there are only a few discrete body movements that behave like the coded material in language and are easily understood by most members of a community.

Kendon (1987) seeks a stronger role for gestural movement when he supports the view that spoken language is no deeper than the gestural representation of that
meaning. "The study of gesture allows us to look inward toward the processes of mental representation, on the one hand, and outward to the social processes by which communication codes become established, on the other. Gesture stands at the point at which individual efforts at meaning representation fuse with the processes of codification." (p. 97)

Birdwhistell (1970), who introduced kinesics or the study of body motion communication, discovered that no gesture stands alone and that gestures are a complex of movement that extend over time, transmitting meaning in much the same manner as sentences. The study of kinesics includes all clearly discernible body movement and any subtle changes in posture and muscle tone.

LaFrance (1985), LaFrance and Broadbent (1976), and LaFrance and Ickes (1981) have investigated postural sharing or mirroring as a nonverbal indicator of interaction involvement. Postural mirroring is the degree to which two or more people simultaneously adopt identical or mirror-imaged body positions vis-a-vis one another (Scheflen, 1964). LaFrance and Broadbent found a striking relationship between postural mirroring and self-reports of interest and involvement. They suggest that posture sharing may reflect listener attention and may be an important source of feedback concerning listener comprehension. LaFrance and Ickes, however, found that the
presence of postural mirroring may depend on the nature of a person's interpersonal orientation and the kind of interaction expected. Postural mirroring was found to be more common in situations where there was an expectation for more communal or relational activity than individual activity. Sex-typed male dyads and androgenous female dyads showed negative correlations between mirroring and talk, whereas sex-typed females and androgenous males who were more included to communal activity showed a more positive relationship between talk and postural mirroring. Thus, it would seem that at least with sex-typed dyads, postural mirroring might not be the best overall indicator of actual involvement, although it may be an indicator of openness to interpersonal involvement and future rapport. In addition, posturing mirroring is more static in nature than complex body movement. It may be that activity changes to achieve postural mirroring to reflect responses to the other and synchrony may be even more influential in the perception of responsiveness and involvement.

Kendon (1970) found that the coordination of movement through posture shifts and others movements may determine the degree of a person's "presence" in the interaction. He suggests that a speaker is never indifferent to what his or her partner is doing. Those who convey boredom leave their partner with a feeling that no rapport has been established, but this partner is usually unable to say what
It is about the behavior of the listener that led to this feeling. Kendon has shown that larger waves of movement fit over larger waves of sound, supporting the idea that the amount of time spent in talking and in gestural activity tend to be related. Kendon also found that when interactional synchrony is found, boundaries of movement waves of the listener correspond with the boundaries of movement waves of the speaker. In group discussion this type of coordinated body movement of the listener can serve as visual confirmation to the speaker that his speech is properly directed.

Although movement tends to be an important source of feedback, Kendon stresses that it is also a means for coordination of interaction. Argyle, Laljee and Cook (1968) found that interactant A would feel uncomfortable in an interaction if he or she could not see a partner, but only in the condition where interactant A could be seen by the partner. Thus, when interactants can see each other, there can be mutual regulation of movement, but when they cannot, responsive movement becomes less of a concern.

Skill in encoding and decoding of bodily movement have been found important in the communication of caring and concern and in perceptions of attractiveness and warmth in counseling situation (DiMatteo, 1979). The therapist who is able to enact nonverbal gestures is likely to be more successful interpersonally than those who cannot. DiMatteo
found that physicians who are sensitive to bodily nonverbal communication tend to establish more effective interpersonal relationships with their patients. While facial expression is thought to be important to relationship development, Ekman and Friesen (1974) explain that facial expression is well controlled and body movement is not and thus more easily reflects the true emotional state of an individual. DiMatteo also emphasizes that physicians themselves must be able to encode nonverbal emotional messages to satisfy the needs of patients for the socioemotional aspects of care.

The question of what type of nonverbal behaviors support interaction involvement has not been firmly established. Words which have been used to described interaction involvement have been alertness, activity, intensity, investment, animated, attentive and expressive. While it would seem that nonverbal indicators chosen to study arousal, such as eye gaze, forward body lean, distance and head nodding may have implications for involvement, they do not give any indication of how active the body is in presentation, in postural changes or in gestural activity.

The importance of perceptions of involved behavior should not be overlooked. Freedman (1972) describes the viewing of videotapes of paranoid schizophrenics with their psychiatrist. In the first interview the psychiatrist
focused on mundane matters, whereas in the second interview
he or she focused on the delusional ideas of the patient.
Without knowing which tape they were viewing and without
benefit of sound, viewers were struck by the difference of
the patient's behavior in the 2 different interviews. When
talking about delusional ideas, the patient appeared more
alert and interested. "He was far more animated - i.e.,
with a fuller range of facial expressions, more erect
posture, gaze directed at the therapist, and many more hand
movements" (p. 158). Freedman, himself, states that there
was no question that the delusional paranoic was very much
a part of the interaction with the psychiatrist. These
observations or perceptions of the involved interactive
behavior of the delusional paranoic had no reference to the
Freedman's dimensions of object or body focusing. Thus, it
is possible that the perception of involvement is not
related to the division of object-focused vs body-focused
but to impressions of movement indicating activation,
animation and interest. While the object and body focused
division may provide evidence of the direction of a
speaker's intention in a research project where divisions
can be labeled, that may not be how the actual interaction
partner realizes the involvement of another in
conversation.

Frey (1981) emphasizes that the tonic aspects of
behavior, or the time-span within which a behavioral event
remains effective, are cumulative in effect and that this means that the quasi-digital way in which most communicative behavior is studied is ineffective. Frey argues, following Schleidt, that the time constant of decay of a behavioral effect is long compared to the interval between successive behavioral events and that their effect will be cumulative, since the effect of any new behavioral event will add to decaying residue of previous effects.

The tonic communication model has important implications for a theoretical view of communication processes. A behavioral event receives its meaning from its role in the context of other behaviors shown by the same individual. Thus, a certain behavior emitted by a person is in large part a consequence of a complex behavioral program rather than only a consequence of a stimulus perceived right before the behavior occurs. Similarly, such a cumulative effect exerts the same kind of effect on interacting individuals. The tonic model for communication behavior demands methodological approaches which can provide data about the full repertoire of behavior occurring in interaction. In order to define an empirical repertoire of movements, Frey defines movements as differences in the sequence of spatial locations and/or difference in the length of time interval across which positions are varied. He does not describe behavior, but evaluates descriptions of behavior with theoretically
defined behavior parameters. Thus, if one assumes that the body movements of interactants exert a long-term influence on the perceptions of interaction involvement, a parameter which measures the cumulative effect of periods of body movement should be defined.

Psychologists have conjectured, according to Frey (1984) that nonverbal behavior is far less consciously controlled than verbal behavior. Frey contends that "real" intentions, attitudes and feelings reveal themselves in the nonverbal communication even if they are not represented in verbal communication. Thus, while previous verbal involvement research has indicated that low-involved subjects change their verbal behavior when interacting with a high-involved subject, it is possible that their affective, nonverbal response might continue to reflect low-involvement. In addition, those who are high-involved may display decreased nonverbal involvement, because they may recognize a lack of involvement in the other and follow an interactional message to avoid involvement.

Kendon (1987) indicates that the visual nature of gestures, may be an important difference between the verbal and nonverbal and how they are used in communication. Kendon states that while gesture is used for the same purposes as speech, gesture employs space as well as time in the creation of expressive form and as a visual medium the impact may be very different from that of speech. He
found that people use more directional gestures when they can see a subject, but when the same people practice a talk with a tape recorder that they use no gestures at all. He concludes that gestures are produced when they are available for a recipient. When trying to describe a geometrical shape, those subjects who are not allowed to use gesture pause more and use more verbal demonstratives than subjects who can use gestures to describe spatial relationships. Berger and Papelka (1971) found that there is greater accuracy in writing spoken sentences when the sentences are uttered with accompanying gestures than when they are not.

Nonverbal Interactive Behavior in Depression

Intuitively, psychiatrists have suggested that the display of gestures is an important indicator of the recovery from depression. This idea is supported by previous research which shows that gestures are supplied for others and that depressives, because they appear to be more inwardly focused, do not employ as much gesturing when speaking. From initial results of analysis of body movement data using time-series notation from 13 psychiatrist-patient dyads, Frey, Jorns and Daw (1980) suggest that recovery from depression is associated with changes in both the patients' and doctors' nonverbal behavior. In an analysis of vertical head posture, it was not the patients, but the doctors, who systematically held
their head in a lower position. In addition, it was the
doctors rather than patients whose head posture changed
with the patient's recovery. Doctors held their heads
lower when patient's were depressed than when patients were
considered almost recovered. In an analysis of overall
movement activity, doctors showed a lower degree of
movement activity than the patients in all but one part of
the body.

Whereas Frey et al looked primarily at individual
parts of the body, Fisch, Frey and Hirsbrunner (1983)
examined the same data for three behavioral aspects that
involve the whole body: the mobility, complexity and
dynamic activation of body movement. While psychiatrists
have long been aware of the clinical relevance of these
aspects of behavior, these impressions have been based on
clinical assessment rather than quantitative assessment.
In depression, reduced motor activity, monotonous and
impoverished motor behavior and difficulties in initiating
movement have been noted, but the problems of measurement
of complex movement behavior made it very hard to compile
and use data to differentiate psychiatric states and
processes as well as to determine how normal and non-role
defined subjects use complex movement behavior in
conversation. Perhaps this is why touch, gaze, facial
expression, voice and olfaction have received more
attention than motor behavior and the initiation of
movement. Friedman (1979) suggests that little is known about the meaning of body positions and gesture, except what they may imply in terms of immediacy and mutual stimulation, as Mehrabian (1972) suggests.

**Time-Series Notation of Body Movement**

Frey and Pool (1976) developed time-series notation to try to overcome the limitations imposed by nonverbal communication. This system allows coding of the temporal and spatial components of body movement in much the same manner as phonetic and temporal aspects of speech are notated. He notes that breaking down speech patterns phonetically leaves the speech product undefined, no matter how differentiated the different speech sounds are represented in a set of symbols. The 26 letters of the Latin alphabet can be used to code the phonetic component of speech. The temporal component, according to Frey, results from writing symbols in lines, thus assigned a temporal vector to each sound symbol. Verbal utterances of unlimited complexity can be noted with the aid of a very limited set of symbols. Just as the complex pattern of speech can be resolved into their spatial and temporal components, so the principle of time-series notation can be used for a highly differentiated description of movement. Frey compares past struggles to study empirically the nonverbal components of communication to using a Chinese writing system with 50,000 symbols. "Even when stored on
video, the nonverbal behavior presents itself to the investigator as an extremely complex phenomenon... There is the facial expression lasting only the fraction of a second, the scarcely perceptible hand movement, the slight straightening of the body, the sudden enlargement of pupils, the slow closing of the hand..." (Frey, 1984, p. 28). Consequently, researchers have used only a small fraction of nonverbal behaviors. "Time-series notation techniques provide a coding strategy that permits fine-grained description of spontaneous movement activity found in face-to-face interaction" (Fisch et al., 1983, p. 307). The possibilities for the quantification of behavioral parameters of widely varying complexity provided Frey and his associates with a rich source of data to trace behavioral features of clinical importance, such as determining diagnostic subgroups, ascertaining therapeutic response or detecting mild forms of affective disorders. While Frey and his associates have been concerned primarily with psychiatric disorders, it seems likely that parameters they have used might also be applicable to the study of movement behaviors in high and low involvement of normal subjects. While many communication studies have used single nonverbal indicators of involvement, such as spatial distance between interactants, Frey's system of decoding nonverbal movement and the development of parameters specific to the complex movement behavior of individuals
should provide more accurate assessment of investment in the communicative process. Others have operationalized body movement as indicators of involvement, but have not been able to assess dynamic activation and deactivation of body movement or its complexity. For instance, when Burgoon and Hale (1988) instructed confederates in a nonimmediacy condition thought to represent noninvolvement, confederates were to keep their arms crossed, effectively eliminating complex movements of the hands and probably forward lean of the body. Freedman's (1972) use of body-focused and object-focused movements to delineate movement behavior may also have missed some of the important features of body movement by collapsing movements into two distinct categories, even though this division seems very well-taken considering the nature of intentionality in communication. An additional fact in favor of using time-series notation is that while nonverbal behavior operates largely out of conscious awareness, there are nonverbal features which reflect the complex and dynamic nature of communication to the observer. By selecting a single nonverbal dimension, such as forward body lean, behavioral predispositions to be involved in conversation may be missed. Frey indicates that individual differences are a significant factor in body mobility. If the system used to investigate nonverbal involvement is not
significantly complex, it may be difficult to ascertain changes in involvement in response to others.

Fisch et al indicate that complexity of body movement, the average number of movement dimensions active simultaneously, is an important indicator of involvement. Those who use complex body movement, use more of the parts of the body at one time and these complex periods of body movement appear more frequently over the course of the interaction. Complexity of body movement explained more than 72% of the variance of doctors' judgments of patients' recovery from depression. If patients were grouped into four different categories of recovery used by doctors, average complexity of body movement scores increased from one category to the next in steps of almost equal size. While the temporal structure of mobility did not change from depression to recovery, the average duration of movement changed from 1.17 to 1.70 seconds. With recovery, dynamic activation and deactivation of movement involved in changing positions over time became more rapid. Interactive aspects indicated that physicians matched or reciprocated the depressed behavior of patients, so that there were no significant differences between depressed patients and physicians. On the average, physicians scored even lower than patients on all dependent variables. When patients were recovered and their mobility and complexity of body movement increased, physicians also increased on
the same measures, but still recorded lower levels than did patients. Fisch et al suggest that these levels reflected a return to normal activity levels for the physician.

While a reduction in bodily mobility itself cannot be considered a generalized indicator of psychomotor retardation because of significant individual differences, complexity and dynamic activation of body movement show that recovered patients move not only more frequently but also differently than depressed patients. The movement behavior of recovered patients was not as uniform, monotonous or impoverished as psychiatrists actually exhibited lower movement than their patients. Perhaps this is a psychiatrist's typical "therapeutic manner", but it is just as possible that this is a reaction to one who is uninvolved and unresponsive. Fisch et al suggest that the data correlations indicate that the patients influenced the psychiatrists, rather than the opposite. In the parlance of arousal models and mutual influence, this would be a matching response and not predicted by most models, expect perhaps the expectancy-valence model of Burgoon and Hale, in which the depressed patient might have been identified as a low-reward communicator. In this vein, perhaps the psychiatrist sees that the depressed patient is not available for their involvement and, thus do not expend the effort.
Generation of Hypotheses

It has been suggested that complex body movement is an important indicator of involvement in interaction. If this is so, those who are hampered by the ability to move to expressive themselves and to be responsive to others, may find difficulty in communicating with others, because of perceptions of these behaviors as an indication of a lack of presence and a desire to avoid communication and the development of rapport. Previous verbal research with the student population to be used in this study indicates that low trait-interaction involved subjects accommodated high trait-interaction involved subjects. Nonverbal studies of the same sample have been primarily limited to body and object-focused gesturing, which does not seem to capture the full complexity and dynamic qualities of movement. Previous research with the time-series notation method of defining complex movement spatially across time, indicates that mobility, complexity and dynamic body movement can measure the bodily presence of an interactant or at a minimum, the perception of involvement and responsiveness in the communicative exchange. The study of these parameters also has demonstrated that there may be effects of complex body movement on communication partners, such that involvement decreases when interacting with a depressed patient. The importance of this study lies in the fact that if significant differences can be found in a
student population, then investigation of other populations where there is more pronounced state involvement or lack of involvement, could prove to be useful in terms of understanding of the role of involvement in communication.

Since the population studied is one which has been tested on the Interaction Involvement Scale and separated based on their scores into three dyadic groups: High-High (H/H), high-low (H/L) and low-low, (L/L), it is hypothesized that:

\[ H_1: \] H/H dyads will exhibit significantly higher nonverbal involvement than the L/L dyads, as indicated by parameters derived from time-series notation of nonverbal behavior. This finding in these 2 different homogeneous dyads would support the validity of the concept of trait interaction involvement developed by Cegala and assist in validating the use of parameters derived from time-series notation as measures of involvement.

It is proposed following the research of Fisch et al and research which indicates that low investment in the communication situation may generate low-involvement on the part of a partner:

\[ H_2: \] High-involved subjects will significantly reduce their nonverbal involvement when interacting with a low-interaction involved
subject as opposed to a high-interaction involved subject.

It is suggested that low-involved individuals do not express their involvement with others and thus to not appear to be significantly affected by the behavior of the other interactant, even when their dyadic partner is high-involved. While the author is aware that theoretically the null hypotheses cannot be accepted, the research evidence from Fisch et al is compelling because it suggests that high-involved interactants may decrease their nonverbal involvement in a mixed dyad, effectively acting like their low-involved counterpart. This finding suggests that, in the nonverbal realm, lows interacting with highs will not have an experience significantly different from an interactive experience with another low-involved person. The sample size of 60 dyads is also large enough that it should be difficult to find a result of no difference.

$H_3$: There will be no significant differences on any of the dependent variables used to study interaction involvement between low-interaction involved subjects interacting with high-interaction involved subjects and those interacting with low-involved subjects.

Because interaction occurs over time and in space, it is possible that involvement in high and low-interaction involved dyads will decrease over time, reflecting the
effect of breaks in intersubjectivity and the influence of one interactant upon another.

\( H_4: \) A trend for the dependent variables measuring nonverbal involvement to decrease over time will be significant for high-involved subjects when they interact with a low-involved subject but this trend will not exist or be non-significant for low-involved subjects or high-involved subjects interacting with other high-involved subjects.

Since females are known to be more affiliative in conversation (Davis, 1982) and attentive (Harper, Wiens, and Matarazzo (1978), both visually and posturally (Mehrabian, 1982), it is thought that females will show more nonverbal interaction involvement than males. Therefore, it is hypothesized that:

\( H_5: \) Females will show significantly more nonverbal interaction involvement than males in all three dyads.

Summary

It is postulated that the state of involvement in interaction is an important indicator of "presence" in a communicative event. Interaction involvement is a concept based on intersubjectivity and mutual intentionality of conscious. The mutual recognition of another as an object which is human and, thus, a subject with whom one can
interact is an essential factor in the development of understanding in communication. Levels of complex body movement, activation and deactivation of movement, and mobility displayed by interactants are suggested to be important indicators by which an interactant recognize the participation of another in interpersonal communication. If this is so, the inability or desire to express involvement with another through body movement could be detrimental to achieving those functions of communication which are made possible or are facilitated by involvement.
CHAPTER II
METHODS

Introduction

Nonverbal communication parameters were used to study the communication behavior of college students who were videotaped interacting for six minutes. High and low-involved interactional behaviors were operationalized by using the trait concept of interaction involvement. Students were tested prior to the videotaping on the Interaction Involvement Scale developed by Cegala et al (1982a) and then paired in dyads, based on their scores on the IIS. The Bernese system of time-series notation (Frey and Hirsbrunner, 1983) of coding the videotapes was used to produce a data protocol from which seven parameters were calculated to test the research hypotheses.

Use of Nonverbal Methods and Time-Series Notation

Freedman (1972) argues that a substantial amount of movement is tied to the communicative effort. He expresses the conviction that "movement behavior as a constituent of the communicative effort constitutes a sign post reflecting upon the organization of thought and experience" (p. 153). Movement behavior may also act as a sign post of
responsiveness and interaction involvement. It is suggested that complex body movement is experienced and perceived as investment and presence in the interaction. The interweaving of external and internal events thought to be characteristic of those who are high-involved, should be reflected in body movement which reflects intensity, activation and responsiveness.

Until recently the assessment of complex nonverbal behavior patterns has been hampered by a lack of a systematic means to study behavior. A system of coding nonverbal communication using a time-series notation technique has been developed by Frey and Pool (1976). The time-series notation technique allows decoding of spontaneous movement activity in face-to-face interaction. The technique allows quantification of complex behavior patterns which should be sufficiently sensitive to note differences between interactants and changes over time in nonverbal behavior.

Three behavioral aspects which involve the whole body have been defined by Fisch et al: time spent-in-motion, complexity of body movement and dynamic body movement. While time-spent-in-motion is thought to be lower in low-involvement, individual differences in mobility may contribute to a lack of significant differences between dyads. The mean duration of movement and the occurrence rate of movement, two measures derived from time spent-in-
motion, may, however, demonstrate differences between high and low-involved interactants. It is hypothesized that the mean duration of movement will be higher and the occurrence rate of movement lower, in unmixed high-involved dyads and that the reverse will be true for low-involved unmixed dyads. Time spent-in-motion can be demonstrated by as little as one movement per 1/2 second or as many 34 movements and is expressed as a percent, so that it is not simply movement alone but how the average number of dimensions simultaneously activated, that is thought to exhibit involvement. Fisch et al state, "Complexity of body movement is a measure of the degree to which the various parts of the body are simultaneously involved in movement activity, and thus it gives a direct measure of the degree to which the patient mobilizes the nonverbal channel" (p. 317). Fisch et al state that their research indicates psychiatrists very alertly respond to differences in the movement complexity of patients who are recovering from depression. Based on this indication, they postulate that complexity of body movement "determines, at least in part, a person's impression about his or her partner's involvement in the communicative exchange" (p. 317). The complexity of body movement (CBM) may be, therefore, more than a behavioral indicator of recovery from depression. The effort to communicate and show presence in the interaction may be reflected in the CBM. A low overall CBM
may indicate an inability to elicit rewarding responses from the other interactant whereas a high CBM may indicate that the interactant can elicit rewarding responses.

Dynamic body movement encompasses both activation and deactivation of movement or how many movements are involved in beginning and ending a movement period and how many movements are involved in change within a movement period. Dynamic body movement is a parameter which Fisch et al state is very closely related to nonverbal responsiveness in an interaction. They stress that "the alteration between activation and deactivation is essential in the intermeshing of behavioral activity and the proper functioning of the communicative exchange". In their research with depressed patients and psychiatrists both the complexity and dynamic activation of body movement increased systematically with recovery. Fisch et al (1983) posited this could be taken as a sign of increased effort to communicate on the part of recovered patient, but it also seems to indicate more responsiveness on the part of both patient and psychiatrist. In this research, a population is used which is neither sick nor depressed. It will be of interest to calculate differences in all of the parameters for high and low-involved subjects, particularly to investigate changes which occur when those who are not similar on the interaction involvement scale interact in a non-role-defined situation.
The determination of whether or not the level of complex body movement allows a person to elicit rewarding responses from the social environment ultimately may have important implications for such areas as health communication, particularly for patients who are movement-impaired and exhibit passive, uninvolved interactional behaviors. Time series notation of body movement and examination of parameters associated with involvement may help to determine what the effects of low-involvement are and provide information which might contribute to the development of more therapeutic modes of communication.

Study Population

The study population consists of 120 students who were selected to participate in the Cegala et al (1982a) study of the trait measure, the Interaction Involvement Scale (IIS). The students were selected on the basis of their scores on the IIS. An initial group of 437 students who were enrolled in a multisection, basic communication course in a large midwestern state university completed the IIS and several other measures as a part of a class requirement. The communication course is a part of the Liberal Arts Core Curriculum requirement and thus draws from a wide variety of student majors and interests.

Criteria were established for the sample pool of the students to be selected to participate in the study: 280
students, 155 females and 125 males. The group of students was chosen if their IIS scores were + or - .5 standard deviations from the mean. This group was expanded by adding subjects who were + or - .4 SD.

The design of this study calls for same sex dyads consisting of 1) high-high IIS dyads, 2) high-low IIS dyads and 3) low-low IIS dyads. Sixty subjects were chosen based on availability, sex type, and involvement type. Of the total original group, 64% met the criteria for the study. There were 20 dyads within each dyad type.

Procedures

Students were scheduled to appear the Behavioral Science Library. The subjects were not aware that the videotaping was related to the Interaction Involvement Scale which had been completed in class several weeks prior to the videotaping. Student dyads were confirmed as strangers, given general directions about the purpose of the study and signed consent forms. They were asked to participate in a brief conversation which they should treat as if they had met the person in a bar or at a bus stop. They could talk about anything they chose.

Students attached a small microphone after sitting in armed lounge chairs about 3 feet apart. The television camera was concealed in an outside room in front of a window, allowing unobtrusive taping of the interaction.
A six minute conversation was taped after the experimenter left the room. Subjects were paid $3.00 for participating.

Design and Analysis

The design of the study consisted of a sex X dyad type X time factorial arrangement. Repeated measures multivariate analysis of variance and analysis of variance were used to test differences between dyad types (3) and sex types (2) and time (3) on the dependent variables (7). T-tests (Tukey) were used to discriminate between significant results and nonsignificant results. The alpha level was set at \( p < .05 \). Correlations were run to check what relationship, if any, the scores on the dependent measures of the Low-IIS subject in the H/L dyad had on the scores of the High-IIS subject in any given time period. Differences between high and low-involved subjects in the mixed dyad and those in matched dyads were addressed. Post-hoc log linear analysis was used to assess the alternation patterns of time spent-in-motion to determine if more alternation occurred with High-IIS subjects as opposed to Low-IIS subjects.

Coding Procedures and Derived Measures

The videotaped interactions of the three dyad types, high-high (H/H), high-low (H/L), and low-low (L/L) on the IIS, were transcribed into a data protocol using time-series notation. From the data protocol, derived measures were calculated for each subject. The original
data protocol was not put on the computer, although this would be desirable in future studies. Graphs of data protocol were produced from certain segments of interaction which visually show the relationships of the nonverbal movements of the dyadic partners.

Coder Accuracy. Frey and Pool (1976) have shown that a one day training period is sufficient to produce reliability figures of over 90% for both retest and intercoder reliability. The researcher attended a one day workshop on coding and software for the time-series notation system. Manuals produced by Frey and Hirsbrunner (1983) and Donaghey (1983) were relied upon by the coder to assist in accurate coding.

The coder did not know which videotapes were from which interaction involvement type (high, low or mixed) during the coding period in order to prevent this knowledge from influencing the coding of the tapes. Since systematic bias could affect the coding of the work of a single coder, coding reliability was established by randomly picking points on 20 tapes and establishing the position codes of dyad partners at a particular point in time. These sets of position codes agreed with positions coded at that particular point in time 96% of the time across 34 coding categories. This compares favorably with the 98% reliability found by Frey and Pool with 2,400 data items by taking a photograph at one point in time and having a
subject take a pose from the coded dimensions. In addition, 10 minutes of interaction in 10 separate dyads was recoded, with agreement as to number of movements per half-second agreeing 94% of the time. Although one additional coder was trained to decode the tapes, the

Table 1
Summary of coding scheme for time series description of nonverbal behavior in face-to-face interaction

<table>
<thead>
<tr>
<th>BODY PART</th>
<th># OF CODED DIMENSIONS</th>
<th>DIMENSION</th>
<th>TYPE OF SCALE # OF UNITS</th>
<th>TYPE OF MOVEMENT DEFINED BY DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Head</td>
<td>3</td>
<td>Sagittal</td>
<td>Ordinal / 5</td>
<td>Up / down tilt of head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotational</td>
<td>Ordinal / 5</td>
<td>Left / right rotation of head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lateral</td>
<td>Ordinal / 5</td>
<td>Left / right tilt of head</td>
</tr>
<tr>
<td>(2) Trunk</td>
<td>3</td>
<td>Sagittal</td>
<td>Ordinal / 5</td>
<td>Forward / backward tilt of trunk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotational</td>
<td>Ordinal / 5</td>
<td>Left / right rotation of trunk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lateral</td>
<td>Ordinal / 5</td>
<td>Left / right tilt of trunk</td>
</tr>
<tr>
<td>(3) Shoulders*</td>
<td>2</td>
<td>Vertical</td>
<td>Ordinal / 3</td>
<td>Up / down shift of shoulder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth</td>
<td>Ordinal / 3</td>
<td>Forward / backward shift of shoulder</td>
</tr>
<tr>
<td>(4) Upper arms*</td>
<td>3</td>
<td>Vertical</td>
<td>Ordinal / 8</td>
<td>Up / down lift of upper arm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth</td>
<td>Ordinal / 8</td>
<td>Forward / backward shift of upper arm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Touch</td>
<td>Nominal / 7</td>
<td>Upper arm contact with chair/body areas</td>
</tr>
<tr>
<td>(5) Hands*</td>
<td>9</td>
<td>Vertical</td>
<td>Ordinal / 14</td>
<td>Up / down shift of hand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Horizontal</td>
<td>Ordinal / 9</td>
<td>Left / right shift of hand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth</td>
<td>Ordinal / 8</td>
<td>Forward / backward shift of hand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>x/y orientation</td>
<td>Ordinal / 9</td>
<td>Angle of hand in vertical plane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>z orientation</td>
<td>Ordinal / 5</td>
<td>Forward / backward away of hand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn</td>
<td>Ordinal / 5</td>
<td>Up / down turn of palm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closure</td>
<td>Ordinal / 4</td>
<td>Opening / closing of fist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Folding</td>
<td>Nominal / 2</td>
<td>Folding together of hands</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Touch</td>
<td>Nominal / 52</td>
<td>Hand contact with chair/body areas</td>
</tr>
<tr>
<td>(6) Upper legs*</td>
<td>1</td>
<td>Vertical</td>
<td>Ordinal / 5</td>
<td>Up / down shift of upper leg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Horizontal</td>
<td>Ordinal / 5</td>
<td>Left / right shift of upper leg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Touch</td>
<td>Ordinal / 3</td>
<td>Contact between knees</td>
</tr>
<tr>
<td>(7) Feet*</td>
<td>7</td>
<td>Vertical</td>
<td>Ordinal / 9</td>
<td>Up / down shift of foot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Horizontal</td>
<td>Ordinal / 7</td>
<td>Left / right shift of foot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth</td>
<td>Ordinal / 7</td>
<td>Forward / backward shift of foot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sagittal</td>
<td>Ordinal / 5</td>
<td>Up / down tilt from ankle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotational</td>
<td>Ordinal / 5</td>
<td>Left / right rotation from ankle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lateral</td>
<td>Ordinal / 5</td>
<td>Left / right tilt from ankle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Touch</td>
<td>Nominal / 10</td>
<td>Foot contact with chair/foot/body areas</td>
</tr>
<tr>
<td>(8) Position on chair</td>
<td>2</td>
<td>Horizontal</td>
<td>Ordinal / 3</td>
<td>Front / back position on chair</td>
</tr>
</tbody>
</table>

* Left and right coded separately

researcher found dedication to the task was not sufficient to produce reliable results. The coder found it useful to decode in large blocks of time, as decisions on coding dimensions became easier to make with experience. The system is not difficult to learn, but it is tedious without computerization.

A timer was visible on the videotape record which allowed decoding of movement at half-second intervals. The spatial component of movement depends on the resolution code. A summary of the coding scheme is given in Table 1.

Coding Procedure. Following the description of Fisch et al (p. 312), the videotape was set at the first time mark and put into "stop motion" mode to allow assessment of the position of a single part of the body in the different coding dimensions. The video recorder was then set into "normal play" mode until further movement was detected for this part of the body. New positions were coded every half second until movement in that part of the body ended. If there was no movement, the previous position code applied to that particular part of the body for all subsequent points in time.

Figure 1 is a sample of the data matrix containing the behavioral information obtained with time series notation. The data matrix (see Figure 1) shows the movement behavior of two subjects: the left half is one interaction and the right half the other. The alphabetic letters and numbers
at the top of the figure correspond to the different parts of the body and their respective coding dimensions. The time code on the left refers to both subjects. Adjacent rows in this matrix describe the nonverbal behavior of these two subjects at intervals of one-half second.

The first row of the matrix shows the static positional state for each of the two subjects at the beginning of their conversation. The numbers in each column represent the specific position value within the dimension coded. An entry is made only if a position is changed. Blanks signify that the position coded at the previous time-mark remained unchanged. The vertical succession of entries and blanks shows how the subjects have moved and rested over the course of the interaction (Frey and Hirsbrunner, 1983).

Before one begins to extract the information needed to examine dependent variables, Frey and Hirsbrunner suggest that it is often worthwhile to visually inspect the data matrix. One can see at a glance, in Figure 1, the relative nonverbal activity of the interactants. Movement complexity can be examined by noting densely clustered entries. The quickness with which movement begins and terminates can be examined by determining how many entries are made at the onset of any movement period. By comparing the activity of various parts of the body, the degree of involvement in total movement activity can be seen.
Lateral dominance, such as a predominance of right or left hand movements, can be assessed. One can also assess the temporal structure of movement duration and rest periods (Frey and Hirsbrunner, 1983).

**Data Base.** Thirty seconds after the interaction began, 1 minute of the videotape was coded. At the 2 1/2 to 3 1/2 minute mark a second minute was coded. At the 4 1/2 to 5 1/2 the third minute was coded. The first half-second was left out because there might have been interference from setting the clock or from the dyad partners themselves as they settled into their interaction. This sampling-over-time procedure was used because it was hypothesized that movement activity would decrease over time for the High-IIS subject who interacted with a Low-IIS subject.

Positions on 34 of the 55 positional dimensions developed by Frey and Hirsbrunner (1983) were assessed every 1/2 second for three minutes for each subject. Only the leg dimensions were left out of the coding scheme, as the researcher found that with subjects in the sitting position, these dimensions contributed very little to the total amount of movement activity and yet required considerable time to add to the coding scheme. When subjects touched the lower body or bent over towards the floor, these dimensions were included in hand or upper body dimensions. The complex movement behavior of the two
subjects in each of the 60 dyads was resolved into a data matrix consisting of $2 \times 360 \times 34$ or 25,200 data points.

**Derived Measures.** Three primary parameters and four secondary parameters developed by Fisch et al (1983) were derived from the empirical data from the data matrix. The three primary parameters were: Time Spent-in-Motion (TSM), Complexity of Body Movement (CBM) and Dynamic Body Activation (DBM). Two secondary measures were derived from the TSM: the mean duration of time spent in motion (XDUR) and the rate at which movement occurred (ORATE). Activation-increase (AINC) and activation-decrease (ADEC) are seen as two separate components of dynamic body activation.

Time Spent-in-Motion (TSM) is the sum of the time periods when at least one part of the body is in motion. TSM is expressed as a percentage of the total observation period. The following algorithm shows how the TSM is assessed from the data matrix.

\[
TSM = \frac{100}{n} \sum_{i=2}^{n-1} \frac{P_i - P_{i-1}}{P_{i+1} - P_i} \quad C_i = \begin{cases} 0 & P_i = P_{i-1} \\ 1 & P_i \neq P_{i-1} \end{cases}
\]

$P_i$ is the subject's entire set of positional codes at $t_i$ and $n$ is the total observation time resolved into half-second intervals. The TSM allows assessment of the total active and inactive time, movement duration (XDUR) and movement rate (ORATE). TSM is expressed as a percentage. XDUR is expressed as the average number of
seconds periods of movement continued. ORATE is expressed as the rate, in number of seconds, at which movement occurred.

Complexity of Body Movement (CBM) indicates the degree to which simultaneous movement occurs in various parts of the body during total movement activity. The CBM is an average of the number of parts of the body that are active at the same time. The following algorithm shows how the CBM is assessed from the data matrix.

\[
\text{CBM} = \frac{1}{n-1} \sum_{i=2}^{30} \sum_{j=1}^{n} \text{CBM}_{i,j} = \begin{cases} 
0 & \text{if} \quad \text{CBM}_{i,j} = \text{CBM}_{i,j-1} \\
1 & \text{if} \quad \text{CBM}_{i,j} \neq \text{CBM}_{i,j-1}
\end{cases}
\]

\text{CBM}_{i,j} \text{ is the positional code for the dimension } d_i \text{ at time } t_i \text{ and } n \text{ is the total observation time resolved into half-second intervals. Only the 30 ordinal scales are used in the calculation of the CBM. The information given in the nominal scales for touch is partially redundant with information contained in the ordinal scales and therefore has not been included in the assessment of the CBM and the DBM. A time graph of the CBM indicates when the highest period of activity takes place.}

Dynamic Body Movement (DBM) measures the rate at which movement activity shifts from one activation level to another. The assessment of the DBM is based on the size of the difference in the number of dimensions participating in total movement at subsequent points in time. Two components of the DBM are: activation-increase or the
increase in psychomotor activity and activation-decrease or the decrease in psychomotor activity. DBM is an overall measure of the rapidity with which complex body movements are initiated and terminated. The DBM shows whether motor activity is continuous or sporadic and whether increases and decreases in activity differ in complexity. The average number of dimensions involved in the increase or decrease of motor activity are derived from the DBM. The following algorithm shows how the DBM is assessed from the data matrix.

\[
DBM = \sqrt{\frac{1}{m} \sum_{i=2}^{n} (d_i - d_{i-1})^2}
\]

\[d_i = \sum_{j=1}^{30} c_{ij}\]

\(d_i\) is the number of dimensions activated at time \(t_i\), and \(m\) is the number of times there was a change in the number of dimensions activated \((d_i = d_{i-1})\), and \(n\) is the total observation time in half-second intervals. The activation-increase (AINC) and the activation-decrease (ADEC) are also derived from this algorithm (Fisch et, 1983, p. 312).

Time graphs were produced of a selected number of interactions to provide a visual account of the mobility, complexity and dynamic activation of subjects over time during the three time periods sampled.

Specific Hypotheses to be Tested

\(H_1\): High/high dyads will exhibit significantly more nonverbal involvement than the low/low
dyads, as indicated by higher TSM, CBM, DBM, AINC, ADEC, and XDUR, and a lower ORATE.

**H2:** High interaction involved (High-IIS) subjects will significantly reduce the amount of nonverbal interaction involvement as displayed by decreases in the TSM, CBM, DBM, AINC, ADEC and XDUR and increases in the ORATE, when they interact with a low interaction involved (Low-IIS) subject rather than a High-IIS subject.

**H3:** There will be no significant differences on any of the seven dependent variables between Low-IIS subjects interacting with other Low-IIS subjects and those who interact with High-IIS subjects.

**H4:** A trend for nonverbal interaction involvement to decrease over time (as exhibited by decreases in the TSM, CBM, DBM, AINC, ADEC and XDUR and an increase in the ORATE) will be significant for high-involved subjects in the H/L dyad, whereas this trend will not exist or be nonsignificant for the low-involved subjects in the H/H and L/L dyads.

**H5:** Females will show significantly more nonverbal interaction involvement than males in all three dyads.
CHAPTER III
RESULTS

Introduction

Before moving on to the analysis of the data, sample time graphs of the three major parameters, TSM, DBM, and CBM for one female H/H dyad and one H/L dyad will be discussed to illustrate the rich source of information which is available from time-series notation of body movement and to give the reader a visual picture how the parameters chosen display the body movements of two individuals.

Time-Series Notation of Dependent Variables Over Time

While computerization of all data matrices was not possible, two female dyad data matrices, one from the H/H dyad and one from the H/L dyad, were placed on computer to produce graphs for the TSM, CBM, and DBM. Figures 2 through 7 show the complex resolution of the data which be produced using the Bernese time-series notation system.

In Figure 2 one can visualize the high percentage of time spent-in-movement by these High-IIS female subjects and the somewhat overlapping pattern of the interactants.
Figure 2. Time spent-in-motion for one H/H dyad.

Figure 3. Time spent-in-motion for one H/L dyad.
In the H/L dyad shown in Figure 3 less time is spent-in-motion and there are brief pauses between movement periods. This type of pause, seen in this one example, may be one reason why the High-IIS female in the H/L dyad activates and deactivates motion more abruptly than in the H/H dyad. In the H/H dyad, the overlaps of motion may account for the lack of need to structure or control the interaction, because both interactants take the "floor" without the stimulus of abrupt movement decline from their partner.

Figures 4 and 5, the graphs of the DBM, show the same interesting phenomena: higher jumps in activation and

![Figure 4. Dynamic body movement for one H/H dyad.](image-url)
Figure 5. Dynamic body movement for one H/L dyad.

deactivation of the DBM from the High-IIS female in the H/L dyad. Thus, DBM is not how often a person moves, but how many dimensions are involved when movement is initiated, terminated or shifted to another level of complexity.

Figure 6 shows periods of alternation of complex movement behavior for an H/H dyad with one overlapping period of activity during Time 3. Figure 7 of an H/L dyad shows the Low-IIS subject moving initially in a moderately complex manner, but then leveling off to a much lower level as the High-IIS partner begins moderate CBM activity. If a high CBM is a signal of involvement to the dyadic partner, it would appear that a high, rather than moderate level of
Figure 6. Complexity of body movement for one H/H dyad.

Figure 7. Complexity of body movement for one H/L dyad.
activity is need to give the impression of involvement. It is also important to note that the first 30 seconds of the interaction have already taken place prior to the first minute coded and that expectations may have already developed for the involvement of the other.

These graphs illustrate that while there is mutual influence in the H/L dyad, this influence is of a different character than in the H/H dyad and produces different overall results.

**Multivariate Analysis of Variance Effects**

A 3 (dyad type) x 2 (sex type) x 3 (time) repeated-measures, multivariate analysis of variance (MANOVA) was run on the seven dependent variables: time spent-in-motion (TSM), complexity of body movement (CBM), dynamic body activation (DBM), activation increase (AINC), activation decrease (ADEC), mean duration of movement periods (XDUR) and rate of occurrence of movement (ORATE). There were significant multivariate results for the main effects of dyad type, sex type and an interaction effect for dyad type x sex type (dyad type - Wilk’s Lambda = .357, $F = 10.38, \ p = .0001$; sex type - Wilk’s Lambda = .784, $F = 4.26, \ p = .003$; dyad type x sex type - Wilk’s Lambda = .714, $F = 2.83, \ p = .0007$). There were no significant main effects for time. Because there was an interaction effect, the level of analysis will focus on the analysis of variance (ANOVA) and
T-tests and will give specific attention to the sex type differences within and between each dyad type.

**Analysis of Dyad Type Effects**

Hypothesis one, which predicted that the H/H dyad would exhibit more nonverbal involvement as indicated by higher TSM, CBM, DBM, AINC, ADEC and XDUR and lower ORATE than the L/L dyad, is partially supported by the analysis of dyad type effects. Only the results on the DBM, AINC, and ADEC which were thought to represent one type of responsiveness in interaction were not in the expected direction. This finding tends to support the idea that in decreased involvement, responsiveness in casual conversations is manifested differently than it is in conversations between depressed patients and psychiatrists. It is also clear that sex differences on the DBM affect results, but not as yet clear as to whether these differences are based on sex or merely the differing levels of involvement displayed in the H/H dyad.

The follow-up ANOVA for dyad type resulted in a significant $F$ for TSM ($F = 16.61$, $p = .0001$), CBM $F = 9.20$, $p = .0002$), and XDUR ($F = 74.61$, $p = .0001$). The H/H dyad type was higher on these dependent variables than either the H/L or the L/L dyad types. The ORATE approached significance ($F = 2.56$, $p = .082$).

Follow-up T-tests (Tukey) for dyad type yielded the following significant results at the .05 level. The mean
TSM was significantly higher for the H/H dyad type than either L/L or H/L dyad type (H/H = 33.239, L/L = 24.79, H/L = 23.41). The mean number of dimensions involved in each half-second of movement (CBM) was significantly higher for the H/H dyad type than either the H/L or the L/L dyad type (H/H = 0.963, H/L = 0.698, L/L = 0.692). The XDUR was significantly higher for the H/H dyad type than for the L/L or the H/L dyad types (H/H = 1.289, L/L = 0.884, H/L = 0.871). The ORATE was not significant for dyad type on the T-Test, but the means show that the L/L dyad had the highest ORATE, and the H/H dyad the lowest (H/H = 1.891, H/L = 2.684, L/L = 3.055). This is the direction predicted by hypothesis one.

Analysis of Sex Type Effects and Dyad x Sex Type Effects

Hypothesis five, which predicted that females would show significantly more nonverbal interaction involvement than males in all three dyads, was only partially supported in that females were significantly higher overall on most nonverbal measures than males, but on the DBM, a measure Fisch et al (1983) states is closely described as nonverbal responsiveness, males had higher rates. Dyad type x sex type analysis shows that hypothesis five can only be supported in the H/H dyad, because it is the only dyad type where there are significant differences in the dependent variables between females and males.
Sex type effects. Follow-up ANOVAS for sex type resulted in a significant $F$ for TSM ($F = 10.43, p = .0016$), CBM ($F = 5.06, p = .0264$), DBM ($F = 4.09, p = .0455$) ADEC ($F = 4.87, p = .0294$) and Xdur ($F = 15.26, p = .0002$). AINC only approached significance for sex type ($F = 3.63, p = .0594$). Females were significantly higher than males on the TSM, CBM and XDur. Males were significantly higher than females on the DBM and ADEC and approached a significant difference on the AINC. The follow-up ANOVA for time showed no significant differences for sex in measures over the three time samples.

For sex type, T-tests yielded the following significant results at the .05 level. Females spent significantly more time-in-motion (TSM) than males (Females = 29.58, Males = 24.709) Females exhibited significantly more CBM than males (Females = .851, Males = .718). The Xdur was significantly higher for females than males (Females = 1.077 and Males = .953). Males had significantly higher rates of DBM and ADEC than females (DBM Males = 4.09, Females = 3.692; ADEC Males = 4.0580 Females = 3.628) AINC only approached significance (Males = 4.092 Females = 3.692).

Dyad type x sex type effects. Follow-up ANOVAS for dyad type x sex type approached significance for TSM ($F = 3.06, p = .0508$) and reached significance for the XDUR ($F = 13.21, p = .0001$). Differences between the dyads separated
by sex show that sex type differences which created the interaction effect of dyad type x sex type are primarily caused by differences between the sexes in the H/H dyad.

On the TSM, the difference between means of females and males was significant for the H/H dyad, whereas the difference between the means of males and females in other dyads was not (H/H = 10.47, L/L = 2.36, H/L = 2.23). On the XDur, females in the H/H dyad were significantly higher than the males, whereas the differences between males and females in the L/L and H/L were close to zero (H/H = .355, H/L = .0155, L/L = .0015). This pattern of differences in the means between males and females on the TSM and XDur in the H/H dyad and similarity of results in the H/L and L/L dyads is also evident in the CBM, but is not significant (H/H = .233, H/L = .042, L/L = .113). The results on the DBM measure show that males have higher levels of DBM in the H/H dyad than females, but this disparity between the two sexes decreases in the H/L dyad and in the L/L falls to almost zero (H/H = .957, H/L = .249, L/L = .0028).

These findings may support the idea that high trait-involved males and females express nonverbal involvement differently when they interact with other high trait-involved males and females or may simply support the idea that males are not as involved in this particular casual conversation as females. It is possible to suggest, using the framework of this second suggestion, that a high
level of responsiveness, as indicated by the DBM, is not a feature of high state involvement. High levels of complex movement behavior may take the place of or obviate the need for swift activation and deactivation of body movement. Perhaps less attention is paid to control functions implied by dynamic body movement in a highly involved conversation. When there is less mutual involvement in an interaction, both high and low-involved males and females in this sample tend to show very similar levels of responsiveness.

Analysis of the Effects of Dyad Type and Sex Type x Time

No significant increase or decrease over time was found in the dependent variables when dyad type x time was examined nor was the one significant result for sex type x time in the expected direction. Follow-up ANOVAs for dyad type x time shown no significant differences. ANOVAs for sex type x time were only significant for the DBM, AINC and ADEC. (DBM $F = 5.17, p = .0064$; AINC $F = 5.29, p = .0057$; ADEC $F = 4.85, p = .0087$). Overtime females significantly increased the DBM, AINC, and ADEC, whereas males tended to slightly decrease over time. (DBM: Time 1 - Females = 3.333, Males = 4.278, Time 2 - Females = 3.783, Males = 4.0127, Time 3 - Females = 3.959, Males = 3.988)

The fact that females tended to increase on dependent measures over time and males tended to decrease over time may have been an artifact of the study in that they
cancelled any significant findings between the dyads on time. For this reason, separate, post hoc, linear time analyses were run on each sex for the all dyads and are included at a later point in this section.

High-IIS and Low-IIS Differences in Different Dyad Types

Hypothesis two, which predicted that high interaction involved subjects would significantly reduce the amount of nonverbal interaction involvement when they interacted with a low interaction involvement subject, was partially supported in that High-IIS subjects in the H/L dyad had significantly lower scores on the TSM, CBM and XDUR and significantly higher scores on the ORATE than the High-IIS subjects in the H/H dyads. Only the DBM is not in the predicted direction. Hypothesis 3, which predicted a finding of no significant difference between low-involved subjects in the H/L and L/L dyads was supported.

Follow-up ANOVAs were run to study the differences between High-IIS subjects in dyad types H/H and H/L and Low-IIS subjects in dyad types L/L and H/L. Caution must be taken interpreting these results as group size was not equal. The H/H and L/L dyads had 40 homogeneous subjects, whereas the H/L dyad had only 20 subjects who were High-IIS and 20 who were Low-IIS. The only significant differences between groups were found between High-IIS subjects in the H/H and H/L dyads. High-IIS subjects in the H/H dyad had significantly higher TSM, CBM, and XDUR rates than those
high-involved in the H/L dyad (TSM $F = 21.06, p = .0001, r^2 = .650$; CBM $F = 9.91, p = .0026, r^2 = .533$; XDUR $F = 36.09, p = .0001, r^2 = .631$) and a significantly lower ORATE ($F = 9.79, p = .0027, r^2 = .532$). There were no significant overall differences in the DBM, AINC and ADEC with the sexes combined in H/H and H/L dyads.

There were no significant differences on any of the seven dependent variables between Low-IIS subjects interacting with other Low-IIS subjects and those interacting with High-IIS subjects.

**Sex Type Differences for High and Low-Involved Subjects**

Because there were significant differences in males and females on the dependent variables, follow-up ANOVAS were run, separating the dyads into male and female groups and testing the differences in the High-IIS subjects in the H/H and H/L dyads and the Low-IIS subjects in the L/L and H/L dyads. Group size was also unequal for this analysis. Further support for hypothesis two was found for females, who exhibited a higher level of involvement in the H/H dyad than in the H/L dyad.

Females were responsible for the significant results found in the High IIS subjects on the TSM and CBM, although male results on these variables are in the same direction as females. In males the differences in High-IIS subjects interacting in the H/H and H/L dyads only barely approached significance on the TSM ($F = 5.18, p = .0854, r^2 = .697$)
and is nonsignificant for the CBM ($F = 1.24, p = .2743$, $r^2 = .616$) and ORATE ($F = 2.03, p = .165, r^2 = .655$).

High-involved females significantly decrease TSM and CBM and increase the ORATE when interacting with a Low-IIS subject ($TSM F = 29.89, p = .0001, r^2 = .616$ and $CBM F = 11.98, p = .0017, r^2 = .514$ ORATE $F = 8.45, p = .0071, r^2 = .492$). Both high-involved males and females show significant decreases in the XDUR between the H/H and H/L dyads (Males $F = 10.68, p = .0029, r^2 = .653$; Females $F = 44.63, p = .0001, r^2 = .594$). There were no significant differences between High-IIS subjects in the H/H and H/L and between Low-IIS subjects in the H/L and L/L dyad types on the DBM, AINC and ADEC for either sex, although the female higher scores on these measures in the H/L dyad as opposed to the H/H dyad approached significance ($DBM F = 3.09, p = .0899, r^2 = .644$; $AINC F = 2.63, p = .1164, r^2 = .610$; $ADEC F = 3.15, p = .0867, r^2 = .648$). There were no significant differences for either males or females between the Low-IIS subjects in the H/L dyad type and the L/L dyad type for either sex.

Correlations Between Subjects in the H/L Dyads

High-IIS and Low-IIS subjects in the H/L dyad rates on the seven dependent variables were correlated for each of the three time periods to assess their relationship to each other. There were no significant correlations between scores, although the correlation between scores on the CBM
and DBM were at or near Pearson's $r = .34$ at the first time period, but decreases to near zero or a slight negative correlation by third time period. The correlation of the XDUR scores is near zero at the first time period, but at time period three, the correlation is negative (Pearson's $r = -.341$). The correlation between ORATE scores is negative or close to zero. Overall, these correlations indicate that the randomization of subjects was successful.

**Post-Hoc Analyses of Linear Time**

On visual inspection of the data, opposing differences in increases versus decreases were found for certain dependent variables for males and females in the H/L dyad which would have made it difficult to find evidence to support hypothesis four in the overall analysis of the effects of time. Therefore, linear analysis of results of both males and females were investigated post-hoc. Mean scores for the dependent measures for females and males over time are given in Table 2. Dyad type differences on the dependent variables for both sexes are displayed in Figures 8-12.

Support for hypothesis four, which predicted a significant trend for a decrease over time in all dependent variables (except ORATE, for which an increase was predicted) for the high involved in the H/L dyad, was partially supported for males but not for females who actually increased over time on several measures. The
Table 2
Average Scores on Dependent Measures for
Females and Males Over Linear Time

<table>
<thead>
<tr>
<th></th>
<th>Females</th>
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<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
<td>Time 3</td>
<td></td>
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<tr>
<td><strong>TSM</strong></td>
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<tr>
<td>High/High Dyad</td>
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<tr>
<td>Highs in High/Low Dyad</td>
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<tr>
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<tr>
<td>Low/Low Dyad</td>
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<td>24.96</td>
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<td><strong>CBM</strong></td>
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<tr>
<td>High/High Dyad</td>
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<tr>
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<tr>
<td>Highs in High/Low Dyad</td>
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<td></td>
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<tr>
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<td><strong>ORATE</strong></td>
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<td>High/High Dyad</td>
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linear time analysis shows that High-IIS males in the H/L dyad decreased significantly on the TSM ($F = 9.93, p = .0055$) and approached a significant decrease on the CBM ($F = 4.06, p = .0592$). For all males in the H/L dyad, the ORATE increases over linear time, but this increase is nonsignificant. The linear time analysis for females showed a significant increase over time in the DBM, AINC and ADEC for High-IIS subjects in the H/L dyad ($DBM F = 6.56, p = .0197, AINC F = 4.51, p = .0478, ADEC F = 7.72, p = .0124$). The increase over linear time in DBM, AINC, and ADEC for female, Low-IIS subjects in the H/L dyad approached significance ($DBM F = 4.08, p = .0586, AINC F = 4.02, p = .0604, ADEC F = 4.07, p = .0588$). The XDUR does not appear to increase or decrease over linear time in any of the dyads.

In the H/L dyad, females had increases in TSM and CBM and increases in the DBM, whereas males had decreases in the TSM and CBM and maintained the level of the DBM over linear time. The ORATE for both High-IIS sexes in the H/L dyad increased over time which was in the expected direction, though not significant. With the exception of the ORATE, these findings for females are all in the opposite direction than that predicted by hypothesis four. While overall High, IIS females in the H/L dyad have significantly lower rates of TSM, CBM, and XDUR, they appear to adapt to low interaction involvement by
increasing very low initial levels of involvement to levels which could be considered reciprocal or matching responses to the levels of their low-involved partners. The increases over linear time on the DBM, AINC, and ADEC for both partners in the H/L dyad may be evidence that with low levels on involvement, moderately high levels of responsiveness may be a feature of the interaction.

High-involved males in the H/L dyad, however, respond initially at a level very close to that of their low-involved partners on the TSM and CBM, but then proceed to decrease their involvement over linear time, while maintaining their responsiveness at a moderately high level. This decrease might be seen as a compensating-type of response.

Graphs of the Results Over Linear Time. Data from the linear time analysis was made into graphs for five variables: TSM, CBM, DBM, XDUR, and ORATE, as shown in Figures 8 through 12. From these graphs one can see that the XDUR is the only variable which clearly discriminates, for both sexes, the H/H dyad from the H/L and L/L dyads. For males, the TSM, as shown in Figure 8, tends to discriminate between groups, but the High-IIS in the H/L dyad, while it remains in the same range as Low-IIS subjects, crosses the curve of both dyads containing Low-IIS subjects, ending at a lower point. Females show more spread in the TSM in the various dyads, but the
Figure 8. Time spent-in-motion for males and females in the different dyads over linear time.

High-IIS subject in the H/L has a much lower percentage of time spent-in-motion than the High-IIS subjects in the H/H dyad. The CBM rates of male dyads, shown in Figure 9, are
within much closer proximity than those of female dyads. While the rates of the Low-IIS subjects in both the H/L and L/L dyad are much the same, CBM rates in those dyads converge for the High-IIS and Low-IIS by the third minute.

Figure 9. Complexity of body movement for females and males in different dyads over linear time.
The DBM graphs, shown in Figure 10, demonstrate an interaction effect of dyad type x sex where crossing occurs. High-IIS males have consistently high rates of DBM.

Figure 10. Dynamic body movement for females and males in the different dyads over linear time.
as shown in the convergence of the two lines at Time 2. If it were not for the large dip in Low-IIS subjects in the H/L dyad at Time 2, the overall rate of the DBM would

![Male XDUR Dyads Graph](image)

![Female XDUR Dyads Graph](image)

Figure 11. Mean duration of movement for males and females in the different dyads over linear time.
probably have been significantly higher than that of the Low-IIS in the L/L dyad. H/H females, on the other hand, have significantly lower rates of DBM, than males but

Figure 12. The occurrence rate of movement for females and males in the different dyads over linear time.
highest rates are seen in the H/L dyad where DBM and related measures increase significantly over time.

As already noted, the XDUR, as shown in Figure 11, is higher for the H/H dyad for both males and females, than it is for all types of subjects in the H/L and L/L dyads.

The ORATE, shown in Figure 12, reflects that one high score for females at Time 2 in the L/L dyad type pushed scores up unrealistically. The ORATE is lowest in the H/H dyad. Low-IIS males in the H/L dyad have somewhat higher ORATES than female Low-IIS in the H/L dyad.

**Post Hoc Log-Linear Analysis of Alternating Patterns in TSM**

Because of considerable individual differences in mobility, a post hoc research question was developed: while the TSM appears to reflect a somewhat constant level over time and in different dyadic levels when overall measures were used, what is the mobility pattern of individuals? Do they alternate periods of high mobility with periods of low mobility or are they fairly constant in mobility over time? Rates on TSM were categorized into high (40% and above), medium (20-39%), and low (0-20%) categories for the purposes of a log linear analysis. This analysis was conducted to assess whether or not rates of time spent-in-motion stayed constant over the three times sampled, or the TSM remained within the same range (high, medium or low) for individual subjects in all dyad types. The analysis showed that individuals in the L/L dyad had
significantly more constants (57.5%) over time periods sampled than did individuals in the H/H dyad (27.5%) (after controlling for sex, \textit{chi-square} = 7.55 \ p = .023). The H/L dyad had 42.5% constants, which was not significantly different from either of the two extreme groups. It might appear that when High-IIS and Low-IIS subjects interact there is an additive-type effect, whereby there is more alternation of time spent-in-motion than in the L/L dyad. This, however, is not the case as Low-IIS subjects in the H/L dyad contribute almost 2 times as many constants as the High-IIS subjects in the H/L dyad. In the H/H dyad, there seems to be more give and take of the "floor", to the degree that TSM may also represent time-spent-talking. Perhaps there is more confidence that one can regain the floor in the H/H dyad than in the L/L dyad. Conversation may be more socially relaxed in the H/H dyad, allowing each interactant to become more involved and active, and less concerned about responsiveness to other. Perhaps this is why hypothesis two is only partially supported, in that neither males nor females actually decrease their responsiveness in the H/L dyad and, in fact, females increase their responsiveness as measured by the DBM. The combination of decreased involvement and increased responsiveness might indicate that High-IIS in the H/L dyad are less socially relaxed in the H/L dyad than in the H/H dyad.
CHAPTER IV
DISCUSSION

Overall, there is reasonably strong support for the main hypotheses examined in this study. When high-involved subjects interact with each other, they show significantly more nonverbal involvement than low-involved subjects interacting with each other. When high-involved subjects interact with low-involved subjects, their nonverbal involvement is at lower levels than high-involved subjects who interact with each other. There were no significant differences between low-involved subjects in the L/L dyad and the H/L dyad on any of the nonverbal measures. The primary sex differences occurred in the dyad where high-involved subjects interacted with each other, with females showing more involvement than males and males showing more nonverbal responsiveness.

The findings reported here attest to the importance of nonverbal indicators to the involvement of individuals in dyadic conversation. Freedman states that "...high compared to low communicative intent refers to the mobilization of the various vehicles of expression...in the transmission of information to the listener" (p. 168). In this study it was
postulated that body movement, specifically time spent-in-motion, complexity of body movement and dynamic body movement would contribute to the understanding of how involvement functions in a communicative exchange. While complexity of body movement is thought to be more specific to involvement than other parameters, findings show that the other parameters contribute in specific ways to the understanding of how body movement contributes to interaction involvement.

**Time Spent-in-Motion**

Overall, high-involved subjects in the H/H dyad spent more time in motion than low involved subjects in the L/L dyad, and there were significant differences between the high-involved in the H/H dyad and the H/L dyad on time spent-in-motion. One cannot say, however, that time spent-in-motion is a generalized indicator of involvement because there is a wide range on this parameter within the dyads, in which one can see that individual differences play a significant role. High-involved subjects in the H/H dyad had ranges of time spent-in-motion of 4-73% and low-involved subjects had ranges of from 10-42%.

Fisch et al note that the TSM remains fairly stable in a depressed individual, whether that individual is depressed or recovered. A person could achieve a high percent of time spent-in-motion by tapping their fingers continuously on a chair, which would indicate little about involvement. There
are, however, dimensions which can be derived from time spent-in-motion which do appear to have relevance for involvement. The range on the mean duration of movement (XDUR) does not seem to show the same wide spread in both the high and low-involved interactants and seems to be an indicator supportive of the involvement shown in the H/H dyad. Matarazzo and Wiens (1972) found that one of the most common indicators of interspeaker influence is change in the mean response duration after the introduction of some manipulation. Mean response duration may correlate with mean duration of time spent-in-motion and thus be a similar measure. Longer periods of time spent-in-motion seem to indicate the possibility for more complete units in transmitting information and more confidence that each interactant will contribute to the communicative exchange.

The occurrence rate of movement (ORATE) only approaches significant differences between dyad types, but the occurrence rate is higher in the L/L dyad than in the H/H dyad and the H/L dyad is closer in mean score to the L/L dyad than to the H/H dyad. In addition, high-involved females show significantly higher ORATE scores in the H/L than the H/H dyad, indicating that interactants will have lower occurrence rate of movement when they are more highly involved in conversation. Thus, the high-involved interactant shows longer periods of body movement and less frequent onset of movement; the low-involved interactant has
shorter periods of movement and these periods occur more frequently. These findings are suggestive of an expressive deficit in the low-involvement interactant and thus longer periods of movement which accompany longer periods of speech may not be present. In addition, short, but frequent periods of movement might be just as likely to occur during listening as during speaking.

The alternation of time spent-in-motion seems to be a concept which is important to involvement. Low-involved subjects have a rather static percent of time spent-in-motion over the three time periods sampled, perhaps exhibiting less give and take with their dyadic partner over the course of the interaction. This rather monotonous pattern of the low-involved interactant is exhibited in both the H/L and L/L dyads. High-involved interactants have minutes which are high and those which are low in the percent of TSM. This alternating pattern may be an indication of accommodation to the interaction of the other when both interactants are mutually involved.

Complexity of Body Movement

Fisch et al indicate that psychiatrists' impressions of the body movement of depressed patients characterized it as monotonous, uniform and impoverished. These impressions were supported by empirical data on the complexity of body movement (CBM) and it was based on this support that Fisch et al suggest that complexity of body movement is more than
an indicator of recovery from depression, but "determines, at least in part, a person's impression about his or her partner's involvement in the communicative exchange" (p. 317). It was not known prior to the present study if this indicator would be sensitive enough to study the level of involvement in the casual conversation of non-depressed subjects. The data of this study suggest that the complexity of body movement is a parameter which is extremely sensitive to changes in involvement.

While there were sex differences as well as dyad type differences in the complexity of body movement, there was no dyad type x sex interaction effect with this measure. Low-involved females had slightly more complex body movement than did low-involved males, but this difference was not significant. High-involved males did, however, have significantly lower rates of CBM than high-involved females in the H/H dyad. Perhaps, the best explanation for this finding seems to be a combination of two factors already mentioned: females are somewhat more involved in casual conversation with strangers and this rather short conversation was one in which males were not highly involved. It is possible to suggest that differences in involvement levels of high-involved males and females will probably only be significant where the situation acts to influence involvement levels of males. It does not seem that communication apprehension was a factor for
high-involved males, as they used highly responsive behaviors and responsiveness is thought to correlate negatively with communication apprehension (Cegala et al., 1982a). Since no coding of the verbal aspects took place in this study, it is not known whether females chose topics which fostered more involvement. Future study of involvement which includes verbal coding should consider topic selection categories, which might shed some light on male involvement in casual conversations. An additional perspective which might be interesting to include in a verbal coding scheme is whether topics discussed are focused on the present or on the past. Anecdotally, females seemed more likely to talk about events in the present, whereas males seemed to focus more on past events.

While high-involved males in the H/H had more complex body movement than than high-involved males in the H/L dyad, this finding was not significant. There was, however, a significant difference in responsiveness between males and females in the H/H dyad. It is possible to suggest that high-involved subjects may use more rapid initiation and termination of movement in situations where they are not highly involved.

Dynamic Body Movement

Dynamic body movement (DBM), the activation and deactivation of movement, is the only parameter for which predictions were not as hypothesized. The findings do suggest, however,
an important role for responsiveness in involvement. Fisch et al. state that the phenomenon of rapid initiation and termination of motor activity is closely related to nonverbal responsiveness. The size of dynamic changes in motor activity has a direct impact on the organization of the interaction through the intermeshing of behavioral activity. Fisch et al. found that not only did depressed patients have significantly lower dynamic body movement than recovered patients, but psychiatrists also had decreased dynamic body movement when they interacted with depressed patients. The finding in this study that low-involved, subjects did not exhibit low levels of dynamic body movement may account for the finding that high-involved subjects interacting with low-involved subjects do not decrease on this same measure. Thus, not all of the parameters which are decreased in depression are decreased with nondepressed persons.

A second interesting finding is that high-involved females in the H/H dyad had significantly lower rates of dynamic body movement than high-involved males. In the H/L dyad, however, high-involved females have significantly higher DBM scores than in the H/H dyad. These findings seem to imply that with high state involvement there is not as much need to regulate the communicative exchange through highly responsive nonverbal behaviors. It may also be possible that high state involvement implies responsiveness
and confidence in the alternation of speaking turns without rapid activation and deactivation.

Fisch et al. state that there is a trend for activation scores to be higher than deactivation scores in depression. This trend exists in this student population as well, but the differences are, for the most part, very small. High-involved females did, however, have higher than average activation rates in the H/H dyad, but in the H/L dyad their deactivation scores were higher during two time periods sampled than activation scores. This difference was particularly pronounced during the third time period, where high-involved females have increased the initial level of nonverbal involvement to match that of the low-involved partner. There were only two other instances where deactivation scores were higher than activation scores and these were one minute each for the high and low-involved males in the H/L dyad.

These trends seem to suggest that in high state involvement, activation of movement contributes to turn taking and, perhaps, makes it unnecessary to deactivate rapidly to encourage the other. In the H/L dyad, the high-involved female puts more emphasis on deactivating rapidly to encourage the other to participate or attempt to control the interaction. It may be that the high-involved person interacting with a low-involved person is uncomfortable displaying high-involvement and, thus, does
not work to take his or her own turn, but tries to encourage the other to respond with involvement. Singer (1974) states that when an interviewer tries to take control and become the stimulus for a large response he or she may upset natural tendencies to be involved. "Paradoxically, he may be a less successful elicitor than the subject himself, because his intrusions and his handling of the situation may instead help the subject avoid or curb his natural potential patterns and levels of emotional and physiological functioning" (p. 6).

While dynamic body movement may not account for all of the nonverbal motion which might be considered responsive behaviors, it is an indication that High-IIS subjects in the H/L dyad, try to continue to maintain the communicative exchange, even when the amount of involvement of the other interactant is not high. It may be that lack of active involvement creates the need for more attention to the relational dimension of an interaction but this does not succeed in increasing involvement. It can be suggested that an increase in involvement from the high-involved interactant may be the more necessary condition for reciprocal interaction involvement, rather than responsiveness. Whether an increase in involvement would be sufficient to change the behavior of Low-IIS subjects is in doubt, but remains a possibility, if Low-IIS subjects are
not limited in some way by psychological and physical factors.

Male and Female Differences in the H/H Dyad

Although females and males exhibited differences in their nonverbal involvement, these overall differences were only significant in the H/H group. High-IIS males do not spend as much time in motion as females, their complexity of body motion is lower and the duration of time talking is shorter. This finding is supported by the Cegala et al (1982a) with this same sample who found that High-IIS males showed less overall body movement than High-IIS females. Visual observation of the data matrix suggests that High-IIS males may use head motion as a means of expressing themselves more than females. Frey (1983) found that lateral head motion is an important indicator of emotional expression and that males and females interpret the meaning of the lateral head position in pictures differently. It may be that although the High-IIS male is not as nonverbally active as the High-IIS female, who use complex movements of the hands in achieving complex body movement, other types of movement may indicate involvement for males. Future research on the difference between male and female involvement behaviors should consider the possibility of this alternative explanation.
Effects of Linear Time in the H/L Dyad

By looking at the behavior of males and females over linear time in the H/L dyad type one finds differences which help to explicate the overall picture of what occurs in the H/L dyad. From the data collected during the first minute of coding for the H/L dyad, it is possible to suggest that both males and females are aware almost immediately of the impoverished set of nonverbal involvement of the Low-IIS subject. In the H/L dyad, the initial, High-IIS female response shows a more profound effect than that of the High-IIS male. The CBM of the High-IIS female decreases during the first minute to .597 (an average rate of one movement every .597 second), which is less than one-half what the CBM is at any time point in the H/H for females and .170 to .300 less than any time point for the Low-IIS subjects in the H/L or L/L dyad. Responsive behaviors, as shown in the DBM, AINC and ADEC, are significantly higher for High-IIS females in the H/L dyad than in the H/H dyad and, over linear time, proceed to increase significantly. This may be a type of compensation for their own lower levels of involvement. While TSM and CBM also increase over linear time to levels which are very similar to those of female Low-IIS interactants, they still do not approach the higher levels of the High-IIS females in the H/H dyad. The ORATE for High-IIS females in the H/L dyad increases slightly over linear time and is significantly higher in the
H/L dyad than in the H/H dyad. Thus, high-involved females adopt a pattern which is similar to that of the low-involved.

During the first minute sampled, High-IIS males in the H/L dyad look very much like males in the H/H dyad, except for a significantly lower XDUR. Over linear time, however, the decrease in TSM for High-IIS males is significant and CBM approaches a significant decrease to low levels which approach that of the High-IIS female during the first minute sampled. The High-IIS male level of responsive behaviors, as shown by the DBM, AINC and ADEC, is maintained at much the same level as those in the H/H dyad, throughout the H/L interaction. The ORATE of the High-IIS male in the H/L dyad begins at the first minute at the same level as in the H/H dyad, but then proceeds to nonsignificantly increase over linear time.

Males are not as quick to respond to low interaction involvement as females, although by the third minute sampled in the H/L dyad, the evidence of their response is exemplified in their nonverbal behavior. Perhaps if the interaction had been longer than six minutes, the High-IIS males would also have increased their involvement slightly to be more in line with that of the Low-IIS subject.

Following Fisch et al (1983), who suggest that the CBM is the primary means through which the other interactant forms impressions about involvement, it can be suggested
that the Low-IIS is aware of the low level of involvement but does not show this awareness in their nonverbal interaction, which is at levels similar to that displayed in the L/L dyad. The only evidence of a low-involved interactant response to the behavior of the high-involved counterpart is found in weak trends in the ORATE and the DBM. Low-IIS females in the H/L dyad slightly decrease their ORATE over linear time while the High-IIS females increase their ORATE over time. Low-IIS male subjects in the H/L dyad increase their ORATE over linear time while High-IIS male subjects increase as well. ORATES for female Low-IIS subjects in the H/L dyad are lower than those in the L/L dyad. ORATES for male Low-IIS in the H/L dyad are higher than those in the H/L dyad. This difference is particularly notable at the third time period sampled, where males have decreased their involved behavior to rates slightly lowered than those of their Low-IIS counterparts. A similar pattern exists in the DBM, AINC and ADEC. At time periods where the TSM and CBM rates are moderately high for the High-IIS subjects in the H/L dyad, the DBM, AINC and ADEC of the Low-IIS subject in the H/L dyad increase. Conversely, when High-IIS subjects have very low rates of TSM and CBM, Low-IIS subjects have lower rates of DBM, AINC, and ADEC. These results might suggest that High-IIS females, by increasing their total involvement over linear time to be closer to that of the Low-IIS interactant, are
encouraging a lower utterance rate, along with more nonverbal responsiveness, while the males, by decreasing their involvement over linear time, are creating more anxiety in the Low-IIS who thus exhibit more rapid rates of speech and somewhat decreased responsivity. Although none of these findings are significant, they provide some indication that involvement may be more important in increasing involvement of the Low-IIS subjects. In addition, it might take more than one interactive session to create change in the characteristically low-involved.

**Mutual Influence**

The pattern of response to low nonverbal involvement by high-involved subjects appears to be a matching response rather than a compensatory response, because high-involved subjects essentially look like their low-involved counterparts in the H/L dyad. On the other hand, High-IIS females initially compensate with low involvement and it is only over time that they match the involvement levels of the low-involved. The reverse situation is seen for High-IIS males. One could also suggest, using a slightly different perspective, that the display of responsiveness of high-involved subjects in low-involvement situations is a type of compensation, both for their own low involvement and that of their low-involved counterpart. Singer suggested that we are aware of our own levels of involvement and that this factor cannot be discounted as an influence in mutual
interaction. Reflexive awareness and not simply awareness of the involvement of the dyadic partner, influences interaction. For this reason, it may be suggested that compensation cannot be just considered in relationship to another's behavior, but should be viewed in relationship to one's own behavior as well.

Even though the high-involved interactant is viewed as more communicatively competent than the low-involved individual, the only suggestions of a High-IIS response to low-involvement in the H/L dyad is in the higher rates of responsiveness in high-involved females. Because increased responsivity is not seen to affect the nonverbal involvement of the low-involved, future studies should investigate the effects of responsive behaviors on involvement.

Responsiveness may put pressure on the low-involved interactant, whereas an increase in involvement may be more socially relaxing. While this may seem paradoxical, one persons' involvement may be perceived as relieving the need for the other to say anything! While this effect may be temporary and involved responses may not occur in one short conversation, it could be the impetus needed for reciprocal involvement.

One-sided expressions of involvement may be difficult to accomplish and difficult to sustain without a reciprocal increase in involvement. Whereas the high-involved delusional paranoid may not be sensitive to the effect of
his or her high-involvement on others, the trait
high-involved person may feel restricted in expressing high
involvement because he or she is sensitive to the behavior
of others. When involvement is not reciprocated it may be
difficult to continue to contribute highly involved
behaviors, because of concern that this would be perceived
as ignoring the interactional wishes of the other.
Occasionally, the high-involved person may become so
invested in conversation that the other person's
participation is ignored temporarily. An example of this
occurs in one H/H dyad where one subject is wearing a neck
brace for an injury sustained in an auto accident. She sits
very straight (a posture necessitated by the neck brace) and
moves very little during the first two time periods. Her
partner, because the neck brace triggers thoughts about an
aunt who needed to wear a neck brace after an auto accident
precipitated by a malignant brain tumor, spends the first
two time periods highly involved, both verbally and
nonverbally, in conversation about her aunt. After these
first two time periods this partner stops abruptly and
apologetically reaching out both arms toward the neck-braced
partner states, "I...I'm not trying to scare you with the
brace..." (imply that her aunt's terminal illness had
anything to do with her partner's neck brace). From this
point onward, her neck-braced partner contributes in a
nonverbally involved manner, gesticulating primarily with
her hands, as her upper torso does not move much. These are the complexity of body movement scores over linear time:

(neck-braced partner followed by her partner)

Time one: .076, Time two: .613, Time three: 1.916

Time one: 1.908, Time two: 1.796, Time three: .555

One can see that the nonverbal involvement of the non-neck-braced partner drops significantly at Time 3, and yet, because she has already established high-involvement this does not imply she is distracted or uninvolved. In fact, she seems to have encouraged her partner to express concerns about the effects of her medical condition. This particular drop in involvement may be seen as a compensating response, but it does not seem to be a withdrawal, but rather allows the involvement of the other to occur.

Verbal Cohesive Devices

While high-involved subjects in this study accommodated low-involved subjects, Villaume and Cegala (1988), using the same population as in this study, found that low-involved subjects accommodated high-involved subjects. Significant differences in the use of verbal cohesive devices occurred in the conversation between Low-IIS subjects in the H/L and the L/L dyads. Low-IIS speakers in the H/L dyad used less interactive ellipsis, used more noninteractive-within reference, spoke with greater syntactic complexity and fewer utterances than Low-IIS speakers in the L/L dyad. Villaume and Cegala attribute this accommodation of the Low-IIS
subjects to motivation grounded in the phenomena of impression management and social approval. In a discriminant analysis, however, they found that on the first function, which indexed elaboration of content within T-units and lessened use of interactive ellipsis, the H/H dyad fell between the H/L and the L/L dyads, perhaps indicating that High-IIS interactants use a somewhat moderate level of sophisticated language when talking to each other. The significant change in language usage of Low-IIS subjects may make for a more formalized, less relaxed conversation. This interpretation of the Villaume and Cegala study would dovetail more closely with the findings in this study. The responsiveness of the High-IIS subject in the H/L dyad may put pressure on the Low-IIS subject to use a more complex syntax. Responsiveness alone, however, does not increase the nonverbal involvement of the Low-IIS subjects.

Nonverbal Involvement in the H/L Dyad

Several explanations for the nonverbal communicative behavior of the High-IIS in the H/L dyad can be suggested: 1) highly expressive involvement might be considered socially inappropriate when there is no reciprocity; 2) the lack of highly expressive, involved behaviors of the Low-IIS subject leaves the High-IIS subject with little to which to relate and little with which to make self-associations in order to initiate and maintain involvement (i.e., if
expressive, involved behaviors were used by High-IIS in the H/L dyad, they would be self-generated); and 3) low involvement on the part of the Low-IIS subjects is disruptive to the overall intersubjectivity of the dyad, affecting what can be accomplished in communication. These explanations imply the somewhat counterintuitive idea that the lack of expressive, nonverbal involvement of the Low IIS subjects has a controlling influence on the behavior of the High-IIS subjects, who are thought to be the more effective communicators.

Efficiency and Social Appropriateness

Kellerman and Berger (1984) state that interactive information acquisition strategies can be placed in a two dimensional space defined by efficiency and social appropriateness. They consider self-disclosure to be a socially appropriate way to gain information. A socially appropriate strategy would be more subtle, but less efficient because it is indirect. Question-asking would be considered efficient but might be considered socially inappropriate because of its directness. A third strategy proposed by Kellerman and Berger is socially relaxing the target person, which would be considered extremely indirect and unobtrusive, but also inefficient. A socially relaxed target might give information, but not the specific information desired. Efficiency is considered to be high in control behaviors and may be in tension with social
appropriateness. Although responsive behaviors could be considered socially appropriate as a response to low-involvement, responsiveness may have a stronger control function than involvement. If there had been more displays of involvement, it might have been possible to say that High-IIS were trying to socially relax their Low-IIS counterparts.

Research by Rosenfeld (1967) and Mehrabian and Williams (1969) has shown that those who are seeking approval from others or are attempting to persuade others, show more gesticulation than do their non-approval-seeking counterparts. The finding here, that complex body movement, reflective of gesticulation, decreased, tends to suggest that High-IIS subjects in the H/L dyad were not trying to put the other at ease or gain social approval. Kellerman and Berger (1984) report research in which high information seekers tried significantly more than low information seekers to make their target conversational partners comfortable. Those instructed to be high information seekers encouraged their partners to talk; to make themselves, their partners and the conversations comfortable; used positive self-presentation; and were noncontrolling in conversation. The high information seekers did, however, employ more control techniques than did low-seekers.
In this study, participants were not instructed to seek information, but rather were instructed that they could choose any subject. This may partially account for the difference in strategies employed. The fact that in this study affiliative and relaxing strategies were not highly in evidence in the nonverbal behavior of the High-IIS subjects in the H/L dyad leads to an interpretation which suggests that those who might be the more highly competent communicators do not employ interactive strategies which encouraged low-involved interactants to be involved. Interactants discover from the involvement of others how to proceed, what topics can be introduced and discussed and what commonalities there are between interactants that go beyond 'what class are you in?' and 'what year are you?'. Involvement appears to be an affective component of communication which is more likely to be displayed when a subject is interested and aroused, and when similarities, liking or disliking are expressed in reciprocal, involved communicative behavior.

Findings in Relationship to Communication Competence

The study findings may imply that although High-IIS interactants know what to do in a social situation, this may not include a repertoire which allows one to put the other at ease, at least in initial acquaintanceship situations with Low-IIS interactants who are strangers. It is possible to suggest that low involvement is somewhat advesive for
High-IIS subjects because they must make an effort to be responsive, attend less to their own interests and more to the relationship with the other interactant.

Reexamination of current definitions of communicative competence may be useful. Hymes (1971, 1972) refers to communicative competence as the ability of the native speaker, within his or her speech community, to interpret and produce language appropriate to situations. Wiemann (1977) states that communicative competence is the ability of an interactant to choose among available communication behaviors in order that he/she may successfully accomplish his/her own interpersonal goals during an encounter while maintaining the face and line of his/her fellow interactants within the constraints of the situation. Certainly, the behavior of the High-IIS subjects in the H/L dyad falls within these paradigms! And yet, something seems to be lacking. Wiemann and Backlund (1980) state that communicative competence is indexed by behavioral flexibility, interaction management, affiliation, support, empathy and social relaxation. Responses from a dyadic partner which do not provide evidence of interlinkages, commonalities, experiences, and feelings that the other has aroused or initiated, give the other interactant a type of feedback. While one can respond to the talk of another by providing feedback which says 'yes, I heard you', the next step in feedback is to offer self-generated thoughts -
...and this is what I think about that' - which are linked to the previous statement of the other. In this study expressive, nonverbal communication behaviors which support this type of verbal feedback are extant in interactions between High-IIS subjects, but are not particularly evident in the nonverbal communication between High-IIS and Low-IIS subjects. What is called to question here is that although behaviors are changed to be "appropriate to the situation" and allow the High-IIS subject to achieve modest communication goals while maintaining the face and line of the Low-IIS other, these communication behaviors do not lead to mutual involvement. Participants may leave the interaction with little understanding beyond that which they brought to the interaction. Thus, present definitions of communication competence seem to describe traits of individuals which may make it more likely that an individual will act competently, but do not seem to include recognition of the dialogical nature of communication competence.

Cegala (1984) points out that communication competence has cognitive, affective and performance dimensions. The level of involvement displayed seems to be related to (1) the ability to be involved and (2) the effect of the behaviors of the dyadic partner (3) one's awareness of self in the interaction (3) the situation in which the dyad interacts. Although those persons who are communicatively competent have the ability to be involved because they are
characteristically more perceptive, attentive and responsive and thus recognize in others qualities which trigger high involvement levels, they do not appear to use these abilities to their fullest when confronted with a nonreciprocating other.

More competent communicators are capable of changing their behaviors to try to reach their conversational goals, but it is important to realize that these goals may change when interacting with a less competent communicator. It appears that less competent communication, whether it is characteristic or created by problems of the moment, does tend to control the amount of involvement displayed by others in initial interactions where there are no instructions to seek information or persuade the other. These findings emphasize the importance of the mutuality of interpersonal communication and suggest that when either a High-IIS or Low-IIS subject loses a sense of the self as a social object by focusing primarily on the dyadic partner, the situation, or on internal matters, less can be accomplished through communication.

**Speculation about Involvement in Helper-Helpee Situations**

While results shown here cannot be generalized to helper-helpee situations, they have made more salient, the importance of complex body movement to the perceptions of involvement and of interaction involvement in general. It may be possible to say that interpersonal communication, as
a tool of exchange between two people, does not work as well when one person in the dyad lacks the ability to be involved. If it can be shown in future research with non-student and role-defined populations that the lack of nonverbal involvement in one interactant creates difficulties for the other interactant and affects the outcomes of interaction, this finding could have important implications for areas where communication difficulties have been thought primarily to be created by sociopolitical dimensions and not interactional dimensions. Several studies point to the importance of complex body movement and involvement in helper-helpee interactions, but these have primarily been studies conducted outside the context of the interaction.

Involvement displayed as a visual phenomenon in complex body movement may important to doctor-patient communication, where the potential for complex body movement may be hampered by illness, chronic disease, anxiety, and depression. If a patient is viewed as uninvolved, there may be reason to believe that this would be perceived as lack of presence or desire for avoidance. While lack of communication is a universal complaint of patients (Taylor, 1979), few have indentified the importance of involvement in communication. Taylor states that "good patients" are highly regarded by hospital staff because they are viewed as compliant, noncomplaining, nondemanding, and generally
passive. Following Goffman, Taylor suggests that "things would be much easier for the staff if the patient were not a person, but, rather, a noninteracting object....From this point of view, the ideal hospital patient role would be an inanimate state" (p. 158). Lack of involvement on the part of patients may contribute to the depersonalization of patients and lead to expectations of passivity and helplessness on the part of the health care professional.

Street and Wiemann (1987), in a paper and pencil test of patients who had just seen their physician, found that as patients became more concerned and anxious about their condition, the more they needed involvement and expressivity from their physicians to feel satisfied. Expressiveness was not found to be extremely important to patients with low concern. Interaction involvement (responsiveness, perceptiveness, and attentiveness) was, however, important to patients in general. It is possible to suggest that patients who were not concerned during their visit were more expressive in the interaction and thus their physician was expressive. With a higher level of sickness or anxiety, the patient may have been less expressive, leading to less expressivity on the part of the physician. Therefore, a lack of expressivity might have been noted more by concerned patients as being important to their satisfaction. It is ironic that the need for expressiveness is higher with greater anxiety and concern, because these emotions could
decrease the ability of the patient to be involved, increasing the likelihood that the physician would not be expressive and involved.

Teacher-student communication also provides evidence that increased gestural activity and head nods are important when seeking positive affect and that they provide important perceptual stimulation for the student. Anderson (1979) and Anderson, Anderson and Jenson (1979) found overall body movement positively associated with the perceived immediacy of a teacher. Mehrabian (1971) noted that greater use of gesture by a teacher tends to be associated with a more affiliative classroom style. Dramatic style behaviors of teachers were investigated by Javid, Downs, and Nussbaum (1988). Their research showed that award-winning teachers used a more dramatic style than nonaward-winning teachers. Norton (1983) described an ineffective teacher as one who is "not very lively or animated, does not signal enough attentiveness or friendliness, does not have a very precise style...is not very relaxed, and does not use a dramatic style" (p. 238). In the teaching profession, it seems that expressiveness and effectiveness are related.

The effect of noninvolved behaviors of the helpee can be seen in the interaction between mother and premature infants. Recent research in a low-income population (Benedict, 1985) has shown that infants of low birth weight are twice as likely as infants of normal birth weight to be
abused by the caretaker parent. Length of gestation was negatively associated with child abuse. Those with gestations less than 32 weeks had a risk for abuse estimated at 2 to 6 times those with a longer gestational age. This finding, which increases in low socioeconomic populations, may have its roots in the relationship between mother and infant. If the developmentally immature infant does not move in response to the mother in the expected manner, the ensuing sense of frustration, anger and disappointment in the mother may lead to child abuse. Mothers of premature infants might benefit by understanding the role of complex body movement behavior prior to taking a developmentally immature infant from the hospital. It is possible to suggest that the mother might be helped, in this situation, by expressing herself as if the infant were responding in the manner expected.

Communication with the elderly is also an area where more research on the effect of decreased expressive involvement should be carried out. Rodin and Langer (1980) found that younger people make fewer demands on the elderly because of judgments of diminished competence. The rate of expressive involvement in the verbal and nonverbal communication of the elderly may be a key factor in stereotypic thinking about the behavior of the aged. Decreasing involvement of others with the aged may lead to a loss of self-esteem and this may be more debilitating than
the actual losses of aging. Because the burden of communication has been placed on the elderly, we have failed to ask how the effects of their communication on others can be overcome. The elderly nursing home patient may have only "fleeting" visitors, because the nurse aide or family members are unable to obtain a level of involvement from the elderly person which makes them feel their effort was worthwhile. Slowness of movement and the inability to move to indicate involvement in ways that younger people might expect, could limit the information which is shared with the elderly person. In this manner, the world of the elderly person shrinks, because he or she is unable to gain linkages with the world outside from their visitors.

Bell (1985) indicates that loneliness also has an effect on conversational involvement. His research showed that lonely subjects were less talkative, interrupted less, used vocal back-channels less and were less attentive than nonlonely participants. Lonely subjects were perceived by others as less involved and less attractive interpersonally. Although his research did not investigate the effect of a lonely interactant on a nonlonely interactant, Bell suggests that people who do not actively seek information from others and reinforce others for their conversational contributions are unlikely to build foundations upon which relationships can be based.
Limitations of the Study and Suggestions for Research

The time-series notation method (Frey and Hirsbrunner, 1983) of investigating nonverbal communication has proved to be a method of high resolution, allowing detailed description of the spontaneous movement activity found in face-to-face interaction. While it does not investigate smiles, eye gaze, or facial expression, it does allow description of a much broader amount of nonverbal movement than previous research which has limited investigation to a small fraction of nonverbal behavior. While it would have been beneficial to place the data matrix on the computer to allow investigation of individual movement dimensions, this would have required considerable monetary support which was not available for this research. Graphs of individual dyadic behavior shown in the body of the text illustrate some of the important interactive effects which can be shown through computerization of the data matrix. Overall, this method seems to provide an excellent means of studying nonverbal involvement in the dyadic setting.

One limitation of the study population is that there was no effort to have the students come into the videotaping session at one particular time of the day, which could have affected involvement scores. In addition, the size of the sample required that taping sessions occur over a long period of time, meaning that some students could have been facing final exams or term papers. This also could have
influenced the type of interactions which occurred, although probably not in any systematic manner.

If the H/L dyad were to have had 40 dyads instead of 20, the comparisons with the H/H and H/L dyads would have had more power. In the future, if this line of research is to be taken further, baseline information about mixed-sex dyads and nonverbal involvement will also be important. If males do use head movement, which is a less complex measure than hand movement, to express themselves, a determination to weight the dimensions of head movement may have to be made to make comparisons to females. Otherwise, this difference, if it exists, could confound the study of complex body movement in involvement.

The use of a student population limits the generalizability of this study, but it was thought necessary to gather information in this setting prior to moving on to more role-defined situations. Since this research has shown interesting differences in the communication of High-IIS and Low-IIS subjects and in the effect they have upon each other, it may be possible to move on to investigation of involvement in more complex situations with more confidence that nonverbal involvement is an important communicative dimension.

A further limitation of this study is that verbal communication was not included. Future research to investigate verbal aspects of communication which are
supportive of involvement in conjunction with nonverbal behaviors is needed. While there is considerable evidence that gestural activity is reflective of verbal activity, more knowledge is needed about what features of verbal communication reflect investment and presence in the interaction.

Conclusion

The suggestion that a communicator try to express involvement even when their dyadic partner is not, is a somewhat radical departure from the basic tenets of interpersonal communication about the mutual intentionality of consciousness and how interpersonal communication occurs. Considerable evidence has been given that some of the basic premises about how interpersonal communication takes place are threatened by the presence of an unexpressive, uninvolved interactant who does not or cannot respond to their dyadic partner in ways expected. In casual conversations the outcomes based on involvement in communication ultimately may not be as important as those in other communicative settings. Therapeutic models of competent communication must go beyond the usual parameters of the communicative context to ask how one interactant can take on some of the communicative intent of the other in order to produce a meaningful communicative environment for both interactants. While researchers no longer think mothers act "as if" their full term infant were responding
because the infant actually does use responsive, expressive behaviors, we may need to consider this type of communication if we are to meet the interactive needs of those who cannot fully express themselves, especially with the use of complex body movement to display involvement and support verbal communication. When the vehicles of expression are limited, the need for relationships based on interpersonal communication may still be high. The manner in which interpersonal communication occurs and the way in which shared meaning develops, point to the significant difficulties which may occur when one interactant is not involved. To discover ways in which a noninvolved person can be reacted to more as a subject than as an object will require considerable understanding of the how involvement functions in interpersonal communication. In some communication settings, it may not be possible to satisfy the need for mutual involvement for competent communication to occur. How this need can be met by interactional behaviors in the face of low interaction involvement, is an important topic for future research.
LIST OF REFERENCES


