

AN EXAMINATION OF CRIMINAL  
'DEFENDANTS' VERBAL BEHAVIOR UNDER TWO  
TYPES OF COURTROOM INTERROGATION PROCEDURES,

by

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## CHAPTER I

### INTRODUCTION

#### Problem

Down through the centuries, from the Roman Halls of Justice to the present court system in this country, the verbal prowess of a Cato or Clarence Darrow in interrogating the defendant and pleading his cause has received much acclaim. However, a systematic study of this courtroom interaction drama with the goal of understanding and predicting the behavioral processes involved has received little attention.

Although a need for a more systematic understanding of courtroom interrogation has been felt by practitioners, at the same time the prospects of a solution of this problem in terms of experimental control were poor, because spontaneity is the very essence of the interrogation technique. Indeed a lawyer's ability to manipulate the interrogation in accordance with his aim, and his flexibility in making use of feedback supplied through the dialogue is a key to his success.

Whatever attempts had been made to increase the reliability and validity of interrogation through forms of standardization and control, the logic of the situation admitted only one conclusion: interrogation with a certain aim in view requires the kind of contact in which each in the dialogue must be nourished by the feedback received from the partner. Therefore, interference with the spontaneity of this process

through standardization must be unacceptable to the interrogators who are most successful in adjusting to the subtle nuances revealed in this type of verbal behavior sequence.

Lawyers operate as artists and craftsmen, unwilling and, because their exercise is largely intuitive, unable to accept the strictures of techniques of standardization derived from alien methods such as psychology researchers employ.

Scientific inquiry has not extended to what would have seemed a step consequent upon and leading to the understanding of such a situation, namely to the inquiry into what are the constituent elements of this conversational activity and what are the patterns, if any, of their successive occurrence. Speech behavior contains both content and noncontent components. In contrast to the hundreds of content-oriented investigations, to date only a handful of researchers have concerned themselves with the noncontent dimensions of speech. Representative of such research is that which has focused on the vocal parameters of speech latency duration (Matarazzo & Wiens, 1967), length of silence (Jaffee, 1967), duration of utterances (Matarazzo, Weitman, Saslow & Wiens, 1961), vocal intensity (Black, 1949; Welkowitz, Feldstein, Finkelstein, & Ayelsworth, 1972), and various speech rates (Goldman-Eisler, 1968).

Both the rationale and methodology for studying the noncontent aspect of speech behavior was derived initially from Chapple's Interaction Chronograph method (Chapple, 1939; Chapple & Donald, 1946) and

his interaction theory of personality. The basis of Chapple's interaction method is an analysis of the time variable during the interview. He has concluded that time is an important variable for describing human relations. He found that his field work as an anthropologist was unduly hampered by the lack of precision and communicability of the various "subjective" variables which anthropologists (and other behavioral scientists) were then using to describe human relations in the family, tribe and the interview situation (Matarazzo, Saslow & Matarazzo, 1956).

Chapple takes the position that personality can be assessed without recourse to intrapsychic and psychodynamic formulations, and further that this assessment involves merely the process of observing the time relations in the interaction of people. Accordingly, he has indicated that this method, because of its objectivity, can lead to a science of personality (Matarazzo et al., 1956).

Following the theoretical orientation of Chapple and using his measurement methodology, Matarazzo and Saslow (1959) in their earliest research investigated the stability of speech behavior, a critical question upon which any long term research program on noncontent dyadic interaction would depend. In exploring this question, they undertook a series of five studies using Chapple's Interaction Chronograph and the ten speech variables which it generated (Matarazzo et al., 1956). However, a subsequent factor analysis (Matarazzo, Saslow & Hare, 1958) revealed that many of these ten variables were redundant, and that two variables, (speech and silence durations), and possibly a third (a

speaker's interruption of his partner, or similar "maladjustment" in synchrony) more than adequately recorded what previously had required ten separate measures. Matarazzo and colleagues developed their own successor to the Chapple chronograph, the Interaction Recorder (Johnston, Jansen, Weitman, Hess, Matarazzo, & Saslow, 1961; Wiens, Matarazzo, & Saslow, 1965).

The basic unit in the recording system is the length of each interviewer's and interviewee's speech and silence units as they occur in ordinary conversation as recorded on an Interaction Recorder (Weins et al., 1965). The Interaction Recorder is an electronic device which time records on paper or magnetic tape an account of the time when either person in an interview is speaking or silent. An interview is recorded "live" through a one way mirror by an observer who depresses (on the Interaction Recorder) either the interviewer or interviewee key, depending upon who is talking.

Three speech variables are derived from the interview data:

- (1) mean speech duration, the total time in seconds the interviewee (or interviewer) speaks divided by his total number of speech units;
- (2) mean speech latency, the total latency time (the period of silence separating two different speech units) divided by the number of units of interviewee (or interviewer) latency; and
- (3) percentage interruption, the total number of times the interviewee (or interviewer) speaks divided into the number of these same speech units which are interruptions of his partner. Hence, Matarazzo's system has as its basic units the

duration of each interview participant's speech, his reaction time before each unit of speech and the number of interruptions of his conversational partner.

According to Sarbin (1954) the formal characteristics of speech are important determinants of how an individual carries out his social role. Such characteristics of speech as pitch, rate, density, length, pauses and silence are aspects of social roles to which other individuals react. Changing these characteristics systematically affect the reception an individual receives from his audience. It is often not what an individual says but the manner in which he speaks that influences how his peers react to him. Interpersonal influence, accordingly may be considered a frequent component of social interaction. It is sometimes easily recognized and socially sanctioned as, for example, in the socialization and education of children. At other times, the influence component in social interaction may be disguised. If influence is designated as the transmission of information designed to change the psychological state of a listener, it becomes difficult to conceive of an active interpersonal interaction that does not involve influence.

Influence is frequently thought of as a one-way process, akin to exploitative power to do something exploitative to a passive audience. But even in the field of propaganda, the exploitative model does not provide an accurate conceptualization. As Davidson has noted: "the communicator's audience is not a passive recipient--it cannot be regarded as a lump of clay to be molded by the master propagandist. Rather the



audience is made up of individuals who demand something from the communications to which they are exposed, and who select those that are likely to be useful to them. In other words, they must get something from the manipulator if he is to get something from them. A bargain is involved" (1959, p. 343). Therefore, we move toward a transactional model of the influence process in which influence attempts are seen to be reciprocal in nature in that both parties expect to give and take from the interaction.

Nowhere is this model better exhibited than in the interrogation of the defendant in the courtroom. This dyad has a special place in the study of influence processes.

In our culture, the dyadic model is the most frequent interpersonal structure for the transmission of private information. Specific dyadic roles have been developed to facilitate the communication of intimate messages. Of these, the husband-wife dyad is perhaps the most prominent, but other examples of dyads that facilitate private communication might include the relationships that exist between priest and parishioner, doctor and patient, lawyer and client, or therapist and client. In the past, researchers concerned with dyadic interactions have tended to emphasize differences between specific situations rather than highlighting possible commonalities within situations. For example, those whose work was concerned with friendship pairs almost never extended their work to doctor-patient dyads. Such has also been the core research in courtroom interactions. But this parochial orientation is

now changing. Nowhere is this better exhibited than in the comparatively new field of forensic psychology which fosters the growing rapprochement between research in learning, social and clinical psychology. Psychologists interested in social influence are now looking toward a convergence of factors involved in behavior change.

Although the emphasis is on the similarities in human interactions, situational determinants of behavior must also be studied. General principles of behavior do not operate in a vacuum. Variance associated with particular settings can be a powerful determinant of behavior. What is needed is more attempts at "bridging" research which tests the conditions under which particular experimental findings might apply (Goldstein & Dean, 1966; Heller & Marlatt, 1969; Hovland, 1959).

The orientation taken to the present research may be summarized by the following set of assumptions:

1. Social influence is a transactional process in which the intent of the communicator, the manner in which his message is presented and the needs of the communicant interact in determining the final outcome.

2. The examination of a defendant in a criminal trial represents an appropriate structure for the study of social influence, particularly since the concern is with conditions that facilitate the transmission of messages in a naturalistic setting.

3. The outcome of examination of a defendant is a joint function of its content and its structural or noncontent characteristics. Al-

though dyadic examinations may differ in content, they often share common non-content structural characteristics.

4. The role relationships between the participants, the interpersonal style with which each defines his role, the cognitive appraisal of the demand characteristics of the examination and the capabilities and resources of meeting them, and lastly, the informational properties of the examination are primary determinants of the structural noncontent characteristics.

This study seeks to identify and examine the factors and relationships which are crucial to the interrogation procedures but for which empirical evidence is as yet limited and unclear.

#### The Problem

Whether patterns of verbal behavior can be shown in cross examination and direct examination of criminal defendants and the extent to which these patterns are modified by the hostile nature of the cross examination would aid in clarifying the dimensions of the temporal indices of verbal behavior.

This study encompasses certain central theoretical propositions of psychological stress and interracial behavior which have received substantial empirical support but for which generalizability to structural noncontent of verbal behavior has not been sufficiently explored in the natural setting.

In addition to addressing the patterns of verbal behavior, this

study undertakes to examine the influence of stress under conditions of courtroom interrogation and the effect of cultural differences in courtroom behaviors. The problems this study examines are important for a number of reasons. First, the study will add to the sparse literature on the noncontent behavioral measures of verbal interaction. Second, it will be one of the first studies to address the relationship between stress and racial background as measured by verbal behavior in the courtroom. Third, the study may provide the legal and psychological community with new information concerning verbal behavior as indices of personality and situational manipulation. Finally, the study may provide new insights into treatment of criminal defendants.

## Purpose and Objectives of the Study

The aim of the study is to investigate the changes in the defendant's interaction patterns across two different examiners--his attorney on direct examination and the prosecutor on cross examination.

The specific objectives of the study are:

- (1) To demonstrate that interspeaker influence in terms of convergence or rhythmic patterning is manifested in both types of examination.
- (2) To demonstrate that the cross examination of the defendant is perceived by the defendant as stressful, and results in a modification of his verbal behavior.
- (3) To demonstrate the effect of race on the verbal behavior of the defendant in the courtroom setting.

## Rationale of the Study

Some of the most consistent findings of the influencing effect of one member of a dyad on the verbal behavior of his dyadic partner are the stimulating studies of interview interaction done by Lennard and Bernstein (1960). Their research addressed itself to a description in quantitative terms of the verbal interaction that takes place in the course of psychotherapy. This was done by recording eight interviews (four therapists, with two patients each) for a period of eight months. Over 120 of these sessions were subjected to an intensive

analysis that resulted in the classification of more than 40,000 verbal propositions along several dimensions dealing with structure and process rather than with psychodynamic content. They present data which show (1) that there is a definite equilibrium process in psychotherapy such that the relative amounts of therapist and patient speech stabilize at a fixed ratio which differs for different therapist-patient pairs, and that this ratio is maintained during the course of many therapy sessions (2) although therapists differ in the amount of their therapeutic talk, the amount of talk for any given therapist tends toward a steady state by being relatively stable from session to session (3) nevertheless, within these individual therapist limits, therapists compensate for higher patient output by reducing their own output (4) considering the number of silences (greater than ten seconds) per session as an index of session strain, psychotherapy sessions exhibiting most silences were succeeded by sessions characterized by a higher percentage of therapist evaluative acts and therapist acts of high information specificity (two content measures) (5) low therapist verbal output was associated with post session patient dissatisfaction with communication during that session (6) therapists differ in the degree to which they can vary their ratio of verbal activity, with some therapists showing considerable flexibility in their proportion of verbal output from therapy session to therapy session and other therapists showing a constant equilibrium process.

It seems quite likely there is an upper limit to how much one

speaker can induce change in the speech behavior of his conversational partner. An asymptote of influence is probably inherent in all of the studies but whether it is two-fold or three-fold has never been independently studied.

Duration of utterance has been studied twice in an unplanned non-laboratory setting. An analysis of the ground to capsule conversation between John Glenn, the first orbital astronaut in his epic three-orbit flight and the ground communicators for each of the three orbits was made (Matarazzo, Wiens, Saslow, Dunham & Voas, 1964). The results showed that increases in unit speech duration of one speaker are associated with increases in the unit duration of the second speaker. To check the finding further, the same investigators conducted a similar analysis of the ground to capsule speech behavior of Scott Carpenter, the second orbital astronaut. The results again showed increases in unit speech duration of the speaker are associated with increases in the unit duration of the second speaker. Therefore, the quasi-laboratory findings also appear to hold under three further conditions (1) an unplanned and therefore natural setting (2) a situation wherein the two speakers were separated by many miles, rather than talking face to face and (3) in a situation where one end of the conversational dyad consisted of 14 different speakers and the other end consisted of only one speaker.

Theoretically, system concepts can be applied to dyadic communications (Lennard & Bernstein, (1960). . . "two person psychotherapy groups

are examined as if each constituted a system within which many sub-systems could be identified." System has been variously defined as "any arbitrarily selected set of variables" (Ashby, 1954, p. 15) and as a "complex of elements standing in interaction" (Bertalanffy, 1957, p. 60). Also more specifically as "two or more units related such that a change in the state of any one unit will be followed by a change in the state of the remaining units which in turn is followed by a change in the state of that unit (Zelditch, 1955, p. 402).

The notion of interdependence between variables rather than a unilateral relationship between variables is central to the concept of system. Interdependence, in the words of Parson, "consists in the existence of determinate relationships among the parts or variables as contrasted with randomness of variability. In other words, interdependence is order in the relationship among the components which enter into a system" (1954, p. 107).

According to Lennard and Bernstein (1960), implicit to a system is a span of time. By its very nature a system consists of an interaction, and this means that a sequential process of action and reaction has to take place before we are able to describe any state of the system or any change of state. The first consideration in applying a systems concept is a decision as to what represents a unit and secondly, what is defined as the system. Units can be thought of as variables in the sense that they can be measured at given moments in time. Measurement precision may of course differ, depending on the kinds of units



involved. But one can precisely and numerically measure a variable of verbal communication such as the number of words or lines in a question or statement.

Since what is considered the unit of a system and what is considered the system depend somewhat on arbitrary decisions, the following systems theory concept could be applied to the interrogation procedures in the courtroom. The units could be conceived of as consisting of the two persons interacting in their respective roles as attorney and defendant, as a dyad. Specific variables of the interaction (e.g., length of utterance, role relationships, stress factors) could be conceived of as other units and their inter-relation as comprising a system. Once it is suspected that two or more variables vary in some determinate fashion, it would appear justified to view them as constituting a system and then to test whether such an approach adds to our understanding of the problem under investigation.

Another theoretical view on which the predictions in the present study are based is the concept of homeostasis or equilibrium. The order in the interrelationship among the units of the system possesses a "tendency to self-maintenance, which is very generally expressed in the concept of equilibrium. It need not, however, be a static self-maintenance or stable equilibrium. It may be an ordered process of change--a process following a determinate pattern rather than random variability relative to the starting point" (Parsons & Shils, 1953, p. 107).

Equilibrium is ". . . a state of a system such that there is a zero change of the units relative to each other" (Zelditch, 1955, p. 402). The notion of dynamic equilibrium in psychology conceives of the tendency of the system to maintain a steady state. This is of course closely related to the notion of homeostasis. As Cannon stated "organisms . . . have somehow learned the methods of maintaining constancy and keeping steady in the presence of conditions which might reasonably be expected to prove profoundly disturbing" (1939, p. 21).

The restatement of this conception of equilibrium in connection with systems of action (communication) would be that "there appears to be something underlying the observed overt behavior which has a continuity and persistence through time. It seems to act like an accounting system which takes account of deficits and surpluses that appear within given small time spans in such a way as to tend toward restoration of certain balances in quality and distribution of action among members over long time spans" (Blaes & Slater, 1955, p. 273). Or put more simply, "if two people relate to each other at all they become involved in a system of transaction characterized by mutually regulative processes . . ." (Spiegel, 1954, p. 269).

In the views advanced by Bertalanffy (1959) and Nagel (1956), the human organism represents an open system, not stabilized at a resting state but subject to a continuous stream of internal and external stimuli and capable of active behavior (growth). Social systems may be similarly viewed as open systems. Therefore, at the level of

communicative acts, equilibrium processes could conceivably be operating in the interrelations of observable verbal behaviors, of the attorney and defendant during the trial of the case.

As previously stated, the notion of system implies a temporal sequence, and thus change over time. The change is not random, but exhibits a definite order. Interaction, for example, is described as a sequence of qualitatively different activities of human individuals which is distributed in time and between individuals in such a way that seems to be organized and patterned in a great number of ways (Bales & Strodtbeck, 1951).

The concept of temporal sequence in communicative acts provides for observation of change in the frequency of occurrence of certain acts of verbal behavior in relation to the duration of the interaction. It allows for observations of uniformities and patterns within the system.

The theoretical synchrony model espoused by Matarazzo (1965) refers to a behavioral phenomenon in which the experimenter varies his interview activity level and the subject varies his own interview behaviors (i.e., activity level) in a matching manner. Matarazzo's model posits that any greater activity by the interviewer is perceived by the interviewee as indicating greater interest or empathy by the interviewer. As presented, this model suggests a reinforcement paradigm and it would appear that Matarazzo is explaining a naturalistic occurrence in reinforcement terms. But examination of the various interviewer

activities and situations which result in behavioral synchrony suggests some difficulties for such a reinforcement model as Matarazzo portrays (Siegman & Pope, 1969).

Although used to label the model, the term "synchrony" has not as yet been carefully defined. In the context of verbal interaction, it could be said to exist when intensity, frequency, or durational characteristics of one's behavior rhythmically agree with similar characteristics of ambient stimuli, whether personal or impersonal in origin (Siegman & Pope, 1969).

Although in a standardized laboratory setting, such synchrony has been demonstrated for duration of utterance (Matarazzo, 1962), its generalizability to naturalistic situations has not been exhibited. The laboratory experiments may be adequately accounted for by a social reinforcement paradigm, for certainly it is clear that noncontent speech behaviors are susceptible to reinforcement (Bachrach, Candland, & Gibson, 1961; Simkins, 1963). But the phenomenon of courtroom interaction may not be consonant with such a reinforcement model. Speech increases can be induced by experimental anxiety (Kanfer, 1958) and by emotional conversational topics (Kanfer, 1959). Thus increased speech duration are apparently major cues of stress and anxiety which are most unlikely to be positively rewarding or to convey increased warmth.

A further difficulty for Matarazzo's reinforcement paradigm arises from the temporal characteristics of synchrony phenomena. If rein-

forcement were operative, learning and extinction curves should occur and the behavior changes reinforced should be relatively stable.

Matarazzo and Wiens (1967) have more recently expressed the notion that behavioral synchrony might be related to Bandura's (1965) modeling framework. But Bandura's modeling phenomenon implies conscious volition and conscious attending to relevant modeling cues. To date, synchrony behavior investigations show little evidence that synchrony phenomena are either conscious or volitional.

An extension of Bandura's model is possible though which might make it more encompassing. As one consciously mimics the behavior of a model, it is quite possible that he is also learning a habit of modeling so that many aspects of his subsequent behaviors are unconsciously modeled. In this way, modeling behavior, itself, might come to be a secondary reinforcer.

Although there has been no research which has specifically investigated the noncontent structure of courtroom interrogation, it seems that it would follow from the above evidence that changes in the interrogator's verbal behavior would be followed by significant, reliable and for the most part, parallel changes in the verbal behaviors of the defendant. However, if one looks to a modeling paradigm for an explanation of results, it seems imperative to consider the influence of stress and cultural background in the naturalistic setting.

## Cross examination as a stressor event in the courtroom

There is an implicit need for systematic analyses of situations in some well-known psychological theories, for example, in Murray's (1938) need press theory and in Lewin's (1951) field theory. The importance of situational analyses was clearly expressed on different grounds during the early 60's by Abelson (1962), Miller (1963) and Sells (1963) among others. The emphasis on situational stress analyses increased in connection with the rapidly developing theoretical and empirical interest in the Person X Situation interaction (Argyle & Little, 1972; Bowers, 1973; Endler, 1973; Magnusson & Heffler, 1969; Pervin, 1968). From different standpoints researchers have recently advocated that the systematic study of situations is urgent (Magnusson, 1974; Mischell, 1973; Schneider, 1973).

As was early stated by Kanton (1924), Koffka (1935), and Murray (1938), among others, a situation can be described in two main ways: by describing in objective terms the physical and social characteristics of the situation as it is and by describing it in terms of the psychological significance for the individual.

Systematic analyses of situations with regard to their psychological significance for individual has two purposes (1) the classification of situations (Moos, 1973) and (2) the use of the Person X Situation interaction in the description and prediction of behavior (Magnusson, 1971). According to the interactional view of behavior "individuals differ not mainly with regard to certain stable aspects of behavior but particularly

regarding their ways of adjusting to the varying characteristics of the situation" (Magnusson, 1971, p. 851).

According to Pepitone (1970) stress has been defined and used by the social and biological sciences in a number of different ways. Sometimes the notion refers to a disturbance in the organism which the organism tries to eliminate or reduce. In this sense, stress is little different from unpleasant states, like anxiety or from aversive motivations, like pain and dissonance. Stress has also been considered as a set of physiological or behavioral responses, which are symptoms of a disturbing inner state. Such stress-coping responses or indicators are observed in several areas of the organism's functioning, including the emotion, the action, and the cognitive. Finally, stress has been regarded as an event or condition of the physical or social environment which leads to avoidant, escapist, aggressive, or problem solving measures specifically designed to remove or weaken the offending condition. Such a notion--of stressors--is similar, in function at least, to danger, threat, pressure, conflict frustration and the extreme situation. Research on stress, if it can be simply characterized, consists of specifying the relationships between the input stressor variables and the output stress symptom or behavioral response variables, often with attention given to the mediating stress-state variables.

Pepitone (1970) admonishes researchers that it can be said at once that there is no one correct definition of stress nor can the research paradims based on certain conceptualizations be totally evaluated as

right or wrong. The state of research on stress is such that evaluation of designs and theoretical formulations can only be in terms of usefulness in producing research, in interpreting research data, and ultimately, in building knowledge.

However, Cofer and Appley (1964) defined stress as "the state of an organism where he perceives that his well-being (or integrity) is endangered and that he must divert all his energies to its protection" (p. 453). Inherent in this definition is an emphasis on individual determination of when stress will or will not occur.

It is further evident from the definition that another aspect of stress is the requirement of "threat." Threat implies a state in which the individual anticipates a confrontation with a harmful condition of some sort. Stimuli resulting in threat or non threat reactions are cues that signify to the individual some future condition, harmful, benign or beneficial. These and other cues are evaluated by the cognitive process of appraisal. The process of appraisal depends upon two classes of antecedents. The first class consists of actors in the stimulus configuration, such as the comparative power of the harm producing condition and the individual's counterharm resources, the imminence of the harmful confrontation and degree of ambiguity in the significance of the stimulus cue. The second class of antecedents that determine the appraisal consists of factors within the psychological structure of the individual, including motive strength and pattern, and general beliefs about transactions with the environment. Threat therefore exists on a



continuum of degree from complete absence to very intense levels (Lazarus, 1966).

Within Lazarus' theory, the courtroom drama would offer research opportunities in which the experimental control of stress and cognitive appraisal of threat could be seen as controlled within the situation. It would be difficult to visualize any criminal defendant who would not see himself as in a threatening situation during the trial of his case. Secondly, it seems reasonable to foresee that the degree of situational threat on a "continuum of degree" is achieved by a consideration of criminal defendants subjected to trial in terms of the seriousness of the offense. That is, on a continuum from larceny to murder. Under our existing system of laws, the number of years for which the criminal defendant can be incarcerated upon a finding of guilty correlates with the seriousness of the crime. The threat therefore can be viewed on a continuum from larceny as less threatening, robbery as more threatening, and murder as the most threatening crime for which to be tried.

Research on stress has followed the view that the appraisal of the threat envisages a judgment about the meaning or future significance of a situation based not merely on the stimulus but the threatening significance to the organism.

Lazarus (1966) considers three factors are involved in the stimulus configuration that determines the appraisal of threat: (1) the balance of power between the harm producing stimulus and the counterharm re-

sources (2) the imminence of the anticipated confrontation with harm and (3) the ambiguity of the stimulus cues.

Investigations of these factors have involved various settings, for example military combat (Thompkins, 1959), the concentration camp (Bettelheim, 1960), disasters (Danzig, Thayer & Galanter, 1958), clinical observations and the experimental laboratory (Friedman, Chodoff, Mason & Hamburg, 1963; D'Amato & Gumenik, 1960). The key point is that some harm is anticipated and this harm is what constitutes the threat.

In the military setting, the role of the objective harm producing potency of the stimulus is well illustrated by the observations of Tompkins (1959) on the incidence of neurosis among pilots as a function of the danger of the flying job. Tompkins results indicated that there was an overall direct relationship between the incidence of neurosis and the danger of the job as shown by casualty rates. His data exhibited that as the objective danger of the flying job rises from the training situation to night bombing with its increase in casualty rate per number of flying hours, the relative incidence of psychiatric breakdown also increased. Since the harm producing potency of the stimulus is greater, threat is more intense.

According to Lazarus (1966), there seems to be little quarrel with the generalization that the more intense the cues of danger, the higher the evidence of threat.

The imminence of the anticipated confrontation with harm is the second factor involved the appraisal of threat. If the confrontation

is distant in time, degree of threat will remain relatively low even when the anticipated harm is very great and inevitable. Both the power of the agent of harm and the imminence of the harm must be considered simultaneously. When the harmful potency of the stimulus is low, it cannot result in threat even if it is imminent because a confrontation with a weak stimulus affords little danger of motive thwarting. But when the potency for harm is great, nearness of the confrontation increases the threat to the maximum provided by the strength of the motive to be thwarted (Lazarus, 1966).

In spite of its obvious importance in threat appraisal imminence of the confrontation with harm has not been studied very systematically (Lazarus, 1966). Clinical observation suggests that a "death sentence" in which the individual knows that there are a few months or a year to live usually produces strong threat and physiological stress reactions.

One study has attempted to chart the threat and physiological stress reactions associated with the factor of imminence of a harmful confrontation involving parachute jumpers (Epstein, 1962). Twenty-eight parachutists were examined as to their reactions to the period before, during and after jumping. A series of ratings by the jumpers of their feelings of approach and avoidance with respect to the jump as the time of jumping came near was obtained. These ratings were made the night preceding the jump, upon reaching the airfield, during the training period immediately preceding the jump, at the time they were strapped to the equipment, while boarding the aircraft, during the plane's ascent, at the ready

signal, upon stepping toward the jumping stand, upon waiting to be tapped during the free fall after jump, after the chute had opened, and immediately after landing. Approach was defined as looking forward to the jump, avoidance was defined as wanting to turn back and call the jump off, feelings of fear, and self-questioning by the parachutist about why he allowed himself to get into the jumping situation.

The data showed that up to the moment of the ready signal for jumping, approach ratings decline and avoidance ratings increased. Following the jump signal, the pattern is reversed. That is while the jumper is waiting to be tapped, or for the chute to open, or during landing, more positive feelings are again beginning to assert themselves; the threat is growing weaker.

Epstein says: ". . . it is immediately apparent that approach is much greater than avoidance to begin with, but as the time to the jump diminishes, there is a rapid falling off in approach and an increase in avoidance, so that by the time the aircraft is boarded, avoidance is greater than approach. This is a somewhat peculiar finding as the parachutists, after all, do jump. Apparently, they are jumping on psychological momentum rather than because of their immediate desire. The momentum consists of commitment and the difficulty in reversing the decision once in the aircraft. Avoidance continues to become increasingly greater than approach, reaching a peak when the signal is given to get ready to jump" (1962, pp. 179-180).

This data offers excellent support for the role of imminence in

threat appraisal. The threat (as inferred from self report avoidance feelings) increases up to the critical point, the point when there is no further action that can be taken to avoid or forestall the confrontation.

The third factor in the stimulus configuration that determines the appraisal of threat within the Lazarus model is the ambiguity of the stimulus cues. Lazarus mentions two kinds of ambiguity with respect to psychological stress: ambiguity concerning the nature of the confrontation and ambiguity about what can be done to cope with it if it is harmful. Frenkel-Brunswik (1949) has introduced the person as being tolerant or intolerant of ambiguity. A person who is intolerant of ambiguity is made anxious by ambiguous situations and has a strong motive to produce cognitive closure in every situation. Therefore, he tends to think in terms of black and white alternatives.

Lazarus feels that ambiguity concerning the significance of a stimulus configuration will usually intensify threat because it limits the individual's sense of control or increases his sense of helplessness over the danger. But this occurs only when there are other grounds, either situational or characterological, for being threatened. In a positively toned situation, ambiguity will not in itself produce threat. If the tone is ominous, even though the nature of the threat is unclear, ambiguity will enhance the threat. The individual assumes the worse. Courtroom settings in a criminal trial are assumed to be completely ambiguous situations--the defendant's fate rests in the hands of a

jury or a judge and the potential outcome can not be known. The defendant is almost helpless--his attorney possibly being his only ally in a sea of hostile faces. The imminence of anticipated harm can no longer be postponed but is at hand.

According to Appley and Trumball (1965) where the chosen interest of the investigator is matched by a natural experience involving the proper set of threats and amenable to systematic study, there should be no impediment to productive research. Naturally occurring stressful events which are amenable to study may be relatively rare, however. The trial of a criminal defendant might be one of the few naturally occurring phenomena which along with combat and disasters would be universally accepted by the scientific and legal community as a stressful experience for the subject.

Although the term stress originated within the physical sciences, a term meaning the force which acting on a body produces strain, it seems generally to have reversed its meaning so that stress has come to represent the bodily condition under strain. Actually, there are two stress concepts, one in physiology and psychobiology (systemic stress) and one in psychology (psychological stress). The popularity of the stress concept stems largely from the work of Hans Selye, the Canadian endocrinologist-physiologist. He describes his work as an extension of the Bernard-Cannon concepts of adaptation and homeostasis and sees stress as the state of the organism following failure of the normal homeostatic regulatory mechanisms of adaptation (Cofer & Appley, 1966).

Selye operationally defines stress as "a state manifested by a syndrome which consists of all the nonspecifically induced changes in a biologic system" (1959, p. 403). A large variety of stimulus events (both external and internal) have been shown to be capable of giving rise to stress. Such stimuli, or stressor agents, include heat, cold, infections, intoxicants, hemorrhage, restraint, muscular exercise, drugs, surgical trauma, and injury (Cofer & Appley, 1966).

Significant is the fact that not only direct (surgical, pharmacological, or physical) intervention but indirect (neurogenic or psychogenic) stimulation can induce a (systemic) stress syndrome. Studies have shown evidence of stress in monkeys induced by such subtle factors as the presence or absence of persons in a room, the change from one room to another, or the application of previously shock associated stimuli (Mason, 1959). Stress has been produced by what is called "sociopsychological stimulation" of size of animal colony (as distinct from mere physical crowding of space restriction) (Christian, 1959). Life threat and social status threat situation have been shown to induce symptoms of systemic stress. The degree of stress in any instance depends on the type and intensity of the stress and on certain pre-stress sensitizing factors (Cofer & Appley, 1966).

Within the psychobiological systemic stress model of Selye, the specific responses to specific stressor agents (vasodilation to heat, antibody formation to infection) appear to be local or focal adaptations appropriate to the particular form of the stressor. When the adaptations

are ineffective, as where the stressor is intense or its application prolonged, or when the stressor is nonspecific (as in neurogenic or psychogenic stimulation, or in low-grade infection), the General Adaptation Syndrome is invoked. The general effect of the stress syndrome appears to be the modification of bodily processes in such a way as to make available the energy resources normally kept in reserve or utilized for other functions. The syndrome by which the stress state is made manifest (General Adaptation Syndrome) characteristically has three states (1) an alarm reaction, including an initial shock phase of lowered resistance and a countershock phase, in which defensive mechanisms begin to operate (2) a stage of resistance in which adaptation is optimal and (3) a stage of exhaustion, marked by the collapse of adaptive responses. The General Adaptation Syndrome may be short-circuited by an intense or overwhelming stressor, such that no countershock or resistance develops, the organism going from the shock phase (in which the resistance is far below normal) into exhaustion and death; or it may be foreshortened or prolonged, depending on the intensity and/or duration of the stressor and the state of the organism at the time of exposure. It is likely that the state of exhaustion of the General Adaptive Syndrome is at least in part a function of the extraordinary physiological reactivity of the organism in the state of resistance. In other words, the adaptive responses themselves may become stressors. Selye has produced experimental diseases through exogenous administration of "adaptive" adrenal hormones. Damages to



heart, kidney, liver, blood vessels, bones and skin have been produced by normally nonpathogenic factors intensified through stress exposure. Of course, it might be noted in passing, the entire concept of psychosomatic medicine is predicated on the hypothesis of self-damage through attempts at adaptation (Cofer & Appley, 1966).

Psychologic stress is a broader term, including systemic stress, but also the conditions preceding systemic involvement. Psychologic stress, in the literature, has been used as a synonym for anxiety, conflict, ego involvement, frustration threat and emotionality. Cofer and Appley propose a threshold model which has the merit of delineating the definition and encompassing systemic stress concepts.

They propose that (1) stress is a state of the organism (2) it involves an interaction between the individual and the environment (3) it is more extreme than an ordinarily motivated state and may be the same as a state of severe frustration or conflict (4) a threat must be present (5) the threat must somehow be perceived (6) the integrity of the organism is somehow involved, and (7) a normal adjustive (coping) response cannot be found. They state that not all of these features distinguish stress from such related conditions as frustration and conflict but that such a distinction is possible and their proposal is to make the distinctions in terms of successive thresholds.

Cofer and Appley point out that previously they had advocated stress as "the state of an organism in any situation where his general well being is threatened and where no readily available response exists

for the reduction of the threat" (1962, p. 880). By well being they referred to a state contingent upon the regular or periodic satisfaction of its motives. However, a condition of insufficiency alone would not produce psychological stress. A simple condition of insufficiency might lead to innate or acquired (habitual) coping behavior. The failure of such already available response modes would permit an increase in arousal to the point where new, exploratory coping behavior takes place. This they refer to as the "instigation threshold." Thereafter, if the goal behaviors are interfered with, or such interference anticipated, and the source of instigation persists, a second threshold--the frustration threshold--will be reached. This is the point at which the situation is perceived as likely to be beyond the capacities of the organism's readily available coping potential. This is the point at which we can begin to speak of threat perception. The crossing of this threshold should give rise to anxiety and, as a result of increased (frustration-instigated) motivation, to an intensification or perhaps repetitive coping behavior. Anxiety-related responses may now enter the picture. These in turn may lead to further intensification of response, introducing competing responses, depending on the nature of the situation and of the responses previously attached to anxiety. In short, it is at this threshold that a shift in pattern of response occurs, from exclusively task-oriented, problem solving behavior to the inclusion of ego-oriented, self or integrity sustaining behavior.

It is perhaps, only if and when both types of behavior (task and ego-oriented) have persisted for a while without any effective change

in the situation that a third, or stress threshold is reached. At this point, we may observe the dropping out of all task-oriented behaviors, and the exclusive preoccupation of the organism with ego protection. This more extreme threshold may be identified with the perception of danger and a resultant further intensification of ego defensive responses (desperation, panic).

Lastly, the exhaustion or anticipated exhaustion of ego defensive behaviors may lead to a fourth, or exhaustion threshold, at which point we may speak of the perception of helplessness or hopelessness. Here the cumulative fatigue and inhibition, increased most rapidly during the previous period of exaggerated response, overtakes energized responding, and a drop in activity occurs (Cofer & Appley, 1966).

From this research and theoretical models of stress concepts in terms of perception and induction of this condition, a consideration of stress responses is necessary in order to move from stress as an important variable to study, to its behavioral correlates with which this study deals.

Four response components are identified with the stress syndrome: systemic stress, emotionality, subjective feelings of distress and defensive behavior. Emotionality arousal has been measured by GSR, heart rate blood pressure. Subjective feelings of stress response express the subject's phenomenal feelings of stress or its antecedent.

Early in the development of the stress pattern there appears to be an intensification in all dimensions of behavior. Slight improvements

can be recorded in the beginning but as arousal continues deteriorative effects are noticeable in all aspects of performance, of judgment and of relations with others and with oneself. Tendencies towards rigidity of response, inflexibility, inability to profit from experience and to use new information, inability to shift when shift is necessary or to persevere when required. Suspiciousness, increase in hostility, irritability, increase in errors and decrease in speed of performance all appear. The degree of deterioration is generally correlated with the intensity of instigation (Cofer & Appley, 1966).

A large number of experiments deal with cognitive performances of subjects exposed to varying degrees of induced stress and many of them provide preliminary support for the notion that a nonmonotonic function might hold for the relation between cognitive efficiency and intensity of stress in terms of emotional arousal. Brown (1961) points out that neuophysiological findings have led Hebb (1955), Malmö (1958), Schlosberg (1954) and other psychologists to consider just such a function on the presumption that the ascending reticular system may deliver insufficient stimulation to the organism's cortex at low levels of arousal and too intense bombardment of the cortex at high levels of arousal. Optimal efficiency would therefore always occur at intermediate levels, where the amount of arousal is neither too weak nor too strong. These considerations lead to a suggestion that the relationship between emotionality and cognitive efficiency in attending to verbal interaction might prove to be a special case of a more general relationship between

the intensity of the stress and any type of cognitive performance. Nevertheless, it still remains an open question whether the inverted U-shape function does in fact accurately describe the way in which the average person's attention and performance in an emotional and stressful communicate exchange will vary as a function of the intensity of the stress.

There is fairly consistent support for the proposition that arousal of very high fear, shame or guilt will induce a significant loss in cognitive efficiency (Easterbrook, 1959; Hall, 1961; Janis, 1968; Lazarus, 1966).

Easterbrook (1959) concludes on the basis of his extensive review of research on emotional arousal and cognitive efficiency, that the most disruptive effects of high arousal occur in the most demanding types of cognitive tasks, which require the subject to take account of large numbers of cues. He suggests that a fundamental change induced by intense fear is a narrowing of attention to central cues in the stressful situation, with a corresponding decrease in responsiveness in peripheral cues. Although a number of different psychological processes might be involved, the evidence cited by Easterbrook seems to indicate a shrinkage of cue utilization under conditions of high emotional arousal.

A number of experimental investigations show that when a person is strongly aroused, he will tend to display marked narrowing of attention, poorer judgment, and more intellectual rigidity (Beier, 1951; Berkum

et al., 1962; Luchins & Luchins, 1959; Osler, 1954). In most of these experiments, plausible-sounding verbal threats were presented in the classroom or laboratory. For example, Osler (1959) arranged to have high school students told individually to report to the principal because a serious complaint had been made about their behavior, a request that caused some degree of stress. Then, some time after being given this information but before the time of his appointment with the principal, each student was tested on various intellectual tasks. Compared with subjects in a control condition, the subjects showed markedly poorer test scores. This study, like others that employ realistic threats, support the conclusion that a temporary loss of perceptual and cognitive efficiency occurs when a person is exposed to communications that arouse strong anticipations of imminent danger or social punishment.

That this conclusion applies to emergency stress circumstances is indicated by a series of extraordinarily realistic stress experiments carried out with Army recruits under field conditions that parallel those of actual disasters (Berkum et al., 1962). The investigators carefully rigged several situations in such a way that the subjects would regard themselves as seriously threatened. In one of the conditions, a group of soldiers on a routine flight suddenly felt the aircraft lurch violently, could see that one of the propellers had stopped turning, and were informed over the intercom that serious malfunctions required an emergency landing in the ocean, which everyone

realized meant only a small chance for survival. At this point, a member of the crew administered a set of intellectual tests, disguised as emergency data forms that allegedly would be jettisoned before the crash landing to furnish proof to insurance companies that all emergency precautions had been properly followed. On the mental efficiency tests embedded in the emergency data forms, the stressed subjects made significantly more errors and showed markedly poorer retention of information than an equated control group on a routine flight. Thus, high arousal in this threatening situation produced a temporary impairment in cognitive functioning.

It seems from the accumulated experimental and clinical evidence on the way people react to disaster situations, that at very high levels of emotional arousal, the average person's perceptual and cognitive functions become impaired.

In terms of task characteristics, the defendant is subjected to interrogation to determine his guilt or innocence. Therefore, his task performance has enormous importance for him--he must convince the judge or jury that he is innocent if at all possible.

At a conference on social and psychological stress in 1967, out of 200 abstracts in the conference collections, tasks were used in almost 70 per cent of the empirical studies. The kinds of uses to which tasks were put varied--most frequently, tasks were associated with inducement of stress (McGrath, 1970).

An example in which task factors represented the only stressor

is the rather ingenious study of collective behavior in a simulated panic situation by Kelly, Condry, Dahlke, and Hill (1965). In this experiment, the experimenter explained to the subjects that the study was about behavior under threat, the situation being one where a number of people have to use a single, limited exit to escape from an impending danger within a limited time. The threatened penalty for failure to escape was, in most cases, one or more painful shocks. The fact that only one person at a time could escape was made clear by explanation and demonstration. Although the details differed from one experiment to the next, in all cases the subject could see signal lights showing his own position vis-a-vis the danger situation and similar lights showing the position of each of the other subjects. At the beginning of a trial each subject's light indicated that he was in danger. By manipulating a switch, he could attempt to escape--at the same time changing his signal light and making his attempted escape visible to all the others. When only one subject has his escape switch on for three seconds, his signal light turned green, indicating that he had escaped. If two more subjects simultaneously turned on their escape switches, no one could escape. Thus, in this study, the task--here represented by the shock and signal light apparatus and by the rules of the game--served as the only source of experimental stress.

McGrath points out that operations as well as goals that are set can give rise to experiences of physical threat or punishment, although examples in the literature are scarce (1970, p. 231). Several studies



involve task stimulus materials which may be said to carry implications of psychological threat or punishment. In a study by Ainsworth (1958) subjects were told (as part of the stress induction) that a test which they were taking was especially important, because it was related to academic success. Because failure on such a test would be quite disturbing to a group of students, the test presumably became more threatening as a result of this manipulation.

Viewed in terms of task-stress research, it seems reasonable to view the verbal responses of the defendant as the performance outcome emanating from the demand characteristics of the task.

Although research on stress to date has not followed a line of investigation of its effect on the non-content aspects of verbal behavior, a few studies have examined the effect of anxiety upon various aspects of speech. Since the theoretical models of stress view anxiety as a component of the stress model (Lazarus, 1966; Cofer & Appley, 1966), review of this research was undertaken and considered in deriving the predictions of this study.

Mahl (1956a) found that anxiety is associated with flustered speech. In finding a positive relationship between anxiety and speech disturbance, Mahl offers the following: "Speech disturbance may be a purely automatic generalized consequence of anxiety in the same way that general changes in muscular coordination or attention span, for example, are brought about by anxiety" (p. 56). He then proceeds to point out that speech disturbances may reflect not only the direct

effect of anxiety per se, but also the indirect effect of defensive maneuvers against anxiety. Speech disturbances, like incomplete sentences, omissions, stutters, and tongue slips, may reflect the speaker's attempt to inhibit feared material. On the basis of this conceptual approach, i.e., that anxiety has a disruptive and inhibiting effect on speech, Mahl predicted that anxiety would be associated with long silent pauses in speech. This he was able to demonstrate in one study (Mahl, 1956a) but he could not replicate this finding in a second study.

Research by Siegman and Pope (1965) has suggested that stress may be an extremely important variable in understanding interspeaker behavior. The focus of their study was the concern for the conditions that facilitate personal self-disclosure. Using both normal and patient groups, they found that anxiety arousing topics, in contrast to neutral ones, are associated with greater speech productivity. The finding is inconsistent with the usual clinical data that a high level of anxiety would be associated with low productivity and slow speech.

In contrast to Mahl's finding, there are, in addition to the Pope and Siegman study mentioned above, other studies suggesting that anxiety has a facilitating effect on verbal productivity and fluency. Davids and Ericksen (1955) found a positive correlation between manifest anxiety, as measured by the Taylor Manifest Anxiety Scale and productivity in a word association task. Kanfer (1958, 1960) investigating the effect of anxiety on verbal rate, found that verbal rate accelerates in response to shock-conditioned tones and in response to anxiety arousing interview

topics.

These findings can probably be most parsimoniously explained in terms of a drive approach to anxiety as advocated by Spence and Spence (1966). Also, if anxiety is regarded as a drive state, then it is to be expected that with an increase in anxiety level there would be an increase in the influencing effect on the speech duration variable in that the same response tendencies are probably being activated.

McGrath (1970) issues the challenge to researchers that perhaps the most basic element of stress involves specification of a class or classes of response which will be taken as evidence that the organism is or has been under stress. The background of stress research and the theoretical models reviewed exhibit that stress has a disruptive effect on finely coordinated behavior. Since speech is an instance of finely coordinated behavior par excellence, it seems reasonable to predict that the situational stress of being on trial will result in a modification of the verbal responses of the defendant, within the interspeaker influence paradigm.

#### Influence of race on verbal behavior in the courtroom

As Katz (1974) states "Despite strong resistance by whites to Negro demands for equal rights, it is clear that the basic trend in race relations is towards the elimination of discriminatory practices. However, as Negroes are integrated into the American system they will increasingly have to perform complex tasks in situation of face-to-face interaction,

and comparison, with whites. To a significant extent, the upward mobility of blacks will depend upon their ability to function effectively in these racially mixed settings. This is important because of the strong influence both favorable and detrimental that such face to face situations have on negro performance" (p. 276).

In the field of education, for example, recent research suggests that Negro pupils learn better, on the whole (Coleman et al., 1966) when a majority of their classmates are white though the achievement of Negroes shows more variability in the predominantly white classroom.

The results of the Coleman study do not really demonstrate causal relationships between particular types of biracial situations and Negro performance. But they do indicate the desirability of studying in greater detail the psychological processes that operate in these situations. Useful information can be obtained from studies of a person's reactions under laboratory-like conditions (Katz, 1974).

In an analysis of interracial performance settings, (Katz et al., 1958), the results indicated that situations in which Negroes and whites came face to face can have detrimental effects upon the intellectual performance of Negro youths. In this study conducted in an urban university in the north, various mental and physical tasks were allocated to work groups made up of two black and two white students all of whom initially were total strangers. In general, Negroes displayed marked social inhibition and subordination to their white partners. When groups were engaged in problem solving which necessitated cooperation between

all members for success the Negroes made fewer proposals than did whites, and tended to accept the white's contribution uncritically. On all the tasks blacks made fewer remarks than did whites. This behavior occurred even when group members could expect a financial bonus for good teamwork, and were informed that their abilities were higher than those of people in other groups.

In yet another experiment (Katz, 1960), special efforts were made to increase the self confidence of the Negroes. Black and white team mates were matched on intelligence by means of individual testing beforehand then were told that they had ability equal to that of their partners. In addition, they were made to display apparently equal ability on certain mental tasks that were given in the group situation, through secret manipulation. Despite these procedures, the Negro subjects later still revealed feelings of inferiority and anxiety. On a questionnaire given afterwards they ascribed higher ability to whites on the very tasks that had been rigged to insure equal performance and expressed relatively low satisfaction with the group experience.

That this type of face-to-face racial situation produced genuine impairment of intellectual functioning in the Negro students, rather than just an inhibition of outward high visible behavior is apparent from another study carried out at the same college (Katz and Cohen, 1962). This time, pairs of subjects composed of one Negro and one white were given a series of mental problems to solve cooperatively. However, before discussing each problem the men had to record privately their individual

solutions. Negroes made more errors than they had made on the same problems at a prior, individual testing session. White subjects, on the other hand, made fewer private errors than they had made previously.

According to Katz (1974), it seems likely that Negroes would be under some degree of social threat in a school or job which has just been integrated--or made multiracial. Cold indifference on the part of white school or work mates could frustrate their needs for companionship and approval, which would result in lowered self esteem and a wish to escape from an unpleasant environment. In this way a Negro pupil or worker could be distracted from the task he was supposed to do, and this would adversely affect his performance.

An example of how the presence of white adult strangers can seriously disrupt verbal learning in young Negro children is provided by an experiment carried out in a Negro area of a large city (Katz et al., 1968). Negro boys of average age eight were tested individually by either Negro or white adult males. Their task was to learn a list of paired words--that is, to learn which word of one list went with that of the other list. Irrespective of how well they actually did on the task, half of them periodically were told they were doing well and the other half just as often were told they were not. The results were clear cut: for each type of examiner approval--being told they were doing well--produced better learning than disapproval, but regardless of type of feedback--approval or disapproval--children learned better when tested by Negroes than by whites. The poorest learners were boys with a high need for approval, as measured by a personality test, and who were told by the

white tester that they weren't doing well. In short, the white adults' expression of approval had relatively little effect on the boys' performance whereas their disapproval was sometimes highly disruptive.

The results from these studies quite clearly point to the effects of racial composition in situations upon performance of blacks. The fact that juries, judges, lawyers, bailiffs, and court clerks are primarily white projects the black criminal defendant into a setting where low expectancy of success in comparison with whites and evaluation by white authorities have real life significance. Although there are no specific studies examining the structural content of verbal behavior in blacks in interracial groups, it would seem to follow that the black defendant as compared to the white defendant, would evidence a significant difference in verbal performance.

## CHAPTER II

The study of dialogue patterns makes one aware that the largest unit dealt with in contemporary linguistics is at most the monologue and more typically, the isolated sentence (Jaffee & Feldstein, 1970). There is a dearth of theory regarding the grosser dialogic phenomena of interaction patterns of speech behavior. Little is known about the linguistics determinants of a switch from the listening to speaker roles or about the mutual influence of the rhythmic patterns of speakers. This hiatus in the available background information presents fruitful research opportunities to the investigator interested in not the interview format but the study of spontaneous, unstructured "natural dialogue." A key feature to the study of dialogic interaction is the fact that one speaker at the time holds the floor with concomitant suppression of simultaneous speech. This phenomenon would be presumed to be a linguistic universal and based on the information processing limitations of the nervous system. Simultaneous speaking and listening is extremely difficult without dysfluency and/or loss of comprehension.

Presentation of the major findings of the research as a general guide to the frame of reference which intergrates the specialized concerns of this research will suggest the outlines of a tentative theory of the temporal structure of dialogue as it exists today. An analysis of the research on the influence of aspects of stress and of race on verbal behavior exhibits the philosophical orientation taken in this study with regard to these two communication variables.



The interaction variables of speech behavior may be investigated by means of the interaction chronograph (Chapple, 1939) but the same variables can be derived quickly and efficiently using a tape recording and a stop watch (Matarazzo, Holman, & Wiens, 1967). Duration of utterance, the focus of the proposed research, can be investigated by word count (the number of spoken utterances in each measure) with a correlation of .98 with the Interaction Recorder (Mahl, 1956; Siegman, Pope & Blass, 1969; Matarazzo, 1973). According to Matarazzo (1973) this enables the graduate student interested in this area to do research without expensive and sophisticated recording equipment.

The earliest application of interaction chronography was by Norwine and Murphy (1938), two specialists working for the Bell System. They monitored and analyzed 51 telephone calls between the Chicago and New York City business offices of the Bell System. The voice records were fed into a recording device that provided an oscillograph of the speech output of each of the two speakers in the 51 conversational pairs. Before proceeding with their analysis, Norwine and Murphy defined their speech measures in a comprehensive classification and only a slightly different nomenclature exists in the descriptive classification today:

"A talkspurt is speech by one party, including his pauses, which is preceded and followed, with or without intervening pauses, by speech from the other party perceptible to the one producing the talkspurt. Response time is the length of the interval between the beginning of a pause as heard by the listener and the beginning of his reply. It may be positive or negative. The pause to which reference is made ordinarily occurs at the end of a talkspurt but may be a pause followed by a resumption of speech by the first talker."

The goal of this codification was the application of probability theory to the temporal patterning of telephonic communication. The specific information desired was the probability that a conversational element would have any given duration "t."

### Stability Studies

The five reliability studies of Saslow and Matarazzo (1959) demonstrated that the interview speech and silence behavior of any given individual is highly reliable for him despite large individual differences in these speech characteristics from one interviewee to another. This finding was confirmed in the studies which included test-retest intervals of 5 minutes, 7 days, 5 weeks and 8 months. A total of 99 pairs of interviews were carried out. In the first and second studies, two interviewers each independently interviewed, five minutes apart, the same new patient in an outpatient psychiatric clinic, while an observer, sitting with an Interaction Chronograph behind a one-way mirror, recorded the formal non-content measures of the interviewer-interviewee interaction. Each interviewer talked about whatever content he typically would in such an initial interview. There was no attempt to standardize the content of the two interviews with each patient. However, each interviewer limited all of his comments to approximately five seconds. The same lack of instructions regarding the content to be discussed in the test and retest interviews, and the five-second interviewer speech duration "rule" obtained in studies 3, 4, and 5, each of which used the same interviewer for the two interviews. This minimal

standardization enabled the researcher to study the stability of each interviewee's speech characteristics from test to retest interview without concern that the random or idiosyncratic formal speech behavior of the interviewer in the two interviews would introduce a methodological flaw in the research strategy.

The conclusion from the five studies was that any given interviewee demonstrates strikingly stable speech behavior in the two interviews with a second conversationist who is talking about different topics in the two interviews but who has "programmed" or controlled a few simple dimensions of his own speech behavior. Each of these five studies investigated the test-retest stability of patients as interviewees.

Another stability study was carried out by Wiens, Matarazzo, Saslow, Thompson and Matarazzo (1965) using nursing supervisors. Using a mean test-retest interval of 14.6 months, the duration of utterance variable for each nurse was essentially L shaped in each of the two interviews. That is, each nurse tended to have many short utterances and correspondingly fewer utterances of longer and longer duration values. The interview length of 35 minutes was considered to be a fair index of the interviewee's utterance duration. An unusually high test-retest correlation of .87 ( $p$  of .001) revealed that even with a test-retest interval of 14.6 months, the duration of utterance behavior for each of the 14 supervisor-interviewees had remained remarkably stable and unchanged.

Examination of the test-retest stability for the remaining three speech variables proceeded along the same lines. The results suggest

a fair degree of stability in mean duration of reaction time latency (4 of .62,  $p$  of .02). However, only a modest stability in initiative time latency ( $r$  of .36,  $p$  is not statistically significant) and less stability in the number of times these supervisors interrupted the interviewer in the two interviews ( $r$  of .22,  $p$ s not statistically significant). The test-retest correlations were considerably lower than those found in the five patient groups. Other investigators (Jaffee & Feldstein, 1970) also report a higher stability for their vocalization and their switching pause measures (similar to the DOU and RTL measures of Matarazzo) than for their simultaneous speech measures (Matarazzo's interruption measure).

Data from an additional study involving only 7 patients and 3 therapists over a 7 day interval with no control as to content or other aspects of their speech behavior, but completely naturalistic psychotherapy manner, revealed a test-retest correlation of .89 for duration of utterance of interviewee speech behavior. Reaction time latency, initiative time latency and interruption behavior exhibited a lower interviewee correlation of .60, .70 and .62 respectively (Saslow, Matarazzo, Phillips, & Matarazzo, 1957).

#### Inter-rater Reliabilities

The accuracy of the observer or recorder is important in the conduct of this research since, if the interaction recorder is used, he is, in effect, part of the recording instrument. If the word count method is used from a tape recording or from a transcript, a high level of

accuracy can be achieved by merely replaying each tape segment or counting the words in the utterance until certain of the accuracy of the word count data.

Phillips, Matarazzo, Matarazzo and Saslow (1957) conducted a study in which two observers simultaneously recorded the two person interaction occurring in job interviews. One observer recorded from one side of a room, while the second observer made similar, but completely independent observations from the other side of the same room. The results revealed that the level of agreement in their two interaction recordings of 17 employment interviews was essentially 100 percent. The Wiens, Molde, Holman, and Matarazzo (1966) study, mentioned above, which successfully compared an observer who scored interviews "live" (while they were actually going on) against observers who later scored the same interaction from a tape recording also attests to the accuracy level of observers. Jaffee and Feldstein (1970) and Conger (1971) have independently confirmed the very high interobserver or inter-rater reliability values.

#### Validity

The research establishes unusually high reliabilities for these interview interaction behaviors but the validity studies have thus far been approached from a number of points of view. The first of these studies was an attempt to establish construct validity and involved a factor analysis of twelve of the interview interaction variables used by Chapple (Matarazzo, Saslow, & Hare, 1958). The results revealed

that the standardized interview was made up of two stable and independent factors: silence behavior and action behavior (i.e., the average duration of the interviewee's habitual silence, or latency, before speaking, and the average duration of each of his utterances or adjustment behavior (the frequency with which a subject initiates or starts again with another communication of his own when his partner has not answered him, and the efficiency with which a member of the communicating pair adjusts, or maladjusts, to his partner by waiting too long and by interrupting).

A second construct validity study (Kanfer, Phillips, Matarazzo, & Saslow, 1960) involved an investigation of the effects of an interviewer content variable (interpretations) of the subject's motives, personality on the duration of his speech units. The results showed a decrease in the subject's duration of utterance when the interviewer introduced the experimental variable (a change from previously neutral nondirective five-second utterances to more challenging, interpretative five second utterances), and a subsequent increase in subjects duration of utterance when the interviewer returned to the previously more neutral type of interview content.

The concurrent validity studies have been of four types. In one, Matarazzo, Matarazzo, Saslow and Phillips (1958) examined by a variety of psychological assessment techniques the same patients interviewed by using the interaction chronography method. In a second study, they investigated the relationship of aspects of an interviewee's self description as revealed in the content of his interview and the formal (measured

in time units) overt interviewee interaction behavior (Phillips, Matarazzo, Matarazzo, & Saslow, 1961). In this study a number of relationships were found between self description (content) and actual interview responses (interaction behavior). A third concurrent validity study involved the simultaneous recording of Bales Interaction Process scores and the interview interaction measures in twenty-four interviews, revealing a number of significant relationships between the two independent sets of interview measures. (Hare, Waxler, Saslow & Matarazzo, 1960). The fourth study involved an analysis of the differences in total interview interaction behavior in five groups of subjects, ranging from hospitalized schizophrenics through outpatient neurotics, to two groups of normal subjects (Matarazzo & Saslow, 1961).

#### Modifiability

The investigative interest of the proposed research deals with the modifiability of the defendant's speech behavior. Although the test-retest stability of conversational speech attributes has been demonstrated, can these speech attributes be dramatically changed for a given speaker by relevant changes in the speech behavior of his partner. In other words, do certain interactional "rules" exist?

As a byproduct of the test-retest reliability question, Matarazzo and his collaborators, using Chapple's early five period standardized interview format programmed the interviewer to respond to the interviewee with one second reaction time latencies in Periods 1, 3 and 5, but to modify this drastically in Period 2 (wherein he increased his reaction

time latencies to 15 seconds each) and also in Period 4 (wherein he decreased his reaction time latencies to "negative" values in the sense that he did not wait for the interviewee to complete an utterance but systematically interrupted him even while the interviewee-patient was still talking). As the interviewer experimentally changed his own duration of utterance and duration of RTL from one period of the interview to another, there were striking and reproducible changes in the speech behavior of the patient interviewees (Matarazzo, Saslow, Matarazzo, & Phillips, 1958).

These findings led to a series of more rigorously controlled studies designed to investigate more systematically the types of interviewer (input) variables that could bring about these changes in the speech behavior (output) of the conversational partner (the interviewee).

Using two normal groups and three patient groups (mixed acute psychotic and neurotic patients, neurotics and chronic schizophrenics) and unknown to the interviewee, Matarazzo (1962) investigated certain of these variables. The standard interview was divided into five periods, with Periods 1, 3 and 5 as free give and take periods (essentially nondirective interviewing) and Period 2 (silence) and Period 4 (interruption) as stress phases of the interview. The results were validated five minutes later by a second interviewer on 40 of the 60 subjects and 7 days later by the same interviewer on the remaining 20 subjects; the mixed group of 20 subjects was reinterviewed after 8 months and the chronic schizophrenics were re-interviewed after five weeks.



Then, the results were cross-validated on a second group of normals and similar patient groups. The results indicated clearly that interviewee silence behavior is influenced by planned changes in the interviewer's own silence behavior. As the interviewer increased his own silences from less than a second in Period 1 to 15 seconds in Period 2, each of the five groups exhibited a corresponding increase in silence behavior from Period 1 to Period 2. When the interviewer decreased his latencies, a corresponding decrease occurred in the five groups. In Period 5, the interviewer returned to latencies of 1 second or less and a similar return was exhibited by the interviewees. It was concluded that the finding that interviewee silence behavior is susceptible to interviewer influence is highly reliable.

For each diagnostic group and its replication, the data was subjected to a t-test analysis of the differences between pairs of means. While an occasional pair of means was significantly different when each of the three nonstress periods were compared, by far the greatest influence was contributed by the two stress periods.

In like manner, as the interviewer decreased his own durations of utterance from five seconds in Period 1 to zero seconds (silence) in Period 2, the two normal and two other patient groups each showed a corresponding decrease in their Period 2 durations of utterance. Interestingly, and unlike each of these four groups, the schizophrenics reacted to the interviewer's Period 2 silence by sharp increase in their own action behavior which was cross-validated. Thus, four groups reacted

to the interview's Period 2 decrease in action (silence) by decreasing their own durations of actions. The schizophrenic groups on the other hand, reacted to this same decrease in interview action (silence) by increasing their own durations of actions.

As the interviewer next increased his actions to five second duration in Period 3 each of the five groups increased their own average duration of action. Likewise in Period 4, when the interviewer next continued his durations of action at five seconds each, but introduced the interruption variable, each of the five groups showed a marked decrease in their own average durations of actions. Similarity of behavior across all five groups was likewise evident in the Period 5 behavior. When in this Period the interviewer continued his five second actions, but terminated the concomitant interruption stress of Period 4, the average duration of action of each of the five diagnostic groups showed a similar increase from the Period 4 low.

For each of the diagnostic groups and its replication, a t-test analysis of the differences between pairs of period means was carried out. Again the major influence was contributed by the two stress periods. Therefore, like the interviewer silence dimension, planned changes in interviewer action behavior are followed by significant, reliable, and for the most part, parallel changes in the interview action behavior of interviewees.

These results introduce the possibility of prescribed courtroom behavioral approaches. That is, if one of the characteristics of some defendants is that they answer the prosecutor guardedly and do so in

utterances of short durations, then one might ask what would be the influencing effect on their duration of utterances if the prosecutor, used only long utterances when cross-examining them? Would there be a corresponding increase in the defendant's own duration of utterance and thus, along this one dimension, at least, more openness in his answer. Likewise, with prosecutors who speak in unusually long utterances, the so-called verbose attorney, would the influencing effect of a defendant using unusually brief utterances (e.g., one or two words per communication unit to answer his questions) be to reduce these long utterances, many times couched with derogatory and slighting phrases designed for its effect on the jury.

Although these studies are provocative, research on the non-content dimensions of interview behavior, despite their unusually high reliability and promising validity, has been pursued by only a few investigators.

Two of Chapple's early Massachusetts General colleagues, Verzeano and Finesinger, also concerned themselves with non-content interaction recording (microphones replaced Chapple's human observer) and subsequent analysis (Chapple's human scorer is also not needed) of interaction behavior, Verzeano and Finesinger (1949) developed an automatic analyzer of interview verbal behavior. This automatic analyzer was used for the study of frequency distribution characteristics of durations of speech in the free interview behavior of eight normal university students who were interviewed individually by an experienced psychiatrist. The results (Verzeano, 1959, 1951) show that durations of interview utterances of speech are skewed with many short utterances and a tailing off toward

the high end and following a "Poisson" distribution in most cases.

Another investigator who has concerned himself with non-content as well as content dimensions of interview interaction is Mahl. For years he has conducted a program of research aimed at investigating the psychodynamic aspects of ongoing psychotherapeutic interaction. Although he has been interested in interview content such as anxiety and speech disturbance ratios, he also has concerned himself with non-content measures as durations of patient silence and durations of patient and interviewer talk (Mahl, 1956a, 1956b). In common with Chapple and the others, Mahl (1956a) found that interview action and silence are unusually reliable and stable interviewee characteristics.

An extension of the finding cited in Chapter 1 with the astronauts and also involving multiple speakers at one end of the otherwise "face to face" dyad was published by Ray and Webb (1966). Reasoning from the laboratory and astronaut duration of utterance findings, Ray and Webb predicted that the speech behavior of President Kennedy and the multiple reporters interviewing him might show a concordance similar to that found in the astronaut study. The results supported their hypothesis. Using the earlier findings that the number of words in an utterance, obtained by a simple word count, is almost a perfect measure of the duration of that same utterance in seconds as is obtained by recording devices such as the Interaction Recorder, Ray and Webb counted the number of lines of words in each question posed by a reporter and the number of lines of words in President Kennedy's reply for each of 61

published news conferences. Their main conclusion was based on a systematic statistical evaluation of their results but it seems that the term concordance would best describe the results as it can not be ascertained which member of the dyad is influencing whom.

These studies lay a firm foundation for the further study of dialogic time patterns as representative of the participants characteristic modes of interpersonal behavior. Further, like the psychiatric-psychologic interview, the cross examination of a defendant can be conceptualized as a dyadic communication system in which one of the participants, the prosecutor, has as his major objective to obtain information from the other participant, the defendant. Consequently, it can be assumed that certain characteristics of the interaction may influence the verbal behavior of the participants such as stress and race which can be referred to as communication variables.

According to Hullian theory, a rise in drive level has the effect of activating previously below threshold response tendencies. Within the stress concept, the component of anxiety as viewed in the Cofer and Appley stress model (1966), appears at the second threshold, a cross over into which produces anxiety responses. It is at this threshold that a shift in pattern of response occurs.

The research investigations which examine the relation of anxiety to verbal productivity (including such parameters as quantity, rate, silence) provide the most relevant research to the present study.

In a study by Cervin (1956), it might be presumed that he was

attempting to manipulate anxiety by varying the stressfulness of the situation. He placed each of 64 undergraduates with two confederates of the experimenter who in one condition consistently agreed with and approved the subject's statements in making up a group story to a Thematic Apperception Test card, while in the other they consistently disagreed with and disapproved of the subject's strongly held opinions on a topic. Subjects receiving disapproval spoke a significantly smaller proportion of the time (.25 to .40) and with a significantly longer latency (over 75 seconds as compared to less than 10 seconds).

In yet another study (Miller, Zavos, Vlandis & Rosenbaum, 1961) either received approval while the subject did not, with neither the confederate nor the subject receiving approval, or with both receiving approval. Subjects experiencing less approval than the confederate spoke slightly less. In a more complex version of this design, subjects receiving disapproval after the confederate received approval (increased stress) spoke significantly less than those receiving the same treatment as the preceding speaker (approval or disapproval), while those receiving approval after the first speaker received disapproval (decreased stress) were in the middle.

In a third study which is a variation of the other two, (Vlandis, 1964), 108 undergraduates gave short speeches, for the first third of which the experimenter said nothing, but for the second and last thirds of which he used varying combinations of first approval followed by disapproval, disapproval by approval, approval by approval, approval followed by no comment. Subjects going from more to less favorable

response (punishment) had a significant decrease in speech, while those continuing to receive the same response or going from less to more favorable response showed nonsignificant increases.

In this series of four studies, stress groups spoke less than control groups, significantly so in three. In the one study measuring silence, the stress group was over seven times as silent as the control.

In three studies stress was varied by manipulating the supposed size of the audience, or by the apparent reaction of the speaker to an audience. Levin, Baldwin, Gallwey, and Paivio (1960) had 48 ten to twelve year old children tell a story to a sentence stem first to the experimenter alone and then to an audience of seven adults. Almost all told very significantly shorter stories to the larger, supposedly more stressful audience. (Mean seconds speaking were 186 to 278).

From the self-ratings of 80 female undergraduates, Geer (1966) selected 20 high and 20 low in fear of speaking before a group. Subjects gave 1 minute speeches on a task they had just completed, believing a group was observing them. For the first 30 seconds speech rate was very significantly slower for high fear subjects, and mean silence quotient significantly higher (8.8 versus 4.4 seconds). Since speeches were monologues, and of even length with only the first 30 seconds analyzed, speech rate is also a measure of speech quantity, so results are consistent with those of Levin et al. (1960).

In Sauer and Marcuse (1957) the manipulation was between overt and covert recording of TAT stories, the overt recording presumably

increasing the potential audience in the subjects' minds. Word count was higher for those overtly than for those covertly recorded, significantly so for subjects with high Manifest Anxiety Scale scores (380 versus 336, 402 versus 380 for those with low MAS scores). Latency was very significantly shorter under overt recording conditions (39.8 versus 53.6 seconds for those with high and 46.7 versus 59.8 for those with low MAS scores) and word rate significantly faster. Results are the opposite of those in the other studies of situational anxiety covered so far. Only a quarter of subjects reported increased difficulty with overt recording so stress manipulation appears weaker than with other studies of situational anxiety. Assuming covert recording provided mild and overt recording moderate stress, results would be consistent with an inverted U relationship between anxiety and verbal quantity.

Some studies have attempted to manipulate stress through the topic on which subjects are instructed to speak, some topics being assumed more stressful than others, and some topics being rated from content, with regard to subjects' adjustment. Topics on which subjects' content indicated poorer adjustment were presumably more stressful for them. Kanfer (1959) asked 29 college students of both sexes to give 3 minute monologues on each of five topics. No group differences in speech rate were found, but there was a significant tendency for subjects to talk faster on those topics where content suggested poorer adjustment. In a similar design with 38 adult, married, female neuropsychiatric patients, Kanfer (1960) found verbal rate to differ very



significantly among four topics with the highest verbal rate being found when subjects spoke about their illness, assumed to be the most stressful topic. There was a nonsignificant tendency for those topics in which content was rated most stressful to have the highest verbal rate.

In these studies, Kanfer dealt with a monologue type situation and equal time periods, so rate and quantity are the same. In the second study, Kanfer (1960) used neuropsychiatric patients for subjects and their desire to talk to a professional about their problems could have more than counterbalanced the usual negative effect of stress on verbal quantity. Another possibility is that when topic is used to manipulate anxiety, any effect on verbal quantity may be minimal at first, since most people probably have some nonanxious stereotyped comments they can make about problem areas, giving a listing of symptoms or the history of the trouble. Allowing only 3 minutes for speeches may have altered the relationship.

Kanfer's second study raises yet a third possibility since he collected eyeblink data on all subjects. Eyeblink appears to be a particularly suitable index of generalized muscular tension (Meyer, 1953; Meyer, Bahrick & Fitts, 1953) and thus often indicative of anxiety. If so, eyeblink figures suggest that of the four topics used the least anxiety-provoking was sex, with family and home intermediate, and illness the most stressful. (Sex involved these married women in talking positively about their husbands, and so could well have been minimally stressful). Verbal rate figures showing illness with the

highest and positive relationship between rate (or quantity) and stress. The eyeblink data also showed steadily decreasing eyeblink rate in each of four succeeding 30 second time periods, suggesting decreasing stress with each period. To fit the U curve the four figures for each topic must show one of these configurations. Assuming high stress to begin with, the four figures can show progressively increasing talk as stress is reduced. Assuming somewhat lower stress to start, the four figures can show first increasing and then decreasing talk. Assuming moderate stress to begin with, the four figures can show progressively decreasing talk as stress becomes milder. If the eyeblink data can be generalized to the four 30 second time periods in Kanfer's first study as well, the data from five of the topics exactly fit the U curve, data from three come very close to fitting it, and data from only one do not fit well.

Siegman and Pope (1965) found no significant relationship between topical focus and either reaction time or silence quotient for 50 subjects. With 16 subjects, Siegman and Pope (1966) found verbal productivity lower on the stress topic and reaction time shorter, neither at acceptable levels of significance, but silence quotient was significantly shorter. In the last of these studies (Pope & Siegman, 1967) with 32 subjects, the family topic resulted in very significantly fewer words (58 versus 89) per response but differences in reaction time were not significant.

Pope and Siegman (1968) felt it seemed reasonable to consider studies manipulating interviewer climate, warm or cold attitudes towards

the interviewee, as related to anxiety, with cold interviews providing more stress. They found that cold interviews increased speech disturbances, suggesting that they were arousing anxiety.

In a study of 10 chronic schizophrenics (Drennen and Wiggins, 1964) seen weekly for 10 group therapy sessions, conducted alternately by a pair of congenial, supportive and a pair of hypercritical, nonsupportive therapists. The cold approach resulted in considerably and significantly reduced interactions in the first session, compared to the warm approach (74 to 136). By the fifth week, patients may have adapted to the cold therapists' attitude and were no longer made anxious by it, for patients now talked as much with either pair of therapists.

In a rather weak manipulation of the warm-cold set (Allen, Wiens, Weitman & Saslow, 1965), 40 male civil service applicants were told the interview would be very warm or rather cold, though actual behavior remained unchanged. The cold set resulted in significantly (over one-third) longer latencies and slightly longer durations of interviewees' interactions.

Another study involving warm-cold experimenters was conducted by Reece and Whitman (1962) in which they assigned 69 college students randomly to groups receiving either warm or cold experimenter behavior as conveyed nonverbally by the experimenter showing interest and attention or disinterest and nonattention. Subjects were told to say disconnected words for 15 minutes. Under cold conditions they said very significantly fewer words (about 298 to 328). In a design with a similar warm-cold manipulation (Reece, 1964) 36 college students were

instructed to give disconnected words starting with a given and varying letter for six trials of 4 minutes duration. Cold conditions resulted in significantly fewer words. Pope and Siegman (1968) had 32 student nurses interviewed twice, with one of the interviewers trained to behave warmly and other trained to be cold. Subjects in the cold condition have significantly fewer words per response (59 to 86).

The results on warm cold interviews are almost consistent, and are an aid in interpreting how the defendant might perceive the questions of his own attorney as versus the questioning by the prosecutor.

Several studies varied accessibility to stimuli, with stress presumably increasing from the normal situation through social isolation to stimulus deprivation. These studies are presented very briefly, since it is possible that stimulus deprivation involves physiological consequences unrelated to an confounding the effects of stress variations. In three of these experiments (Oyamada, 1966; Suedfeld, Grissom & Vernon, 1964; Suedfeld, Vernon, Stubbs & Karlins, 1965) subjects endured 24 hours of severe stimulus deprivation, a comparable period of social isolation, and the control conditions. In all studies verbal quantity was higher in the social isolation (moderately stressful?) condition, and lower in the stimulus deprivation (highly stressful?) condition, significantly so in the two Suedfeld experiments. In Suedfeld et al. (1965) subjects in the isolation group spent the entire time, inadvertently, in temperatures over 90 degrees, probably an extremely stressful situation, and their speech decrement was much greater than for the stimulus deprivation

condition. Oyamada (1966) also reported speech rate to be lower in the deprivation than in the control group.

In somewhat similar studies Walters and Henning (1962) found high school boys' speech quantity did not change significantly after 3 hours, but was significantly reduced after 6 hours of isolation, while Zuckerman, Albright, Marks and Miller (1962) reported a significant reduction in verbal quantity for student nurses confined for 6 hours in an iron lung with rather complete stimulus deprivation whereas a similarly confined group with little stimulus deprivation showed little change.

Results of the stimulus deprivation studies then are consistent with most other situational anxiety studies in revealing a drop in verbal quantity, usually significant, with severe stress.

The data is sparse with regard to the effects of the interracial situation upon non-content aspects of verbal behavior.

In a study conducted in the South, individual black students from a predominantly Negro college were told that they would receive a painful stimulus (electric shock) while working on a task in which they had to learn a code (Katz and Greenbaum, 1963). The performance of those who worked in the presence of a white experimenter and a fellow subject was more adversely affected by the shock instructions than was the performance of those who worked in the presence of a black experimenter and a black fellow subject. Apparently, feelings of insecurity at being alone in a strange white environment made the Negro students highly vulnerable to the additional stress presented

by the threats of electric shock (which in fact was never given).

Experiments of this type suggest factors that may affect Negro students in a way which hampers their performance when they are face to face with whites. Novel types of contact with white strangers possess a social threat component. Negroes may be fearful of arousing white hostility by being assertive or displaying intellectual competence. The amount of social threat would be a direct function of the amount of evidence of hostility from whites and the amount of power possessed by whites in the actual confrontation, as stemming, for example from numerical predominance, control of authority positions, and so on (Katz, 1974).

Another type of detrimental influence may well be that of failure threat. A high expectation of failure at a task does not by itself constitute failure threat--it is necessary also that the failure have a social meaning which is harmful (Katz, 1974).

An examination of verbal behavior of blacks in the courtroom setting would add greatly to the dearth of research on response factors which may be related to social threat, low expectancy of success and threat of failure in the interracial situation.

## RATIONALE OF THE REVIEW

The studies on duration of utterance (Johnston, Jansen, Weitman, Hess, Matarazzo, & Saslow, 1971; Lennard & Bernstein, 1960; Matarazzo, Wiens, Saslow, Dunham & Voas, 1964; Siegman & Pope, 1969; Wiens, Matarazzo, & Saslow, 1965) lay a firm foundation for the exploration of dialogue patterns as representative of the participants characteristic modes of interpersonal behavior. Conceptualizing interrogation as a dyadic communication system, it can be reasoned that duration of utterance in courtroom interrogation is a valid dependant measure of verbal behavior.

Little investigation of stress in terms of a communication variable in interactive structural verbal behavior has been done. However, reasoning from the most relevant research in the area of verbal productivity in self-initiated speech (Miller, Zavos, Vlandis & Rosenbaum, 1961; Reece & Whitman, 1962; Suedfeld et al., 1965), a severe drop in verbal quantity under stress occurs; therefore, it is expected that duration of utterance under the more stressful circumstances of cross examinations would decrease.

The data again is sparse on the influence of race upon non-content aspects of verbal behavior. The analysis of situations of interracial performance in terms of response factors of problem solving, number of verbal remarks, various types of mental and physical tasks (Katz, 1974; Katz & Cohen, 1962; Katz & Greenbaum, 1963) reveal a significant detrimental effect on performance in the interracial situation of blacks.

Reasoning from these studies which clearly point to the effects of racial composition in situations upon performance of blacks and the fact that juries, judges, lawyers and court clerks are primarily white projects the black criminal defendant into a setting where evaluation by whites has real life significance, it would seem to follow that the black defendant as compared to the white defendant, would evidence a decrease in duration of utterance.

On the basis of these research investigations, the present study sought to investigate a number of hypotheses relating to dyadic interaction occurring in courtroom interrogation. To this end, this study involved a manipulation of the variables of seriousness of crime on a continuum of degree (larceny, robbery, murder); race of defendant (black, white); type of examination (direct, cross). The hypotheses are as follows:

I. Duration of utterance of defendant

- (1) Duration of utterance will be shorter on cross examination than on direct examination for the defendant.
- (2) Assuming that blacks will be more stressed, duration of utterance for blacks will be shorter.
- (3) Duration of utterance will be shorter as the seriousness of the crime increases, assuming that the defendant is under greater stress the more serious the crime.



## II. Duration of utterance of attorney

Assuming that the different roles of the attorneys will affect their verbal behavior; that is, that the prosecutor will seek to manipulate the defendant's length of utterance by increasing his own, the following prediction is made.

- (1) Duration of utterance will be longer on cross examination for the prosecutor.
- (2) There will be no effect on duration of either attorney in the interrogation of black and white defendants.
- (3) There will be no effect on duration of utterance as severity of crime increases.

## III. Ratio of Subject/Attorney utterance lengths.

Within each of the scored sections for each defendant, the dyads of attorney-defendant exchanges will be transformed into a ratio. Assuming that under periods of stress, the ratio will tend to decrease, the following predictions can be made.

- (1) The ratio will decrease on cross examination.
- (2) Assuming that blacks will be more stressed, the ratio will decrease as compared to white defendants.
- (3) The ratio will decrease as the seriousness of the crime increases.

## IV. Correlation

Within each examination, a correlation will be calculated.

These correlations should be significant (Matarazzo effect).

However, low correlation might result under periods of stress.

- (1) Assuming that cross examination is more stressful for the defendant, a lower correlation in cross examination is expected.
- (2) Assuming that severity of sentence affects stress, a significantly lower correlation with crimes of greater seriousness is expected.
- (3) Assuming that blacks are more stressed, a significantly lower correlation for blacks is expected.
- (4) Assuming that the examination by the attorney on direct is less stressful, a significantly higher correlation on direct examination is expected.

## CHAPTER III

### METHOD

The subjects utilized in this study were 72 male criminal defendants, brought to trial under criminal indictments for felonies. Twenty-four of the 72 defendant subjects were indicted for larceny (12 white defendants and 12 black defendants); twenty-four were indicted for robbery (12 white and 12 black defendants); and twenty-four for murder (12 white and 12 black defendants).

#### Source of Data

Verbatim court transcripts of the direct examination and cross examination of each defendant at the time of trial on the charges for which he was indicted were utilized.

#### Procedure

The transcript of the testimony of the defendant during direct examination by the defense attorney and the testimony of the defendant during cross examination by the prosecutor following the sequential ordering of question answer pairs across both types of testimony was used for the analysis.

The basic unit of analysis is an utterance. The utterance is separated at either end by two silent periods--one silence following the other participant's last comment, the second silence following the speaker's own comment and preceding the listener's next comment.

Within each transcript of the defendant's testimony, the line count method was utilized. This system consists of counting the lines of testimony in each utterance of the defendant (any fragment of a line was counted as a whole line). Any bench conferences or interruptions for rulings of law on evidence questions were deleted from the analysis and only the defense attorney-defendant question-answer pairs and the prosecutor-defendant question-answer pairs were used. The means of these utterances constituted the unit of analysis for two of the dependent variables. The mean duration of utterances (DOU) for each speaker was obtained by summing the lengths of each of the individual utterances in each examination and dividing this sum by the number of utterances in that period.

The research reported in this study involved three independent variables: race (black, white), seriousness of crime (larceny, robbery, murder) and type of examination (direct examination of the criminal defendant by his own attorney and cross examination by the prosecutor).

One dependent variable is the defendant's mean number of lines per utterance. He therefore received 2 scores, 1 on cross examination and 1 on direct examination. The same sampling procedure is used to determine the average utterance length of the attorneys. Each attorney receives a score. That is, within direct examination of the defendant by his own attorney, the attorney's mean duration of utterance is obtained. Also, within the cross examination of the

defendant by the prosecutor, the mean duration of utterance length was obtained across his interrogation.

### Hypotheses

In view of the research on the verbal productivity of subjects under stress, the weight of the evidence seems to now indicate that a drop in verbal quantity results under stressful conditions. Assuming that the mean utterance length of the defendant decreases under stressful conditions, the following prediction can be made.

- (1) Duration of utterance will be shorter on cross examination than on direct examination of the defendant.
- (2) Assuming that blacks will be more stressed, duration of utterance for blacks will be shorter.
- (3) Duration of utterance will be shorter as the seriousness of the crime increases, assuming that the defendant is under greater stress the more severe the penalty for the crime.

Assuming that the different roles of the attorneys will affect their verbal behavior; that is, that the prosecutor will seek to manipulate the defendant's length of utterance by increasing his own, the following predictions are made.

- (1) Duration of utterance will be longer on cross examination for the prosecutor.
- (2) There will be no effect on duration of utterance of either attorney in the interrogation of black and white defendants.

- (3) There will be no effect on duration of utterance as seriousness of crime increases.

Within each of the scored sections for each defendant, the dyads of attorney-defendant exchanges (question-answer pairs) will be transformed into a ratio. The line length of defendant's answer will be divided by the line length of the attorney's question. The mean of the set of ratios was the unit of analysis. Assuming that under periods of stress, the ratio will tend to decrease, the following predictions can be made.

- (1) The ratio will decrease on cross examination.
- (2) Assuming that blacks will be more stressed, the ratio will decrease as compared to white defendants.
- (3) The ratio will decrease as the seriousness of the crime increases.

Within each examination, a correlation was calculated between the first and second member of each dyad of attorney-defendant exchanges. These correlations should be significant (Matarazzo effect). However, it is possible that low correlation might result under period of stress.

- (1) Assuming that cross examination is more stressful for the defendant, a lower correlation in cross examination is expected.
- (2) Assuming that seriousness of crime affects stress, a significantly lower mean correlation with crimes of greater magnitude is expected.

- (3) Assuming that blacks are more stressed, a significantly lower mean correlation for blacks is expected.
- (4) Assuming that the examination by the attorney on direct is less stressful, a significantly higher mean correlation on direct examination is expected.

## RESULTS

Length of Utterance of Defendant

The data collected from defendants' direct and cross examination relative to utterance length of the subject was analyzed by a three way analysis of variance. The factors used in this design were seriousness of crime--three levels (larceny, robbery, murder); race--two levels (white, black); and type of examination (direct and cross).

The first major hypothesis regarding the present research was:  
Duration of utterance will be shorter on cross examination than on direct examination for the defendant.

The summary of the analysis of variance of the defendant subjects' scores are presented in Table 1 (Appendix A) and revealed that the effect of type of examination was highly significant across defendants,  $F(1,66) = 34.80$ , ( $p < .001$ ). The mean utterance length of the defendant subjects for direct examination was 2.20 and for cross examination 1.64 (Appendix A).

The second major hypothesis was:

Assuming that blacks will be more stressed, duration of utterance for blacks will be shorter.

No significant differences were found among the defendant subjects in terms of race,  $F(1,66) = .08$ ,  $p > .05$ .

The third hypothesis was:

Duration of utterance will be shorter as the seriousness



of the crime increases, assuming that the defendant is under greater stress the more severe the penalty for the crime.

No significant differences were found for the main effect of seriousness of crime,  $F(2,66) = 1.34, p. > .05$ . An examination of the means collapsed across type of examination yields a mean duration of utterance length for the defendants of 1.82 for larceny, 2.07 for robbery and 1.86 for murder. However, the interaction between seriousness of crime and type of examination was significant ( $p < .005$ ). That is, the effect of seriousness of crime depends on the type of examination (direct or cross). A post hoc comparison of means (Duncan New Multiple Range Test) indicated there was a significant difference in direct versus cross examination in the more serious crimes of robbery and murder but no significant difference in the less serious crime of larceny. Further analysis exhibited shorter duration of utterance length under direct examination for larceny defendants than for either robbery or murder subjects. Under cross examination, however, the seriousness of crime was not a reliable variable.

No other interactions were significant.

#### Mean Utterance Length of Attorney

The data collected from the defense attorney on direct examination and the prosecutor on cross examination relative to utterance length was analyzed by a  $2 \times 2 \times 3$  analysis of variance design including the same factors as in the previous design except that now the type of

attorney (prosecutor and defense) is a between subjects variable.

The first major hypothesis was:

Duration of utterance will be longer on cross examination for the prosecutor.

No significant differences were found between the prosecutor and the defense attorney in terms of interrogation length. Although collapsing across race and seriousness of crime, the means are in the predicted direction of longer duration of utterance by the prosecutor than by the defense attorney. The mean utterance length for the prosecutor being 1.66 and for the defense attorney 1.60, ( $F(1,66) = .68$ ,  $p > .05$ ).

The second hypothesis was:

There will be no effect on duration of utterance of either attorney in the interrogation of black and white defendants.

An effect of race in the interrogation length was found,  $F(1,66) = 3.86$ ,  $p < .05$ . The mean interrogation length when examining black defendants was 1.50 and the mean interrogation length when examining whites was 1.70. The predicted interaction between race and type of attorney failed to reach significance,  $F(1,66) = .73$ ,  $p > .05$ .

The third hypothesis was:

There will be no effect on duration of utterance as severity of crime increases.

No significant differences were found for length of interrogation as severity of sentence increased  $F(2,66) = .02$ ,  $p > .05$ . An examina-

tion of the mean utterance length collapsed across attorneys revealed a mean utterance length of 1.64 for larceny, 1.62 for robbery and 1.64 for murder.

No remaining effects were significant.

#### Ratio of Subject/Attorney Utterance Lengths

The ratio of attorney defendant exchanges was submitted to an analysis of variance in the same design as the first examination of mean utterance length of subject. The mean of the ratio of defendants' answers divided by attorneys' question was the unit of analysis.

The first major hypothesis was:

The ratio will decrease on cross examination.

The summary of the analysis of variance exhibits a statistically significant difference of type of examination,  $F(1,66) = 41.85$ ,  $p < .001$ . An examination of type of examination collapsed across seriousness of crime reveals a decrease in the ratio on cross examination. (The mean ratio of 1.17 on cross examination versus a mean ratio of 1.67 on direct examination).

The second hypothesis was:

Assuming that blacks will be more stressed, the ratio will decrease as compared to white defendants.

No significant difference was found in the main effect of race, (mean ratio of 1.46 versus a mean ratio of 1.39 for whites,  $F(1,66) = .51$ ,  $p > .05$ ).

The third hypothesis was:

The ratio will decrease as the seriousness of the crime increases.

The main effect of seriousness of crime was not significant,  $F(2,66) = 1.81, p > .05$ . An examination of the mean ratios revealed a mean duration of utterance ratio of 1.30 for larceny, 1.53 for robbery and 1.42 for murder. However, there was a statistically significant difference in the interaction of crime and type of examination. A post hoc comparison of means (Duncan New Multiple Range Test) indicated that there was a significant difference in direct versus cross examination in the more serious crimes of robbery and murder but no significant difference in direct and cross examination at the level of the less serious crime of larceny. The effect of seriousness of crime is dependent therefore on the type of interrogation at these levels. Further analysis exhibited shorter duration of utterance ratios under direct examination for larceny defendants than either robbery or murder subjects. Under cross examination, however, the seriousness of crime was not a reliable variable.

No other interactions were significant.

### Correlation

A correlation was calculated between the first and second member of each dyad of attorney defendant exchanges. The analysis of variance design is the same as that under the mean utterance length of subject and ratio of subject/attorney utterance lengths after a Fisher's Z transformation was performed on the scores.

The first major hypothesis was:

Assuming that cross examination is more stressful for the defendant, a lower correlation in cross examination is expected.

The second hypothesis was:

Assuming that severity of sentence affects stress, a significantly lower correlation with crimes of greater seriousness is expected.

The third hypothesis was:

Assuming that blacks are more stressed, a significantly lower correlation for blacks is expected.

The fourth hypothesis was:

Assuming that the examination by the attorney on direct is less stressful, a significantly higher correlation on direct examination is expected.

No significant effects were found in this analysis. An examination of the Pearson product moment correlation coefficients revealed 10 significant correlations (N = 144 observations). Of the 19, there were 9 significant correlations in the white condition and 10 in the black condition across both types of interrogations. An examination of types of examination under which the significant correlations occurred revealed 10 under the prosecutor conditions and 9 under the defense condition.

In terms of the seriousness of the crime, there were 7 significant

correlation coefficients under the larceny conditions, 10 under the robbery conditions and 2 under the murder condition.

The most logical explanation from an examination of the raw data for the failure to find significant effects in this analysis is that there are a large number of one line to one line exchanges therefore there is no variance. A Pearson product moment correlation will not discriminate unless there is variance. All of which suggests that the line count method is not a sensitive measure of the correlation effect in courtroom interrogation but that a word count would possibly be the appropriate measure.

## CHAPTER IV

### Discussion

The specific objectives of the study were to investigate the changes in the defendant's interaction patterns across two different examiners--his attorney on direct examination and the prosecutor on cross examination. Further, (1) to demonstrate that the cross examination of the defendant is perceived by the defendant as stressful and results in a modification of his verbal behavior, (2) to demonstrate the effect of race on the verbal behavior of the defendant, prosecutor and defense attorney in the courtroom setting, and (3) to demonstrate that interspeaker influence is manifested in both types of examination.

The analysis of the data collected relative to the principal objectives of the study indicated significant differences in the verbal behavior of the defendant. Between blacks and whites, no significant differences were found in their courtroom verbal behavior although the means were in the predicted direction of shorter duration of utterance for blacks than whites on cross examination. The analysis of the significant interaction of seriousness of crime and type of examination revealed that the effect of type of attorney depended on the seriousness of crime. It was significant only in the more serious crimes of robbery and murder. Under further analysis within type of examination, shorter duration of utterance was exhibited for those defendants in the larceny condition under direct examination than

either the robbery or murder conditions. Under cross examination, however, the seriousness of crime was not a reliable variable.

The analysis of differences in verbal behavior of the defense attorney and the prosecutor did not reveal any significant effect in terms of interrogation length although the means were in the predicted direction of longer duration of utterances by the prosecutor. The examination of the significant differences of an effect of race upon the attorneys' interrogation length of utterance was not predicted (the prediction being that there would be no effect of race) but revealed that the attorneys utterances were shorter when examining white defendants.

The examination of significant differences in the ratio of attorney/subject exchanges revealed a decrease in the ratio on cross examination versus direct examination. An analysis of the significant interaction between seriousness of crime and cross versus direct examination indicated that the effect of cross examination by the prosecutor was operative at the levels of robbery and murder but no significant effect at the level of larceny. Further analysis within type of examination revealed shorter duration of utterance for those defendants in the larceny condition under direct examination than either the robbery or murder conditions. Under cross examination, however, the seriousness of crime was not a reliable variable.



## Conclusions

In the writer's opinion these data indicated firstly, that the courtroom setting is an excellent "laboratory" in which to study verbal behavior providing a forum for insightful exploration of crucial variables of verbal interaction in a naturalistic setting. Secondly, meaningful results have been obtained contributing to a continuing search for a viable theory leading to a structural model of verbal behavior.

The results suggest that stress, as a variable, can now be added to the list of other variables which previous research has shown can affect interaction patterns of dyadic speakers.

The evidence from the present study lends clarifying data to the conflicting studies as to the effect of verbal productivity under conditions of stress. Although the literature is sparse in which the interaction of the verbal behavior of dyadic speakers is studied under stress, those studies most relevant were verbal productivity of subjects in self initiating speech (speeches, TAT stories). Mahl (1956a) found that anxiety produced an increase in length of response as have other researchers (Siegman & Pope, 1965; Davids & Ericksen, 1955; Kanfer, 1958). Whereas a number of investigators (Cervin, 1956; Miller, Zavos, Vlandis & Rosenbaum, 1961; Levin, Baldwin, Gallwey & Paivio, 1960; Sauer & Marcuse, 1957) reported a drop in verbal quantity under conditions of stress.

The results in the present study (I and III) of a decrease in duration of utterance by the defendant and a decrease in ratio length can best be interpreted within a stress model of instigation thresholds (Cofer & Appley, 1966). It views successive thresholds of stress over time, ultimately culminating in stress responses. Verbal behavior as a response measure of stress in the courtroom can be seen as a response to the culmination of the crossing of these temporal thresholds paralleling the successive stages of the judicial process through which the defendant must pass.

Within the writer's proposal of a "judicial" model of stress thresholds, the instigation threshold is viewed as an interference with goal behaviors or an anticipation of such interference. Within this model, this threshold is reached at the time of a preliminary hearing and a finding of "probable cause" that the defendant committed the crime has been entered.

The source of the instigation threshold persists--the defendant is scheduled for trial and once a finding of "probable cause" has been entered there is no way to impede the judicial process of moving towards a trial. It is at this point that the frustration threshold is reached. The defendant perceives the situation as likely to be beyond the capacities of his readily available coping potential. We can begin now to speak of threat perception in that the defendant's general well being is threatened and no readily available mechanism exists to reduce the threat. The defendant is viewed as seeing himself emeshed in the

judicial process and the threat of a long confinement a very real possibility. Secondly, the concern over his expected role behavior and his ability to adequately cope with the interrogation is intensified. It is postulated that the crossing of this threshold within this theoretical judicial model of stress occurs at time of trial under interrogation by the prosecutor (when the immediacy of the threat of harm by the State is at hand). The verbal response measures examined and reported in this study support this view.

The interaction of the seriousness of the crime and type of examination (I and III) found in this study can also be explained within this model. The defendant charged with the more serious crime of robbery and murder has potentially a more harmful situation confronting him at the second threshold. Within the Cofer and Appley explanation, it is at this point we may observe the exclusive dropping out of all task oriented behaviors and the preoccupation of the organism with ego protection. The more extreme threshold (due to the more serious crime) may be identified with perception of danger and a resultant intensification of ego defensive responses here manifested by a decrease in utterance length when examined by the prosecutor.

However, as revealed by the further analysis of the data, the stress threshold was reached earlier under the impace of direct examination at the level of the less serious crime of larceny. This can be seen as a reflection of stress of the "first type of offender" effect in that the population of larcenists includes a large number of first

time offenders whereas in the robbery and murder conditions, this does not apply. An alternative hypothesis to explain this finding rests in the fact that the criminal defendant charged with larceny (a less serious crime than the other two) spends less time with his attorney overall than the robbery or murder offender. Conceivably, the lack of familiarity with his own attorney, still a comparative stranger, combined with the situational effect of the trial produces a higher stress threshold, resulting in the difference in his verbal behavior.

These theoretical postulates of a judicial model are supported by the research cited earlier in this chapter (although not conducted within an interaction paradigm) that the decrease in verbal quantity parallels the degree of stress under which the subject is operating.

The surprising and unexpected finding of the race effect in the attorneys behavior suggests that the race of the defendant tapped an already present, differentially viable motivational state in these attorneys which revealed itself in the verbal behavior of both.

The absence of a finding of an effect of race as predicted in the verbal behavior of the defendant is contrary to the majority of experimental results of the behavior of the black defendant in an interracial situation (katz, 1958, 1960). Although the means were in the predicted direction of shorter duration of utterances for blacks, the desired level of significance was not reached. A follow up study examining this variable should be undertaken.

## CHAPTER V

### SUMMARY

At this moment in history, representatives of our government are focusing on what can be done to reduce crime, and some members of the judiciary have been asking for a consideration of research on categories of specific behavior that "criminals" emit in an attempt to channel these persons emitting such behaviors into treatment centers. The relationship between criminality and specific criminal personality typing has thus far eluded any Procrustean approach of traditional models, and psychological contributions to the science of criminology are being amalgamated with ideas from other disciplines. Socio-psychological models for analyzing the deviances of criminality provide an interdisciplinary approach (Coffman, 1969).

The plan of this study was guided by the relatively specific set of theories and studies which point to an analysis of verbal behavior as an extremely good indicator of the personality of the individual and the variables which might influence his behavioral responses.

The objective of this study was to examine the verbal behavior of criminal defendants in the courtroom under two types of interrogation procedures--that of his own attorney under direct examination and under cross examination by the prosecutor. Specifically, to investigate the behavior of the defendant indicative of the ability to cope with natural occurring stress factors.

The subjects were 72 male criminal defendants brought to trial

under criminal indictments for felonies. Twenty-four of the 72 defendant subjects were indicted for larceny (12 white, 12 black); twenty-four were indicted for robbery (12 white, 12 black); and twenty-four for murder (12 white and 12 black).

The transcript of the testimony of the defendant during direct examination by the defense attorney and the testimony of the defendant during cross examination by the prosecutor following the sequential ordering of question-answer pairs across both types of testimony was used for the analysis. Within each transcript the line count method was utilized.

This research involved three independent variables: race (black, white), seriousness of crime on a continuum of larceny, robbery and murder, and type of examination (direct versus cross).

The results indicated the following:

1. The defendants manifested significant differences in their verbal behavior on cross examination.
2. Between blacks and whites, no significant differences were found in their courtroom verbal behavior.
3. An analysis of the significant interaction of seriousness of crime and type of examination revealed that the degree to which the effect of the seriousness of the crime had substantial effect depended on whether the defendant was being interrogated by his own attorney or the prosecutor and was significant for the more serious crimes

of robbery and murder.

4. Differences in verbal behavior of the defense attorney and the prosecutor were significant on the race variable. Both attorneys exhibited longer interrogation utterances when examining white defendants.
5. Differences in the ratio of attorney/subject exchanges revealed a decrease on the ratio of cross examination versus direct examination. An analysis of the significant interaction between seriousness of crime and cross examination by the prosecutor was operative at the levels of robbery and murder but no significant difference in the ratio of exchanges between interrogation by the defendant's own lawyer and the prosecutor at the level of the less serious crime of larceny.

This study has provided experimental evidence that noncontent verbal behavior provides an indices of stress (assuming that cross examination of the defendant by the State prosecutor is stressful).

It offers support to the studies presenting evidence that the individual's coping response in terms of verbal behavior is a decrease in utterance length. It questions the motivational aspects of attorneys who interrogate black and white defendants differentially. It offers evidence that a defendant's verbal behavior is affected by the degree

particularly when he is confronted with the potential danger and threat to his well being personified by the Prosecutor for the State under cross examination. It strongly suggests that the more immediate and the extent of the degree of potential harm or threat to the defendant, the more stress he experiences.



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APPENDIX A

Tables

TABLE 1  
 SUMMARY OF THE ANALYSIS OF VARIANCE  
 MEAN UTTERANCE LENGTH OF DEFENDANT

Source	SS	df	MS	F
Race	.04	1	.04	.08
Crime	1.59	2	.79	1.34
Race x Crime	.76	2	.38	.65
Error	39.06	66	.59	
Type	11.22	1	11.22	34.80**
Race x Type	.58	1	.58	1.79
Crime x Type	3.81	2	1.90	5.92*
Race x Crime x Type	.63	2	.31	.99
Error	21.29	66	.32	

\*\* .001

\* .005

TABLE 2  
 MEAN DURATION OF UTTERANCE  
 FOR DEFENDANTS

White Defendants

	Larceny	Robbery	Murder
Direct	1.63	2.58	2.15
Cross	1.83	1.72	1.50

Black Defendants

	Larceny	Robbery	Murder
Direct	2.14	2.43	2.27
Cross	1.72	1.55	1.52

Table 3  
 SUMMARY OF THE ANALYSIS OF VARIANCE  
 MEAN UTTERANCE LENGTH OF ATTORNEY

Source	SS	df	MS	F
Race	.66	1	.66	3.86*
Crime	.008	2	.004	.02
Type	.11	1	.115	.68
Error	24.94	132	.17	
Interactions:				
Race x Crime	.026	2	.013	.08
Race x Type	.128	1	.128	.76
Crime x Type	.560	2	.28	1.64
Race x Crime x Type	.917	2	.458	2.69
Error	24.94	132	.17	

\* .05



TABLE 4  
 MEAN DURATION OF UTTERANCE  
 FOR ATTORNEYS

White Defendants

	Larceny	Robbery	Murder
Direct	1.47	1.79	1.66
Cross	1.97	1.62	1.69

Black Defendants

	Larceny	Robbery	Murder
Direct	1.58	1.51	1.60
Cross	1.55	1.58	1.55

TABLE 5  
 SUMMARY OF THE ANALYSIS OF VARIANCE OF RATIO  
 OF DEFENDANT/ATTORNEY UTTERANCE LENGTHS

Source	SS	df	MS	F
Race	.17	1	.17	.51
Crime	1.25	2	.62	1.81
Race x Crime	.53	2	.26	.77
Error	22.93	66	.34	
Type	8.92	1	8.92	41.86**
Race x Type	.00	1	.00	
Crime x Type	1.93	2	.96	4.55*
Race x Crime x Type	.06	2	.03	.14
Error	14.07	66	.21	

\*\* .001

\* .01

TABLE 6  
 MEAN RATIO OF SUBJECT/ATTORNEY  
 UTTERANCE LENGTHS

<u>White Defendants</u>			
	Larceny	Robbery	Murder
Direct	1.26	1.91	1.75
Cross	1.13	1.23	1.05

<u>Black Defendants</u>			
	Larceny	Robbery	Murder
Direct	1.53	1.84	1.75
Cross	1.32	1.17	1.15

TABLE 7  
 SUMMARY OF THE ANALYSIS OF VARIANCE  
 CORRELATION

Source	SS	df	MS	F
Race	.01	1	.01	.28
Crime	.08	2	.04	.74
Race x Crime	.01	2	.005	.88
Error	3.61	66	.05	
Type	.00	1	.00	
Race x Type	.05	1	.05	1.88
Crime x Type	.00	2	.00	.15
Race x Crime x Type	.04	2	.02	.45
Error	1.96	66	.03	

TABLE 8  
CORRELATION

WHITE

	Larceny	Robbery	Murder
Direct	.07	.01	-.04
Cross	.07	.07	.04

BLACK

	Larceny	Robbery	Murder
Direct	.06	.11	.02
Cross	.08	.03	.01

TABLE 9  
DURATION OF UTTERANCE MEANS FOR DEFENDANTS  
COLLAPSED ACROSS RACE

	Larceny	Robbery	Murder
Direct	1.88	2.50	2.21
Cross	1.77	1.64	1.51

TABLE 10  
RATIO OF DEFENDANT/ATTORNEY MEANS  
COLLAPSED ACROSS RACE

	Larceny	Robbery	Murder
Direct	1.39	1.87	1.75
Cross	1.22	1.20	1.10

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AN EXAMINATION OF CRIMINAL  
DEFENDANTS' VERBAL BEHAVIOR UNDER TWO  
TYPES OF COURTROOM INTERROGATION PROCEDURES

by  
Alice Worley

(ABSTRACT)

At this moment in history representatives of our government are focusing on what can be done to reduce crime, and some members of the judiciary have been asking for a consideration of research on categories of specific behavior that "criminals" emit in an attempt to channel these persons emitting such behaviors into treatment centers. The relationship between criminality and specific criminal personality typing has thus far eluded any Procrustean approach of traditional models, and psychological and psychiatric contributions to the science of criminology are being amalgated with ideas from other disciplines. Socio-psychological models for analyzing the deviances of criminality provide an interdisciplinary approach. (Coffman, 1969).

The plan of this study was guided by the relatively specific set of theories and studies which point to an analysis of verbal behavior as an extremely good indicator of the personality of the individual and the variables which might influence his behavioral responses.

The objective of this study was to examine the verbal behavior of criminal defendants in the courtroom under two types of interrogation procedures - that of his own attorney under direct examination and under cross examination by the prosecutor. Specifically, to investigate the behavior of the defendant indicative of the ability to cope with natural occurring stress factors.

The subjects were 72 male criminal defendants brought to trial under criminal indictments for felonies. Twenty four of the 72 defendant subjects were indicted for larceny (12 white, 12 black); twenty four were indicted for robbery (12 white, 12 black); and twenty four for murder (12 white and 12 black).

The transcript of the testimony of the defendant during direct examination by the defense attorney and the testimony of the defendant during cross examination by the prosecutor following the sequential ordering of question-answer pairs across both types of testimony was used for the analysis. Within each transcript the line count method was utilized.

This research involved three independent variables: race (black, white), seriousness of crime on a continuum of larceny, robbery and murder, and type of examination (direct versus cross).

The results indicated the following:

1. The defendants manifested significant differences

in their verbal behavior on cross examination.

2. Between blacks and whites, no significant differences were found in their courtroom verbal behavior.

3. An analysis of the significant interaction of seriousness of crime and type of examination revealed that the degree to which the effect of the seriousness of the crime had substantial effect depended on whether the defendant was being interrogated by his own attorney or the prosecutor and was significant for the more serious crimes of robbery and murder.

4. Differences in verbal behavior of the defense attorney and the prosecutor were significant on the race variable. Both attorneys exhibited longer interrogation utterances when examining white defendants.

5. Differences in the ratio of attorney/subject exchanges revealed a decrease on the ratio of cross examination versus direct examination. An analysis of the significant interaction between seriousness of crime and cross examination by the prosecutor was operative at the levels of robbery and murder but no significant difference in the ratio of exchanges between interrogation by the defendant's own lawyer and the prosecutor at the level of the less serious crime of larceny.

This study has provided experimental evidence that non content verbal behavior provides an indices of stress

(assuming that cross examination of the defendant by the State prosecutor is stressful).

It offers support to the studies presenting evidence that the individual's coping response in terms of verbal behavior is a decrease in utterance length. It questions the motivational aspects of attorneys who interrogate black and white defendants differentially. It offers evidence that a defendant's verbal behavior is affected by the degree of the seriousness of the crime with which he is charged particularly when he is confronted with the potential danger and threat to this well being personified by the Prosecutor for the State under cross examination. It strongly suggests that the more immediate and the extent of the degree of potential harm or threat to the defendant, the more stress he experiences.