THE OPTIMIZATION OF CONVERSATIONAL COHERENCE

by

Alexander Kenneth Black

B.A., University of Victoria, 1984
M.A., University of Victoria, 1986

A Dissertation Submitted in Partial Fulfillment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

in the Department of Psychology

We accept thesis as conforming
to the required standard

Dr. J. B. Bavelas, Supervisor (Department of Psychology)

Dr. R. Hoppe, Departmental Member (Department of Psychology)

Dr. R. B. May, Departmental Member (Department of Psychology)

Dr. P. H. Stephenson, Outside Member (Department of Anthropology)

Dr. R. Arundale, External Examiner (Department of Speech and Drama, University of Alaska)

ABSTRACT

Coherence and incoherence in conversation refer to the relationship between adjacent parts of the conversation (e.g., between one statement and the next, or between one topic and the next). A clear, relevant connection is called coherent; the absence of an obvious connection is incoherent. Coherence and incoherence are therefore central to any analysis of discourse, but, despite many existing theories of coherence and incoherence, there is little empirical knowledge of these phenomena.

This dissertation continues the study of coherence begun in my master's thesis. In it I propose three axioms to describe the structure of coherence throughout conversations:

I. Both coherence and incoherence are necessary for conversation to occur.

II. Conversations optimize coherence both globally and locally.

III. Coherence is optimized at several different, hierarchical levels of conversation.

Because there is already evidence that coherence is maximized at a global level (Black, 1986/1988), I chose to test whether coherence is optimized at a local level. Specifically, local optimization of sequential coherence relations would consist of a series of alternations between

coherence and incoherence. I also sought to test this hypothesis at several different levels of conversation (statement, topic, and macrotopic).

In order to test the hypothesis, it was necessary to develop a method for segmenting conversations into statements, topics, and macrotopics and a method for measuring the degree of coherence between these segments. Using the guidelines developed, two judges were able to segment conversations at all three levels with high reliability. Similarly, other sets of raters used a magnitude estimation procedure to scale the degree of coherence between units at each of these levels and again achieved high reliability.

It was also necessary to develop a time-series analytic technique for verifying the predicted series of alternations in short sequences of data, because existing methods are not applicable to small Ns. The new statistic is based on the geometric properties of a particular data set: it compares the obtained sum of the interior angles facing toward the mean of the data series with the sum of the interior angles facing the mean of all other permutations of these data points.

Three getting-acquainted conversations were obtained; these yielded 325 statements (the spoken equivalent of a sentence). After segmentation, coherence scaling, and application of the optimization statistic, there was

moderate support for the hypothesis of local optimization. Three quarters of the topics contained sequences of propositions with a sum of interior angles that was smaller than the sum of half of the alternative permutations. At the macrotopic level, however, the hypothesis was not supported.

The contributions of this dissertation are (1) an explicit, parsimonious, discourse-based theory of coherence; (2) objective methods for measuring and studying coherence; and (3) a new time-series statistic; and (4) encouraging but not yet convincing evidence for the theory.

Examiners:

Dr. J. B. Bavelas, Supervisor (Department of Psychology)

Dr. R. Hoppe, Departmental Member (Department of Psychology)

Dr. R. B. May, Departmental Member (Department of Psychology)

Dr. P. H. Stephenson, Outside Member (Department of Anthropology)

Dr. R. Arundale, External Examiner (Department of Speech and Drama, University of Alaska)

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CHAPTER ONE

OVERVIEW

According to the Shorter Oxford English Dictionary, coherence is

> that which sticks or clings together . . .
> logical connexion; congruity, consistency . . .
> harmonious connexion of the several parts of a discourse . . . .

Coherence is a crucial feature of most theories of discourse comprehension and production (Bauman, 1991; Kellerman & Sleight, 1989; McLaughlin, 1984). Neubauer (1983) believed that

> coherence is one of the central problems in linguistics and text linguistics where the question is to define when a text is coherent or when it can be said to be noncoherent. (p. vii)

Other researchers have linked coherence to a number of other social phenomena, such as the attainment of speakers' goals (Tracy, 1984). Finally, scholars interested in discovering a grammar of discourse often invoke coherence as an explanatory device (e.g., Maynard, 1980; Schiffrin, 1987; Schlesinger, 1974; Stech, 1982).

This dissertation continues the study of coherence begun in my master's thesis (Black, 1986/1988), which described the patterns of coherence that occur over the

course of entire conversations. I proposed that conversations are not haphazard with respect to conversational coherence. Rather, the coherence relations in conversation are stable, regular in variation, and maximally efficient. To confirm this hypothesis, I measured the degree of coherence between all possible pairs of statements in four short conversations and found that the order of statements that occurred was, considered as a whole, the most coherent possible ordering of those statements. Taken together, the results of the four replications provided strong evidence for the theory.

There were several features of my theory on the syntax of conversational coherence that distinguished it from most of the previous literature on conversational coherence. First, unlike coherence theorists who explicitly treat coherence and incoherence as binary opposites (Charolles, 1983), I proposed that they form a continuum; that is, coherence varies in degree. Second, I examined linear coherence relations over the entire conversation; many works on coherence limit the process to one- or two-step sequences (e.g., Planalp & Tracy, 1980; Tracy, 1982, 1984) or to a single coherence relation located in a tree-like structure (e.g., Hobbs & Agar, 1985; Polyani, 1988). Third, the model introduced a formal, discourse-centred approach to the study of coherence and excluded both social conditions and

cognition as explanatory devices for the patterns of coherence that occur in conversation.

There are also features of my approach that are complementary to traditional approaches. The broad goal is to confirm the assumption of non-randomness that all theories of coherence make. Also, the methods developed can facilitate the confirmation of extant theories. Finally, the theory is discourse-centred in a way that may be useful to the study of other conversational phenomena.

In the work to be described in this dissertation, I have expanded my previous work on conversational coherence theoretically, methodologically, and empirically: The theory now explains and specifies the structure of local sequential coherence relations throughout a conversation. It also explains and specifies the structure of sequential coherence relations at several different levels in conversation. There is now a method for identifying units of conversation at several levels as well as a procedure for measuring the degree of coherence at these different levels. Testing the hypotheses required a statistic that could describe predictions about the period of cyclicity of these short (small-N) sequences. Finally, all of these new hypotheses and methods had to be tested empirically with new data.

The next chapter (Two) reviews the previous literature. Chapter Three sets out the details of my theory of conversational coherence. Chapter Four describes a method for identifying the different units or levels at which coherence might occur; a method for scaling coherence at each of these levels; information about the reliability of these two methods; and the data that were used to test the theory. Chapter Five describes a statistic developed to test the theory, as well as the results of applying the statistic to the data gathered. Chapter Six is a summary and overview.

CHAPTER TWO

THE COHERENCE AND INCOHERENCE LITERATURE

The literature on coherence is one of the most extensive in the field of discourse analysis. The three major reviews, by McLaughlin (1984), Kellerman and Sleight (1989), and Ellis (1992), include a wide range of diverse topics: discourse production and comprehension (e.g., Clark & Haviland, 1977; Grice, 1975; van Dijk, 1980; Reichman, 1978; Shank & Abelson, 1977; Tracy, 1984); speech acts (e.g., Searle, 1975; Craig, 1986; Jacobs & Jackson, 1983; Jose, 1988); story grammars (Rumelhart, 1975; Black & Bern, 1981); relevance (e.g., Hobbs, 1979; Jackson, Jacobs, & Rossi, 1986; Sperber & Wilson, 1986); and cohesion (e.g., Halliday & Hassin, 1976; Murphy, 1985)--to name a few! The literature on incoherence is equally broad. A complete literature review of incoherence would include (at least): turn taking and adjacency pairs (e.g., Sacks, Schegloff, & Jefferson, 1974); discourse markers (Schiffrin, 1987); topic change (e.g., Maynard, 1980; Schank, 1977); indirect replies (Nofsinger, 1976); and equivocation (Bavelas, Black, Chovil, & Mullett, 1990).

In this chapter, I did not attempt the Herculean tasks of critizing or synthesizing the full literatures on

coherence and incoherence but instead concentrated on selected fundamental issues on which to compare previous approaches with the theory to be described in the next chapter. These are (1) definitions of coherence and incoherence, including proposed relationships between the two phenomena; (2) measurement issues, which include the units of analysis to which coherence and incoherence have been applied, as well as their existing operational definitions; (3) empirical tests of hypotheses about coherence phenomena.

Coherence, Incoherence, and their Relationship

This section contains an overview of the ways other scholars have conceptualized coherence and incoherence. (For a more detailed summary of the many different specific kinds of coherence relations, the reader can consult Ellis, 1992; Kellerman and Sleight, 1989; and McLaughlin, 1984.)

Definitions of Coherence.

According to McLaughlin (1984) and Ellis (1992), the referential or (propositional) approach is the most common basis for defining coherence; see Table 2.1. These theories start with the content of a proposition--what each statement is "about." A coherence relation is the relationship between successive propositions, that is, the relationship

Table 2.1

Referential Theories of Coherence

	Unit of Analysis			
Scholar	Proposition	Utterance	Topic	Macrotopic
Bauman		x	x	
Black	x			
Black & Bern		x	x	
Craig		x		
de Beaugrande & Dressler	x		x	
Goldberg		x	x	
Hobbs		x	x	
Jackson & Jacobs		x	x	
Jose		x		
Polyani	x		x	x
Reichman		x	x	
Schlesinger		x		
Sperber & Wilson	x	x	x	
Tracy		x	x	

-between the contents of the two segments of speech. A typical referential theory consists of an exhaustive and exclusive taxonomy of the possible kinds of coherence relations that can occur in a conversation.

Hobbs's (1979) taxonomy is a good example of the referential approach. He proposed four general classes of coherence relations: (1) strong temporal relations, (2) evaluation relations, (3) linkage relations, and (4) expansion relations. Each of these four general coherence relations contains subsidiary coherence relations. For instance, Hobbs proposed two kinds of linkage relations. A background linkage occurs when the first statement provides information that is important for the succeeding statement. The following is an example of a background linkage, because the content of the first statement provides a background context for the claim about the player in the second statement:

A: The Huskies were dominant in the Rose Bowl.

B: Steve Entman is such a dude!

An explanation linkage occurs when a preceding rare or strange event is explained or linked to background information. Here the content of the second statement

explains the unusual event described in the first statement:

A: Jane walked by me in the gym the other day and didn't say hello.

B: She must not have had her glasses on.

Hobbs (1979) proposed that relationships between the content of contiguous segments of speech can be described by his taxonomy of 10 different coherence relations. As in all other referential approaches, each of the coherence relations is based on the relationship between the content of the two segments.

Varied as they are, there are points of both agreement and disagreement among the referential definitions of coherence. For example, nearly every one of the taxonomies includes a temporal coherence relation to describe the relationship between statements that describe events occurring in a sequence. Each theory also contains at least one unique coherence relation. These theories share an assumption that coherence depends on a fairly literal interpretation of the referential content of statements.

The second most common approach is to define coherence on the basis of the inferred cognitive processes necessary to produce or understand the discourse. Most of these theories of conversational coherence (see Table 2.2) propose

Table 2.2

Cognitive Theories of Coherence

	Unit of Analysis			
Scholar	Proposition	Utterance	Topic	Macrotopic
Grice		x	x	
Kellerman	x	x	x	
Kintch & van Dijk	x	x	x	
Reichman	x	x	x	x
Schank	x	x	x	
van Dijk	x	x	x	x

coherence relations based on the cognitive operations necessary to process the content and generate a coherence relation between the parts.

Alternatively, some of the cognitive theories define various kinds of coherence relations on the basis of the social or illocutionary function the part of speech serves. Often, the difference between cognitive and referential theorists is a matter of degree, because both assume an isomorphic relationship between cognition and discourse or text. However, the two approaches differ in the degree to which the definitions of coherence are based on the content of the discourse or on inferred cognitive mechanisms.

Van Dijk's (1980, 1985) theory is a good example of the cognitive approach to defining and explaining coherence. He proposed that global coherence is the result of the conversationalists' "built-in" macrostructural organizational scheme. According to van Dijk (1985),

> a macrostructure is a theoretical reconstruction of intuitive notions such as "topic" or "theme" of discourse. It explains what is the most relevant, important, or prominent semantic information of the discourse as a whole. At the same time, the macrostructure of the discourse

defines its global coherence. (p. 115)

Van Dijk then proposed a set of macrorules that describe the cognitive operations interlocutors use to generate the macrostructural organization (i.e., deletion, selection, generalization, and construction). Reichman's (1978) notion of context spaces is very similar to van Dijk's notion of macrostructure, as is Kellerman's ideas about conversational processing. Thus, for van Dijk and others who take an cognitive approach, coherence does not reside in the content of the discourse, but rather in the cognitive operations that conversationalists perform on the discourse.

Definitions of Incoherence.

In contrast, virtually all scholars who study incoherence take a referential approach (see Table 2.3). For these scholars, incoherence occurs when there is a significant change in the referential content of successive bits of speech. Thus, any topic change or talk that is not relevant to previous statements is considered to be incoherent. In fact, for many of these scholars, a period of incoherence is the point of analytic departure, because they study how conversationalists re-establish coherence (e.g., Vuchinich, 1977; Jefferson, 1972) or how incoherence is actually "coherent" if examined in the context of the

Table 2.3

Referential Theories of Incoherence

	Unit of Analysis			
Scholar	Proposition	Utterance	Topic	Macrotopic
Bavelas		x	x	
Clark & Haviland		x	x	
Crow		x	x	
Hobbs & Agar		x	x	x
Jefferson		x	x	x
Maynard		x	x	
Nofsinger		x	x	
Planalp & Tracy		x	x	
Schiffrin	x	x	x	
Searle	x	x	x	
Vuchinich		x	x	

conversationalists' goals (Hobbs and Agar, 1985). (One obvious exception to the referential approach of most incoherence researchers is Kellerman and Sleight, 1989, for whom incoherence is only found in discourse that is not meaningful.)

Despite their common referential approach, scholars of incoherence define it in a variety of ways. For most, incoherence occurs when there is a conversational error or topic change; for example, Jefferson (1972), Vuchinich (1977), Schneider (1988, in Ellis, 1992), Schiffrin (1987), or Planalp and Tracy (1980). For others, incoherence occurs when a statement is not a direct answer to a question (Nofsinger, 1976; Bavelas, Black, Chovil, & Mullett, 1990) or when a speaking turn is not relevant to the preceding turn (e.g., Grice, 1975; Clark & Haviland, 1977). Finally, Hobbs and Agar (1985) identified incoherence as structurally incorrect discourse.

The Relationship Between Coherence and Incoherence.

Some theories implicitly treat coherence and incoherence as unrelated phenomena (see Table 2.4). The separation of coherence and incoherence is a function of these theorists' different analytic goals. Coherence theorists attempt to describe the structural regularity in

Table 2.4

Theories that Treat Coherence and Incoherence as Unrelated

	Unit of Analysis			
Scholar	Proposition	Utterance	Topic	Macrotopic
Black & Bern		x	x	
Craig		x		
Crow		x	x	
Goldberg		x	x	
Jackson & Jacobs		x	x	
Jose		x		
Kintch & van Dijk	x	x	x	
Maynard		x	x	
Polyani	x		x	x
Reichman		x	x	
Schank	x	x	x	
Schiffren	x	x	x	
Tracy		x	x	
van Dijk	x	x	x	x

conversation. Alternatively, incoherence theorists attempt to account for the changes that occur in conversations. Therefore, when a scholar does not explicitly discuss the relationship between the two phenomena, we have to assume that he or she considers them distinct or unrelated.

Some coherence theorists have treated incoherence as a subset of possible coherence relations. Most of these theorists assume that incoherence is deficient or unusual and that conversationalists perform mental operations to transform incoherence into coherence. For example, much of the seminal article by Clark and Haviland (1977) is devoted to discussing the kinds of strategies people use to understand incoherence. Jackson, Jacobs, and Rossi (1986) proposed that incoherence in conversation is a result of the conversationalists' not sharing the same goals or plans. Jackson et al. implied that incoherence is an unusual and undesirable state that can be rendered coherent by examining the plans and goals of the conversationalists. In the theory closest to my approach, Hobbs and Agar (1985) asserted that local incoherence in conversation disguises larger global coherencies.

A few scholars have treated coherence and incoherence as binary and opposite. Schlesinger (1974) was most

explicit in separating coherence and incoherence into a dichotomy. He proposed that, in conversations, the structural organization of discourse could be described in terms of "moves" that were either relevant to one another or not. Less explicitly, several of the ethnomethodologists working on conversational repairs also treat coherence and incoherence dichotomously. For these analysts, incoherence in conversation is a "conversational trouble" that must be repaired by the re-establishment of coherence. For example, in Jefferson's (1972) classic article, she described a side-sequence pattern where a conversational error is followed by talk that is not relevant to the ongoing discussion but to the conversational error. The implication is that the (incoherent) side sequence remedies the error so that the conversationalists can return to a (coherent) discussion of the original topic.

Only a few theorists have treated coherence and incoherence as endpoints of a <u>continuum</u> of semantic similarity. Tracy (1984) proposed that coherence relations varied in their degree of appropriateness; she equated appropriateness with coherence and inappropriateness with incoherence. Bauman (1991) assumed that coherence relations varied in their ease of processing; she equated coherence

with relations that are easily processed and incoherence with relations that are difficult to process. Bavelas, Black, Chovil, and Mullett (1990) proposed that answers to questions vary in their degree of equivocation, which can be measured on a continuum ranging from statements that do not answer the question at all to those that are direct responses to the question asked.

Measurement

Few coherence theorists have developed procedures for identifying empirically the kinds of coherence relations they propose. Ellis (1992) summarized the causes and consequences of this problem in the context of referential (propositional) theories:

> There is a basic methodological problem with propositional analyses that makes them difficult to interpret and apply. A discourse analyst must be able to decompose a text into its constituent propositions. But there is no algorithm to guide this process. There is no systematic way to identify propositions, and different analysts will arrive at different propositions. Even though the theory of propositional analysis appears rigorous, the actual analysis of propositions is subjective. This means

> that one analyst's set of propositions cannot be tested effectively because they represent only one interpretation. (p. 124)

Although Ellis' comments were directed toward referential theories of coherence, they are even more applicable to cognitive theories. Envision the difficulty in devising a set of rules for systematically describing the unobservable thoughts of conversationalists. Moreover, the problems in measuring coherence or incoherence have even more basic roots. Not only are there few objective specifications of what coherence is, there is little consensus or even discussion of where to find it, that is, on the appropriate unit of analysis. These two problems will be reviewed next.

Unit of analysis

From an examination of the literature, we can infer five different units of analysis for coherence relations; these will be described here from smallest to largest.

Referential theories use the smallest unit of analysis, the spoken equivalent of a short written sentence. This unit is often called a *proposition*, which leads to some confusion with "propositional" theories, so I will use the more descriptive term, *statement*. For example, in the course of illustrating what she calls "an enablement

coherence relation," McLaughlin (1984, p. 53) implicitly identified two such units:

> In an enablement relation . . . the state implied in the first proposition can be inferred to enable the state or event asserted in the second:
>
> A: Diana said she'd watch Julia Sunday afternoon.
>
> B: Good, then I can work on my book. (Italics omitted)

Note that each of these propositions contains a noun, a verb, and an object, and each expresses a single idea. Goldberg (1983) identified a similar unit, which she called a "move." According to Goldberg (1983),

> Moves categorize each individual locution of an exchange in terms of its lexico-syntactic ties with preceding locutions both between and within turns of talk. (pp. 83-84)

An example of some conversational moves illustrates the similarity between a move and a statement:

> X: Yeah.
>
> Y: Are there? I didn't know that. (Goldberg, 1983, p. 40)

In the preceding, there are three conversational moves. The first move consists of the statement "Yeah"; the second

consists of the question "Are there?"; and the third consists of the statement "I didn't know that." Although only the third move contains the formal linguistic elements of a statement, each of the three moves expresses a single idea (an agreement, a question, or a statement).

The reliability of identification of the statement as a unit is unknown. In most of the research that relies on the statement (e.g., van Dijk, 1985), the discourse under consideration is invented by the analyst and not obtained from conversations. Thus, it is difficult to estimate the extent to which researchers can reliably identify the statement in actual discourse. (For a related discussion on procedures for discovering sentences in conversation, see Taylor & Cameron, 1987, pp. 125-157).

The next largest unit of analysis used by previous analysts is the utterance, which consists of a single speaking turn. The utterance or speaking turn is the most common unit of analysis in the study of coherence and is the primary unit of analysis for both referential and cognitive theories. For example, the speaking turn is the unit of analysis for the study of cognitive aspects of coherence (Bauman, 1991; Kellerman, 1991; Reichman, 1978; Schank, 1977); structural facets of coherence (Schlesinger, 1974);

the relationship between conversationalists' goals and coherence or incoherence (Hobbs & Agar, 1985; Planalp & Tracy, 1980; Tracy & Morgan, 1983); comprehension and incoherence (Clark & Haviland, 1977; Grice, 1975); and incoherence and repair sequences (Jefferson, 1972).

In most cases, the speaking turn is not explicitly operationalized. Indeed, many scholars present and analyze artificial examples of speaking turns rather than talk obtained from real conversations. Nonetheless, it is clear that for most analysts the speaking turn consists of the uninterrupted talk of one person. When the speech of the conversationalists overlaps, this co-speech is partitioned according to speaker. Similarly, short "back-channel" comments of the listener are noted but excluded from a speaker's turn.

In my view, the utterance is a problematic unit for several reasons. First, given the unconstrained characteristics of actual speech, there is the methodological question of accurate transcription and segmentation, for which no reliability is presented. Second, coherence and incoherence often occur within a single (longer) turn. A third and deeper objection is that, given that coherence is the relation between adjacent parts

of discourse, a suitable unit should be based on boundaries evident in the discourse rather than being identified on nonlinguistic grounds. Yet the basis of the speaking turn is social (who said what) rather than linguistic (what was said).

Most theories of coherence also use a third unit, the topic, to examine and explain coherence. Despite differences in particular constituents, a topic is a segment of discourse that has a single general referent (Crow, 1983; McLaughlin, 1984). For example, according to Reichman (1978) and Tracy (1982, 1984), a topic is a segment of text that is about the same issue or event. One of the tape-recorded topics that Tracy (1984) presented to subjects consisted of the following:

> People bad-mouth it [MacDonald's] but I think it's totally uncalled for. It serves a number of needs well--it has a function. Sara and I went to Burdeen's for lunch the other day. The service was terrible. It took two hours and I was late for my meeting. (p. 461)

Tracy considered this sequence a single topic because all of the sentences referred to some of the good aspects of MacDonald's restaurants.

There is some evidence that the topic is a viable unit of analysis for the study of coherence and incoherence. Both Schneider (1988) and Planalp and Tracy (1980) found that naive judges without training can segment conversations into topics with a high degree of agreement (greater than 90%). However, Ellis's (1992) above-quoted comments about referential definitions of coherence also raise a question about the ultimate validity of the topic as a unit of analysis. Given that the topic is based on a decision about the referential unit of content and that analysts seldom agree on the referential content, then it may be that they would come to different understandings of the coherence relation between topics because of a lack of agreement about the referential content of the unit. It is difficult to assess whether this is a threat to the validity of the topic as a unit of analysis, because none of the extant articles (except as noted) has discussed segmentation procedures or how referential assignment is determined.

Although there is no agreed-upon term, there is a fourth unit of analysis employed in the study of conversational coherence, which I will call here the macrotopic. This unit is derived from van Dijk's (1980) concept of macrostructure. A macrostructure is a global

representation of the discourse that conversationalists build during conversation. As van Dijk (1985) described them,

> such macrostructures are expressed by the text itself, for example, in announcements, titles, summaries, thematic sentences, or the expression for plans for action. (p. 116)

The textual correlate of the macrostructure, the macrotopic, refers to a segment of text that may contain several smaller topics, all of which refer to the same conceptual macrostructure. In most conversations, there are only a few macrotopics. For example, in a brief conversation between two friends, three macrotopics would probably occur: a greeting, a group of several topics describing what they have done since seeing one another, and a departure salutation. The macrotopic also seems to correspond to other larger units of speech such as a theme (de Beaugrande & Dressler, 1981), an episode (Sigman, 1983), or a story (Longacre, 1983).

Finally, because discourse analysts sometimes examine the coherence relations of an entire conversation (e.g., Black, 1986/1988; Goldman, 1983; Hobbs & Agar, 1985; Jose, 1988), it is a fifth possible unit of analysis for the study

of coherence.

Considering these problems more broadly, we must acknowledge that the problem of segmentation or unitizing is endemic to the study of all discourse and is not just a problem in the study of coherence. As Condon and Ogston (1967) concluded:

> The search for the units of behaviour, their organization and their empirical validation, thus constitutes the central problem of behavioural analysis. (p. 221)

Many have argued that it is the rejection of the traditional linguistic unit, the sentence, that forms the foundation of discourse analysis (de Beagrande & Dressler, 1981; Brown & Yule, 1977; Taylor & Cameron, 1987; van Dijk, 1985). Certainly it is the case that discourse analysis is the study of conversation beyond the level of the sentence. However, there is little consensus about what constitutes the appropriate new unit(s) of analysis or what criteria should be employed to determine the appropriate units. For example, some scholars (e.g., Schiffrin, 1987) have argued for an emic determination of units, in which there is congruence between the unit of analysis used by analyst and the units of analysis used by the conversationalists. Other

analysts (e.g., Brown & Yule, 1977) have argued for the priority of a particular etic unit for the study of conversation (usually the speaking turn).

Given the central importance of what constitutes the appropriate unit for the study of discourse in general and coherence in particular, one would expect, if not agreement on some standard procedures for identifying the various segments of talk, at least an explicit concern for the validation of these units. Such is not the case. Regardless of the units of analysis they have employed, previous coherence researchers have usually segmented their texts by fiat, with no explicit justification or attempt to establish reliability.

There would be no problem with using the judgement-by-fiat technique if researchers identified the same units in text. However, examination of the two instances where the researchers actually assessed the reliability of their coherence typology illustrates the need for establishing segmentation procedures. Tracy (1984) and Crow (1983) asked trained judges to segment and identify topics in conversation. Both Tracy and Crow found only moderate reliability for the judges' segmentations of the conversations; percentage of agreement between the judges'

scores for the two studies varied from a low of 48% to a high of 85%. Considering that the judges in Crow's and Tracy's studies were trained and were using the same typology, it is reasonable to expect a higher degree of agreement among their decisions. If we extrapolate from these nearly-ideal circumstances to the coherence literature as whole, where researchers have employed a variety of coherence typologies to identify units, we can seriously question whether researchers would segment a conversation into the same units. Indeed, these measurement concerns are more serious when one considers the number of different units or levels included in the study of coherence. It may well be the case that there would be little empirical agreement among scholars on the segmentation of the same conversation.

Operational definitions of coherence and incoherence

Putting aside for the moment the question of what unit is said to be coherent or incoherent, we will look next at how coherence and incoherence have been operationalized. In the literature, one can find four methods previously used to assess conversational coherence or similar phenomena: (1) expert judgement (e.g., Jose, 1988; Tracy, 1982, 1983, 1984); (2) restructuring of conversations (Ellis, Hamilton,

& Aho, 1983); (3) scaling of equivocation (Bavelas & Smith 1982; Bavelas et al., 1990); and (4) scaling of the degree of coherence by naive judges (Bauman, 1991; Black, 1986/1988).

Most researchers have used the judgement-by-fiat technique to assess coherence. Typically, experts have analyzed a conversation in terms of a proposed taxonomy and the criteria for identifying the different kinds of coherence are included in the analysis. The criteria may emphasize the semantic content of the statements (e.g., van Dijk, 1985; Hobbs & Agar, 1985; Reichman, 1978; Shank, 1977); the kind of speech act (e.g., Jose, 1988); the kind of topic shift (e.g., Crow, 1983); or the kind of reaction to an incoherent speaking turn (Vuchinich, 1977).

The reliability of these measures is usually unknown, although when assessed the taxonomies have achieved a fair to high degree of reliability. Crow (1983) reported agreements ranging from 73 to 85% percent on a taxonomy of topic relations, as did Jose (1988) for a taxonomy of speech acts (87%). Finally, over her numerous experiments, Tracy has obtained inter-rater reliabilities almost as high for issue or event continuations: When continuations were treated as a dichotomous variable, agreement was 70% or

better. When issue or event continuations were a continuous variable, the correlations between judges' ratings were moderate to high (average r for issue continuations across seven conversations = 0.88; average r for event continuations across seven conversations = 0.70).

Promising as these results are, we know too little about the psychometric properties of most of the coherence taxonomies. As noted above, the reliability of most has not been reported. Furthermore, many of the taxonomies also have a potential subjective bias, because the people who classify the conversations are the very scholars who propose the taxonomy. However, as noted above, when researchers have assessed their reliability with naive judges, it seems that they were able to establish a high degree of agreement. Of course, whether the results of the three instances described are generalizable to the many other taxonomies of coherence is an open question.

It is difficult to decide whether the second method, the restructuring of conversations procedure used by Ellis et al. (1983), is actually a measure of coherence. These researchers transcribed a conversation, printed the statements on cards, randomly ordered the cards, and asked subjects to sort the cards into the order in which they

occurred. Because they did not ask subjects to base their judgements on the coherence between the utterances, it is difficult to determine what criteria the subjects used when sorting the cards. It is interesting to note that other researchers who have used the same or similar procedures (e.g., Clarke, 1983) did not explicitly equate the subjects' sorting to coherence judgements. So the validity of this procedure is moot.

One part of the procedure for measuring equivocation (initially developed by Bavelas & Smith, 1982; described in detail in Bavelas et al., 1990) can be reinterpreted as a measure of coherence. These researchers trained several successive sets of naive student judges to scale, among other things, the extent to which a message is a direct answer to the question just asked. The procedure has extensively demonstrated high reliability and validity (Bavelas et al., 1990), but it is only applicable to question-answer pairs. As will be seen, I adapted many of its principles for the present measure of coherence.

Finally, Bauman (1991) and Black (1986/1988) developed explicit measures of the degree of coherence. My measure will be discussed in more detail below. Bauman (1991) asked naive subjects to rate the degree of coherence for various

kinds of topical coherence relations on a six-point Likert scale. Because of the complex nature of the experimental design employed in Bauman's studies, it is impossible to estimate either inter-item or inter-rater reliability. However, the measure could not have been very unreliable, because attenuation would have prevented the strong results she obtained.

Empirical Studies of Coherence and Incoherence

After this review of the significant definitional and measurement problems in the field, the reader may no longer be surprised to learn that, in the voluminous literature on coherence and incoherence, there is relatively little empirical information. The existing empirical literature addresses three questions: (1) How do people respond to an incoherent speaking turn? (2) What kinds of coherence relations are preferred and easily processed? (3) What are the common patterns of coherence relations that occur in conversation?

Responses to Incoherence.

Two studies have demonstrated that speakers are sensitive to incoherent speaking turns and that responses to incoherence are systematic. In Vuchinich's (1977) experimental study, a confederate responded to a subject's

statement with an incoherent speaking turn. Vuchinich found that subjects responded to the incoherent speaking turn in one of four different ways: 29% let the previous topic die; 27% refocussed the discussion on the previous topic; 27% ignored the incoherent topic; and 15% contributed to the new incoherent topic. Jefferson (1972) identified a systematic side-sequence that responded to conversational errors (i.e., incoherence). The misapprehension sequence consisted of the problematic statement, a request for repair, a clarification or remedy, and an acknowledgement that the clarification is satisfactory.

Coherence processing and preference

Building on Reichman's (1978) theory of conversational coherence, Tracy (1982, 1983, 1984) has systematically examined the relationship between issue and event topic extensions, comprehensibility, and the conditions under which the various types are preferred. In general, Tracy (1982, 1983) found that people prefer speaking turns that continue the issue under discussion rather than speaking turns that continue the discussion about the events of the previous speaking turn. Subsequently, Tracy (1983, 1984) found that this "relevance rule" did not hold when the messages had low comprehensibility: when an issue extension

is not comprehensible, it is seen as less competent than an event extension.

Bauman (1991) contrasted two models of the relationship between coherence and the interpretation of discourse. The plan-based theories of coherence (e.g., Jackson, Jacobs, & Rossi, 1986) propose that pragmatic coherence (the connection between discourse and the interlocutors' plans) is more important than textual coherence. In contrast, connectionist approaches to the study of coherence assume that referential, pragmatic, and other kinds of coherence all combine to contribute to the global coherence of a text. Bauman found better support for a connectionist model of coherence processing.

Coherence Structure

There is only one investigation into the general patterns of coherence that occur over the course of conversation. Jose (1988) examined speech-act sequences in 48 adult-child conversations. Although "adult question/child answer" sequences were the most common pattern, occurring 54% of the time, there were also 16 other sequences (ranging from 2 to 6 steps).

The Relation between Existing Theories of Coherence and the Optimizing Theory

As will be seen in the next chapter, the optimizing theory of coherence has points of both similarity with and departure from existing theories of coherence and incoherence. These will be pointed out briefly here.

Like most of the theories of coherence and incoherence, the optimizing theory of coherence takes a referential approach to defining the phenomenon. Where it differs from many of the referential theories is that the optimizing theory relies on a literal interpretation of the contents of the units of speech. The use of a literal interpretation of the discourse may make the optimizing theory less susceptible to the measurement problems of the referential approach identified by Ellis (1992; see above, p. 18), but this is ultimately an empirical question of reliability.

The definition of coherence and incoherence in the optimizing theory differs from most other definitions by explicitly linking the two phenomena to form a continuum, whereas most others treat them as either unrelated or as only implicitly related.

In terms of units, the optimizing theory of coherence is obviously different from the coherence literature,

because it specifies the relations between units at several different levels. These units include both common and uncommon units from the existing literature on coherence and incoherence. Specifically, like many theories, the optimizing theory employs the statement and topic. Unlike many theories, it also examines the degree of coherence between macrotopics and the structure of coherence relations over the course of entire conversations. Finally, by not including the speaking turn as a unit of analysis, the theory is distinct in using only units based on the discourse and not on extra-textual criteria.

The optimizing theory of coherence has two features that distinguish it, as a theory, from most of the existing theories on coherence and incoherence. First, it makes fewer and simpler assumptions than most other explanations of coherence, and it is one of the few theories of coherence or incoherence that explicitly identifies the assumptions being made or not made. (For example, the optimizing theory makes no assumptions about the social setting, the conversationalists' goals, or conversationalists' cognitive operations.) Second, the optimizing theory, unlike most theories, relies strongly on empirical confirmation for its validity.

Finally, the optimizing theory explicitly specifies an assumption implicit in all of the previous literature, namely, that conversations are not random in regard to coherence. Thus, the optimizing theory and any evidence for it would not only confirm an assumption that underlies most of the coherence and incoherence literature, it would also describe how that nonrandomness is achieved.

CHAPTER THREE

THE OPTIMIZATION OF COHERENCE IN CONVERSATION

In many respects, the model of conversational coherence proposed here was the result of a single insight about conversations. As part of a research project on equivocal communication (Bavelas, Black, Chovil, & Mullett, 1990, Ch. 8), I was analyzing political interviews with candidates in the 1984 American Democratic party primaries. These interviews were a fertile field for equivocation in a natural context. Politicians rarely answered reporters' questions in a straightforward manner, and reporters seldom responded directly to politicians' preceding statements. At first, political interviews seemed like schizophrenic conversations (Bateson, Jackson, Haley, & Weakland, 1956).

More frequent and closer observation of political interviews revealed what was to me a surprising and interesting notion. Despite considerable incoherence in conversations between politicians and reporters, there were also periods of definite coherence. The statements that made up the speaking turns of politicians often consisted of cogent reasoning for a particular stance on an issue. Similarly, reporters' questions often contained assertions that were buttressed with relevant facts. At a topical level, too, there seemed to be at least some coherence in

these conversations. It was not as if the conversationalists had lists of topics that could be discussed in any order. Rather it seemed as if, given the varied daily agenda of issues and news, they managed to structure the order of the topics so that their order would be as sensible as possible. Although political interviews still seemed chaotic and incoherent, they also seemed to be a coherent or organized chaos.

While making these observations about the coherence of political interviews, I began to notice similar patterns in other kinds of broadcast conversations. Conversations between baseball announcers had an overarching coherence that superseded the necessary changes of topics dictated by the play of the game. Within the discussion of a single at-bat, there was both incoherence (e.g., reminiscences about past events) and coherence (describing the pitch and the call). Even the dialogue of Kirk, Spock, and Bones in Star Trek episodes seemed to have a pattern of coherence and incoherence at several levels that was similar to the patterns in political interviews.

More formally stated, my impressions and observations centred on three features of conversation. First, the analytic focus was on what was said rather than who said what; that is, the observations excluded everything but the content of the conversations. Moreover, the content of the

conversations was taken in a literal sense; the observations did not reflect the conversationalists' interpretation of the discourse. Second, the observations were based on the changes in content between sequential or adjacent parts of the conversation. From this perspective, irrelevant statements were incoherent, whereas continuations or relevant statements were coherent. At another level, adjacent topics with similar content could be seen as coherent and adjacent topics with dissimilar content as incoherent. Third, the observation that there was an overall pattern to the coherence and incoherence of conversations referred to the temporal patterning of coherence and incoherence throughout the entire conversation. The notion that political interviews, Star Trek dialogue, and the play-by-play of baseball games have similar patterns of coherence and incoherence is an assertion about the similarity of the ordering of coherence relations between statements and topics over the course of the conversation as a whole.

Three Axioms of Conversational Coherence

I propose to describe the structure of coherence and incoherence that occurs in conversations by three axioms:

I. Both coherence and incoherence are necessary for conversation to occur.

II. Conversations optimize coherence, both globally and locally.

III. Conversations optimize coherence at several different, hierarchical levels.

The rest of this chapter will describe in detail each of these axioms and their ancillary assumptions about what constitutes coherence, global and local optimization, and levels in conversation.

I. Both coherence and incoherence are necessary for conversation to occur

Before considering the meaning of the first axiom, it is necessary to define coherence, incoherence, and their relation to each other. In this model, coherence and incoherence are assumed to be endpoints of a continuum of semantic similarity and difference between two units of discourse. At one end of this continuum, any two units of discourse with the same literal referential content are coherent. Each of the following three pairs of sentences has a high degree of coherence:

(i) How are you? How are you?

(ii) How are you? I am fine.

(iii) How are you? Not bad.

The first pair of sentences have the exact same content; hence they are maximally coherent. The second pair of sentences are an example of a very high degree of coherence

because they both concern the state of the same person. The third pair of sentences are an example of a slightly less coherent relation because it is necessary to assume that sentences refer to the same person.

In contrast, units of discourse that are considered to be incoherent have no referential similarity. Each of the following two pairs of sentences is an example of incoherence because there are two very different referents and it would be necessary to make innumerable inferences about the sentences to match their referents:

(iv) How are you? The door is brown.

(v) I went running yesterday. Betsy was in the dog house after she ate the Yule-log cake.

The relative position of pairs of units of discourse along the hypothesized continuum of coherence and incoherence depends on the depth or number of inferences necessary to equate their referents. For example, the following two sentences are moderately incoherent because it is necessary to use a metaphorical interpretation of the second sentence to equate the match the two referents:

(vii) How are you? It's a pretty dark day out.

Similarly, the following two sentences from a political interview are quite incoherent because several inferences are required to equate "small businesses being savaged" with "being in the venture capital field":

(vi) Small business has been savaged in 1981, 1982, and 1983. We were in the venture capital field.

The following two pairs of sentences (from the same political interview) are examples of highly coherent relations:

(viii) I didn't manage the businesses personally.
I was not the chief executive officer.

(ix) I was not the chief executive officer.
I chaired a board.

Both pairs of sentences have "the speaker's activities in the businesses" as a common referent; for coherence it is only necessary to assume that they are delineating the speaker's activities in the same businesses.

Using the preceding definitions, the first axiom, which proposes the necessity of both coherence and incoherence, can be demonstrated by imagining a perfectly coherent and a perfectly incoherent conversation. A perfectly coherent conversation would consist of repetitions of the same statement. There could be no novelty or variety of topics; only incoherence can introduce these. Indeed, the perfectly coherent conversation could never end, because a departure salutation or closing statement would necessarily introduce incoherence. In contrast, a snippet of perfectly incoherent conversation would look like a pair of randomized sentences. The completely incoherent conversation would have no

discernable beginning or end, no syntax, and no recognizable content. Indeed, the perfectly incoherent conversation would also contain sounds other than phonemes.

Considering these extreme conversational alternatives, the necessity of both coherence and incoherence for the occurrence of conversation is self-evident. Conversations have greetings, departures, topic continuations, elaborations, justifications, jokes, misunderstandings, and digressions--all of which entail both coherence and incoherence.

II. Conversations optimize coherence, both globally and locally

Given that coherence and incoherence are necessary elements of conversation, the question becomes how they are distributed throughout a conversation. The second axiom addresses this question by describing the interrelated patterns of coherence and incoherence that occur both globally (i.e., over the whole conversation) and locally (e.g., statement-by-statement). Briefly, the second axiom contains two assertions: (a) each conversation is maximally coherent at a global level, and (b) within this constraint, the sequencing of local coherence and incoherence values is also optimally coherent. These two facets of the second axiom are discussed separately below.

The global maximization of coherence

To assert that the global coherence of any conversation is maximal is to make a statement about the coherence relations that occur in a particular conversation that distinguish it from other ways of organizing the same conversation. Thus, the first part of the second axiom asserts that the order of statements that occurs in conversation is the most globally coherent possible ordering of the statements.[1] The sequence of statements that actually occurred in a conversation is more globally coherent than any random ordering of the statements. The displacement of even a single statement within a conversation will result in more global incoherence.

In the following illustrative conversation, we will consider the various possible ways of ordering the statements in the conversation and the effect of the various orderings on the global coherence of the conversation. The statements were by a radio announcer and a caller on a talk show where second-hand objects were being offered for sale. (Note that the statement, not the speaker, is the unit of analysis).

(1) Hello, "Second-Hand Store"

(2) Good morning, good morning

(3) I have two violins, yes

(4) Assorted picture frames

(5) Four storm windows

(6) Well, that's about all that I can take

(7) That's all you can get

(8) Uhh, good, what's your phone number?

(9) 384-9773, 9773

(10) Okay

(11) Thank you

(12) Bye-bye

Globally, the conversation seems almost pedestrian in terms of its development. First, there is a greeting; next, objects are offered for sale; and then the caller provides a way for buyers to contact her. Finally, the conversation ends with a departure salutation. The progression through topics is logical and direct, without irrelevant digressions. (This is true in spite of considerable variation in the local coherence relations: The degree of coherence between statements 1 and 2, 3 and 4, and 4 and 5 is very high. In contrast, there is a high degree of incoherence between statements 2 and 3 and statements 5 and 6.)

That the ordering of the preceding example is maximally globally coherent becomes evident when we consider the extreme opposite, a random ordering of the same 12 statements:

(5) Four storm windows

(2) Good morning, good morning.

(9) 384-9773, 9773

(11) Thank you

(3) I have two violins, yes

(4) Assorted picture frames

(1) Hello, "Second-Hand Store"

(8) Uhh, good, what's your phone number?

(12) Bye-bye

(6) Well, that's about all that I can take

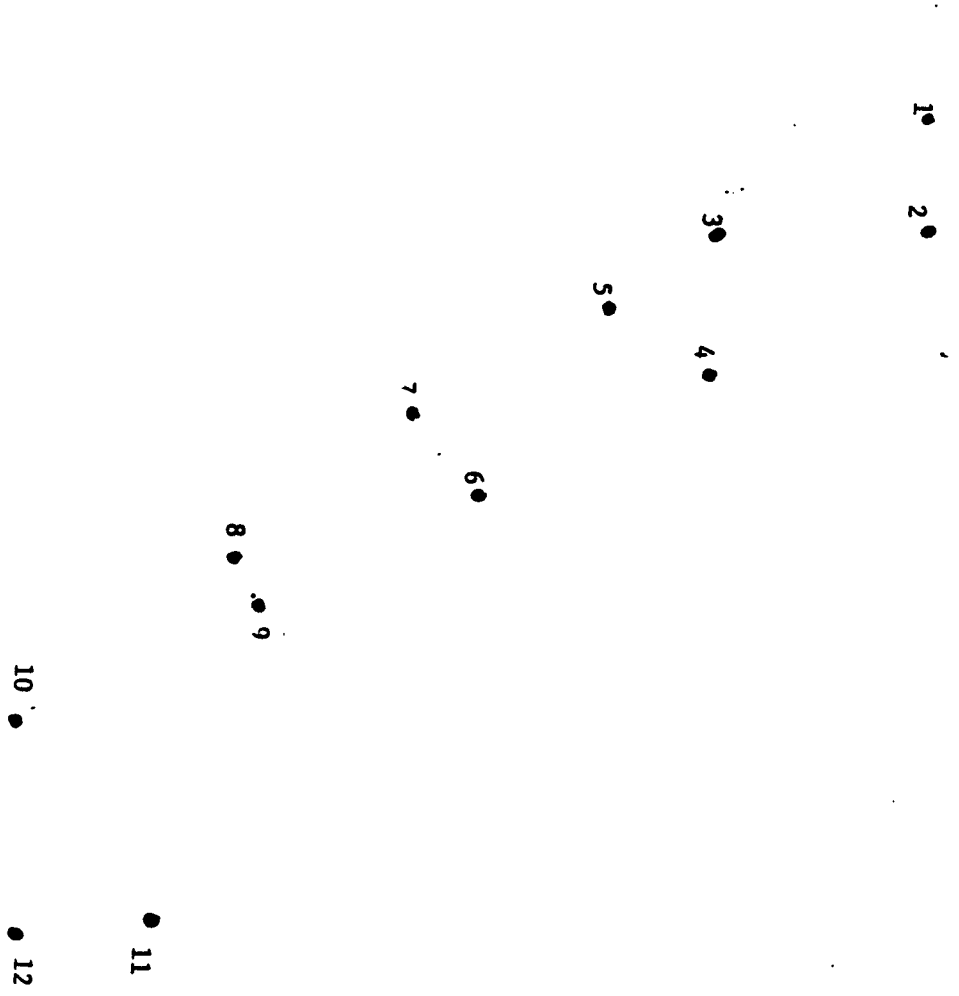
(10) Okay

(7) That's all you can get

Globally, the random arrangement of the statements lacks a systematic progression of content; virtually every succeeding statement consists of a new topic. The result is a conversation with a high level of global incoherence.

A topographical representation of two extreme examples (the actual and random orders) illustrates more precisely the maximization of global coherence in conversations; see Figure 3.1. In the figure, physical distance represents the degree of coherence between statements. Thus, in these topographical representations, statements that are coherent are close together and statements that are incoherent are further apart. (Because the representation must be two-dimensional, the distance between statements is only

Figure 3.1. A topographical representation of coherence in a conversation.



accurate to each of its two neighbours.[2] Thus, the distance between statements 1, 2, and 3 accurately represents their degrees of coherence, whereas the distance between statements 1 and 12 overestimates the degree of incoherence between the statements.)

The global coherences of the two different orderings of the Second-Hand Store conversation are presented in Figures 3.2 and 3.3. In these figures, the length of the line connecting the statements represents global coherence. The considerable difference between the length of the lines in the two figures reflects the difference in the global coherence of the two conversations. The maximal global coherence of the first example (the actual ordering of the conversation) is obvious. Like the global coherence of the actual conversation, the line in Figure 3.2 is short and direct; it does not meander, back-track, or cross over itself.

The optimization of local coherence

The other half of the second axiom proposes that, within the constraint of maximum global coherence, conversations also optimize coherence relations at the local level.[3] At this level, optimization means that <u>sequential coherence relations in a conversation maximize local coherence with the simplest pattern</u>. To see how this occurs, we must consider two different features of local

Figure 3.2. The global coherence of the order of statements that acually occured in a conversation.

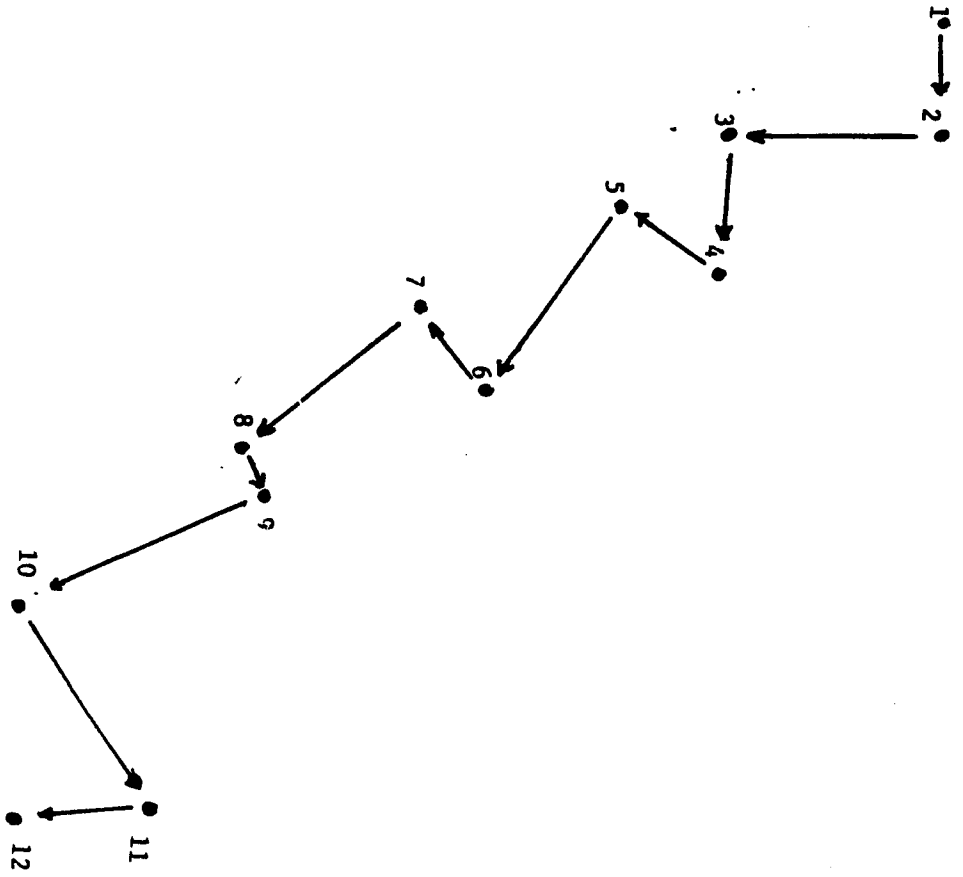
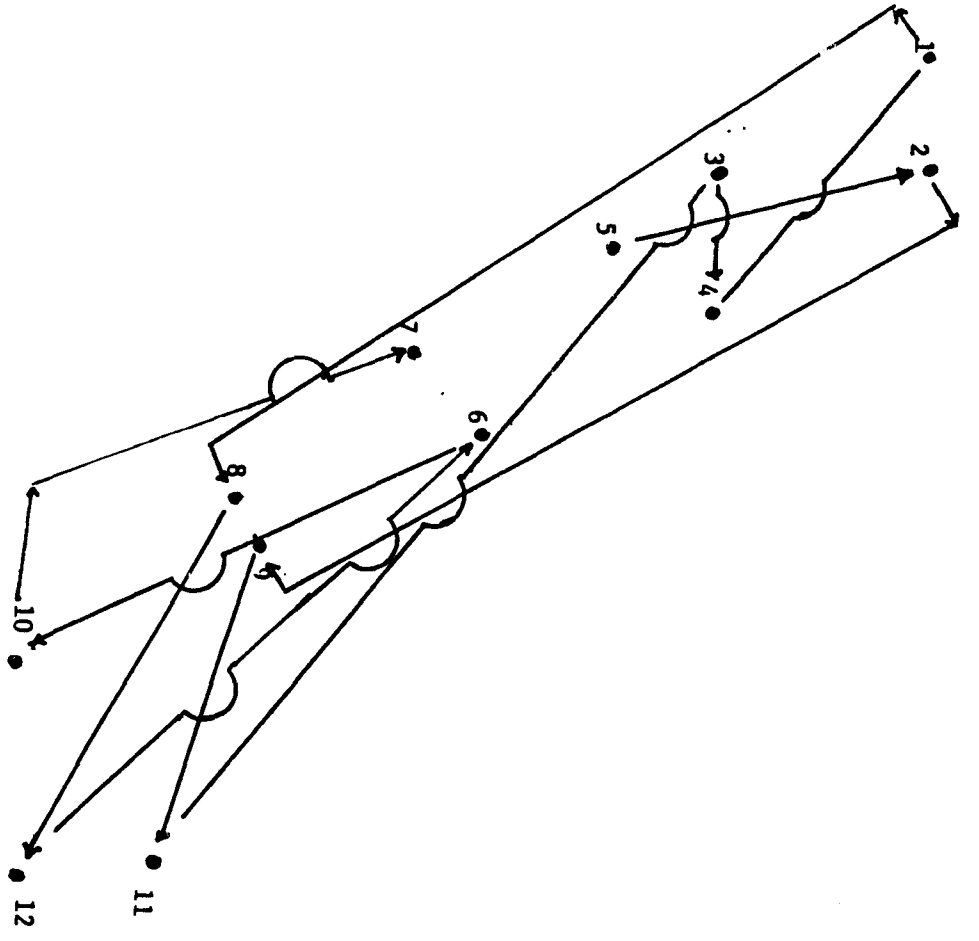


Figure 3.3. The global coherence of a random ordering of the statements in a conversation.



coherence relations, namely, their distribution and their pattern. First, a particular local coherence relation (e.g., the degree of coherence between two statements) has a certain value, which can range from highly coherent to highly incoherent. Taken together, the values for all coherence relations in a conversation form a distribution; for example, skewed toward highly coherent, or centred at moderately coherent. The first axiom proposes that both coherence (semantic continuity) and incoherence (variety and novelty) are necessary for conversation to occur. Therefore, a distribution of exclusively coherent or incoherent values is not possible, and we should expect a distribution centred around moderate coherence.

One kind of distribution that would simultaneously achieve both semantic continuity and semantic novelty is uniform moderate coherence, that is, a single, moderate coherence value throughout the conversation. Such a distribution would ensure the topic change necessary for the conversation to occur and would also be a very predictable pattern. Another kind of distribution that would satisfy the first axiom work consists of periods of coherence and periods of incoherence--also centred at moderate coherence but with larger variance.

Figures 3.4 and 3.5 illustrate these two possible distributions of local coherence relations with the same

Figure 3.4. Distribution of coherence relations with no variation.

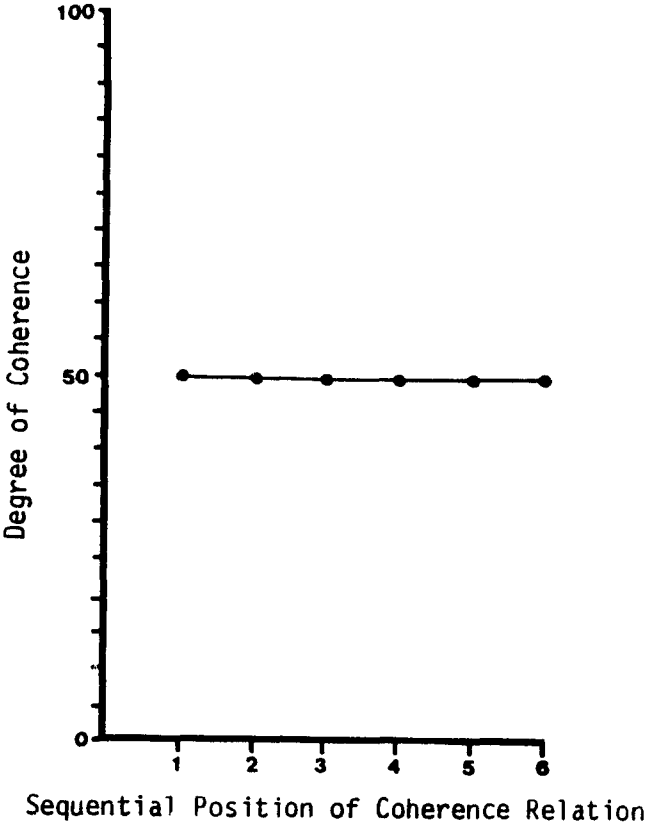
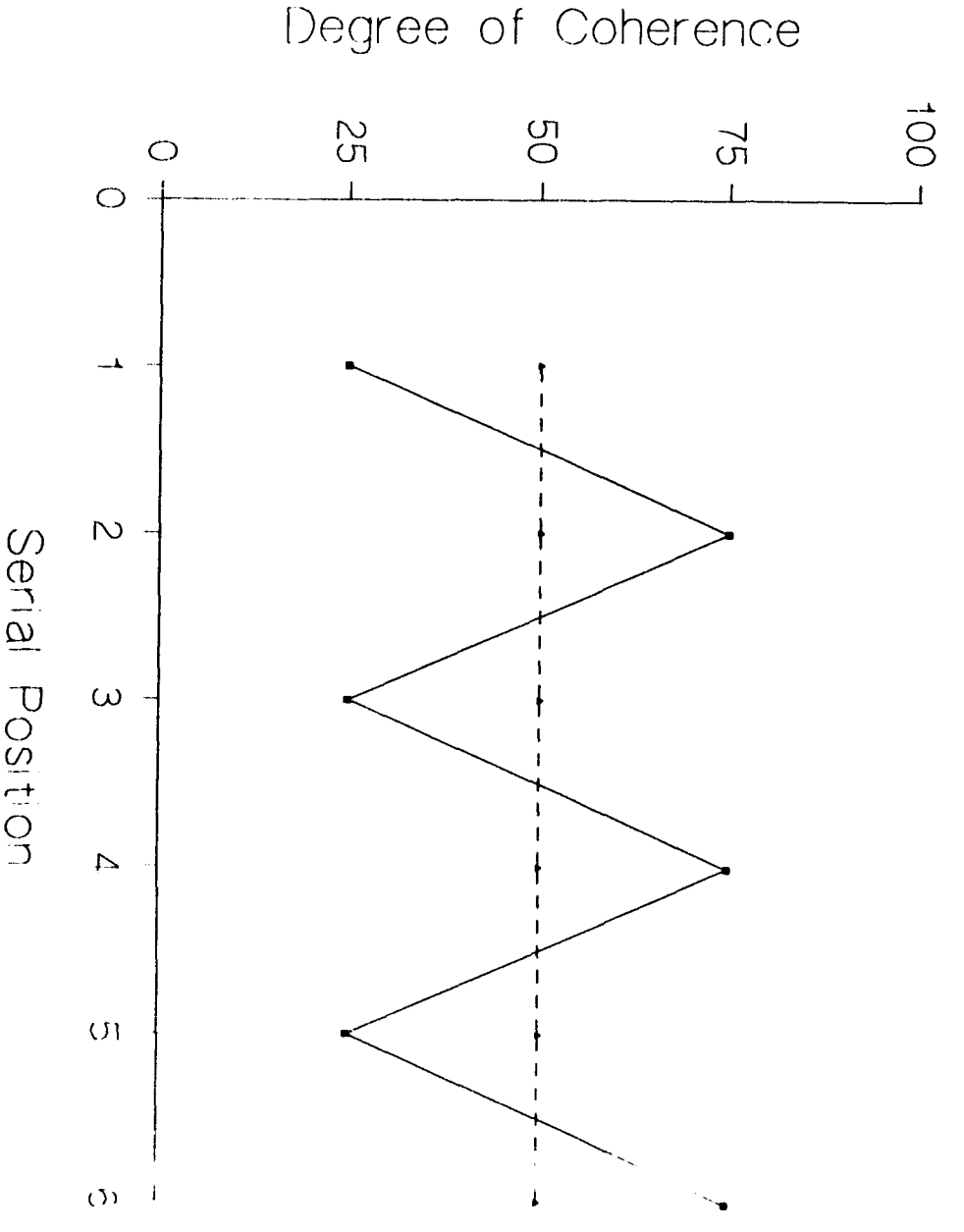


Figure 3.5. Distribution of coherence relations that alternate.



degree of global coherence. As shown in the figures, variation between periods of coherence and incoherence also results in maximal local coherence. As can be seen by comparing Figure 3.4 with Figure 3.5, variation in coherencemaximizes the degree of local coherence. More extreme distributions of coherence relations result in greater values of coherence.[4]

Having considered the overall distribution of local coherence values, we must now examine their sequential, temporal pattern over the course of a conversation. Is there a relationship between a given coherence value and the one that follows it? Recall that the optimization required by the second axiom means that sequential coherence relations in a conversation maximize local coherence with the simplest pattern. That is, the pattern of sequential coherence relations that occurs should be the simplest pattern that maximizes local coherence. In this use, "simplest" refers to the complexity or legnth of the pattern of coherence relations.

I propose that the simplest possible pattern of coherence relations is systematic alternation between coherence and incoherence. Figures 3.6, 3.7, and 3.8 illustrate my argument. These figures depict three possible patterns of sequential coherence relations that have the same total global coherence. Figure 3.6 depicts the most

Figure 3.6. Distribution of coherence relations with a six-step pattern.

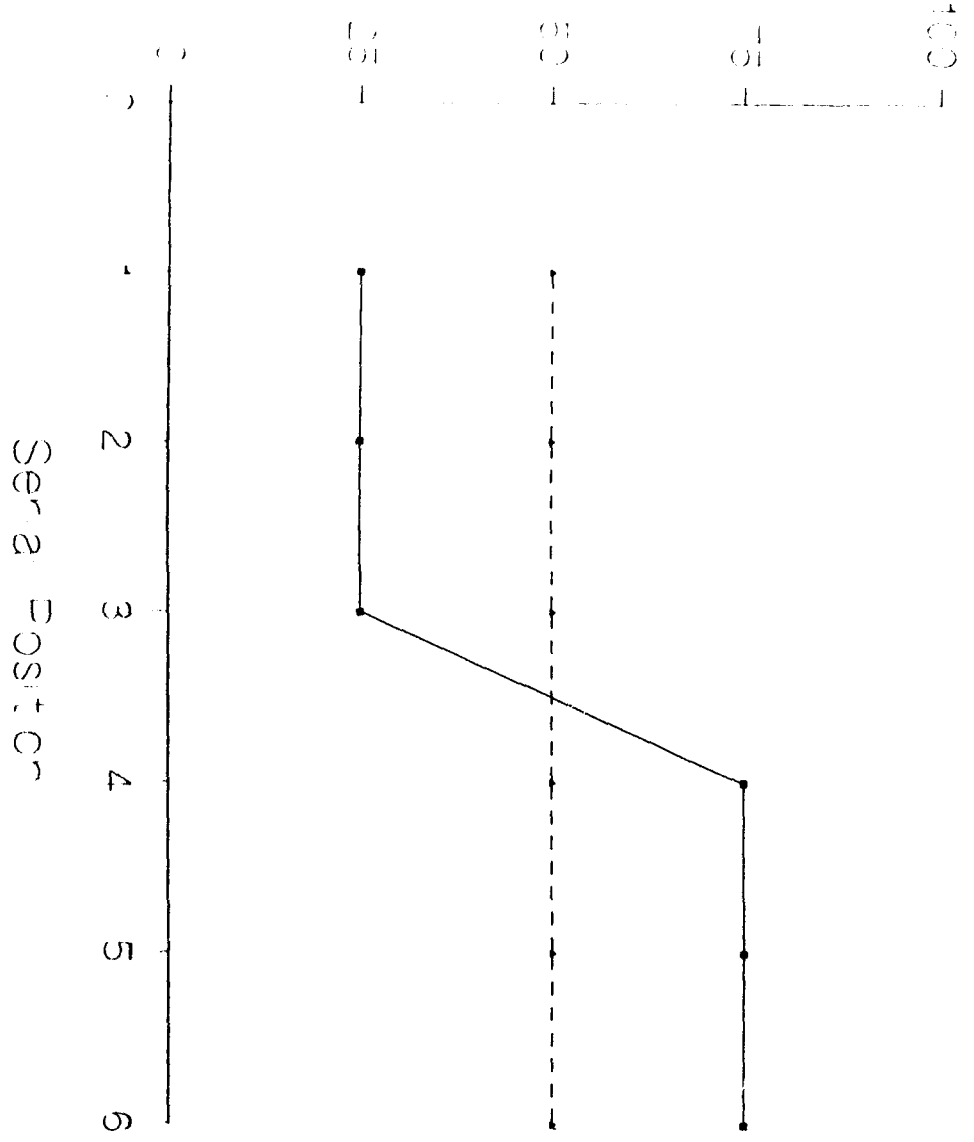


Figure 3.7. Distribution of coherence relations with a four-step pattern.

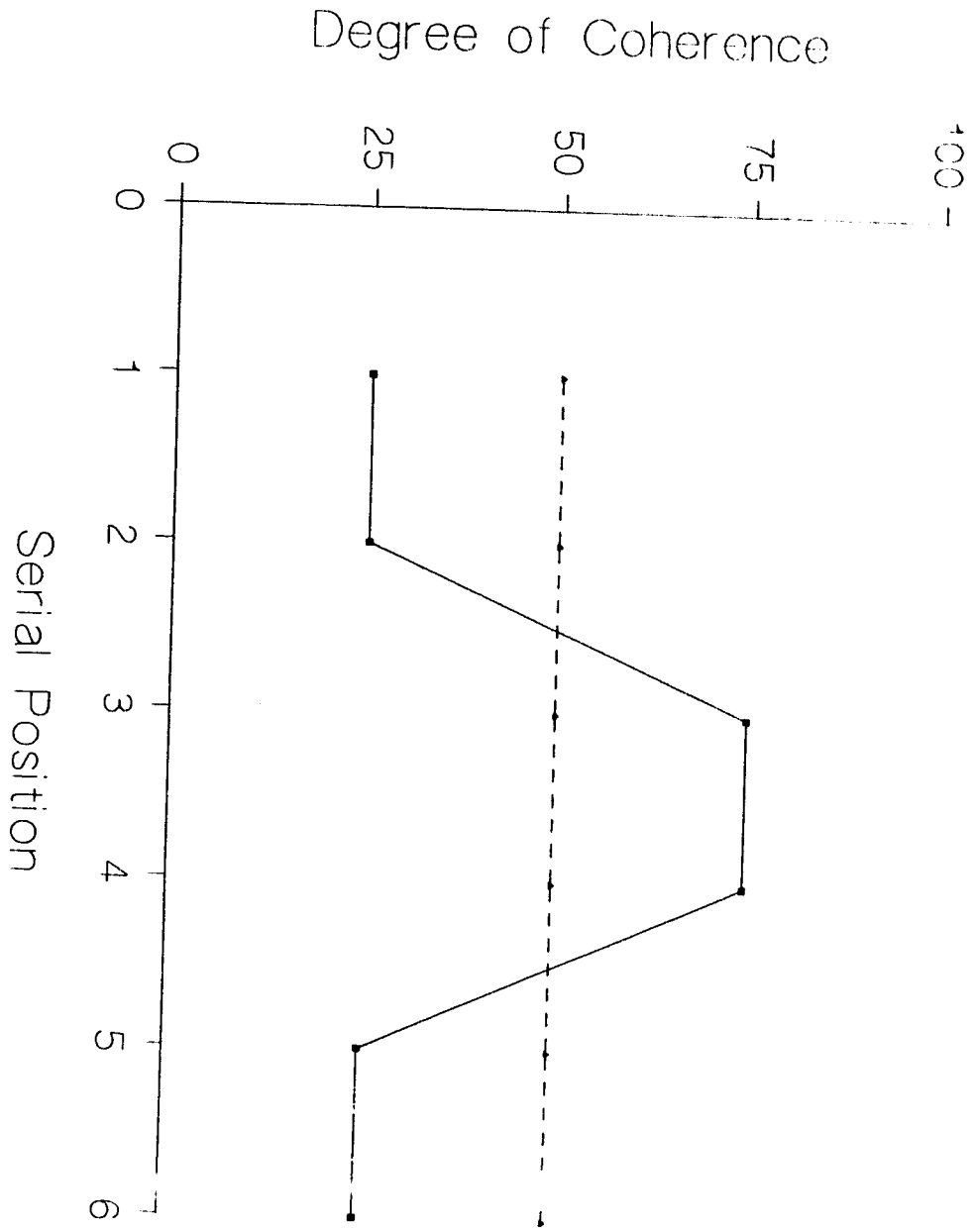
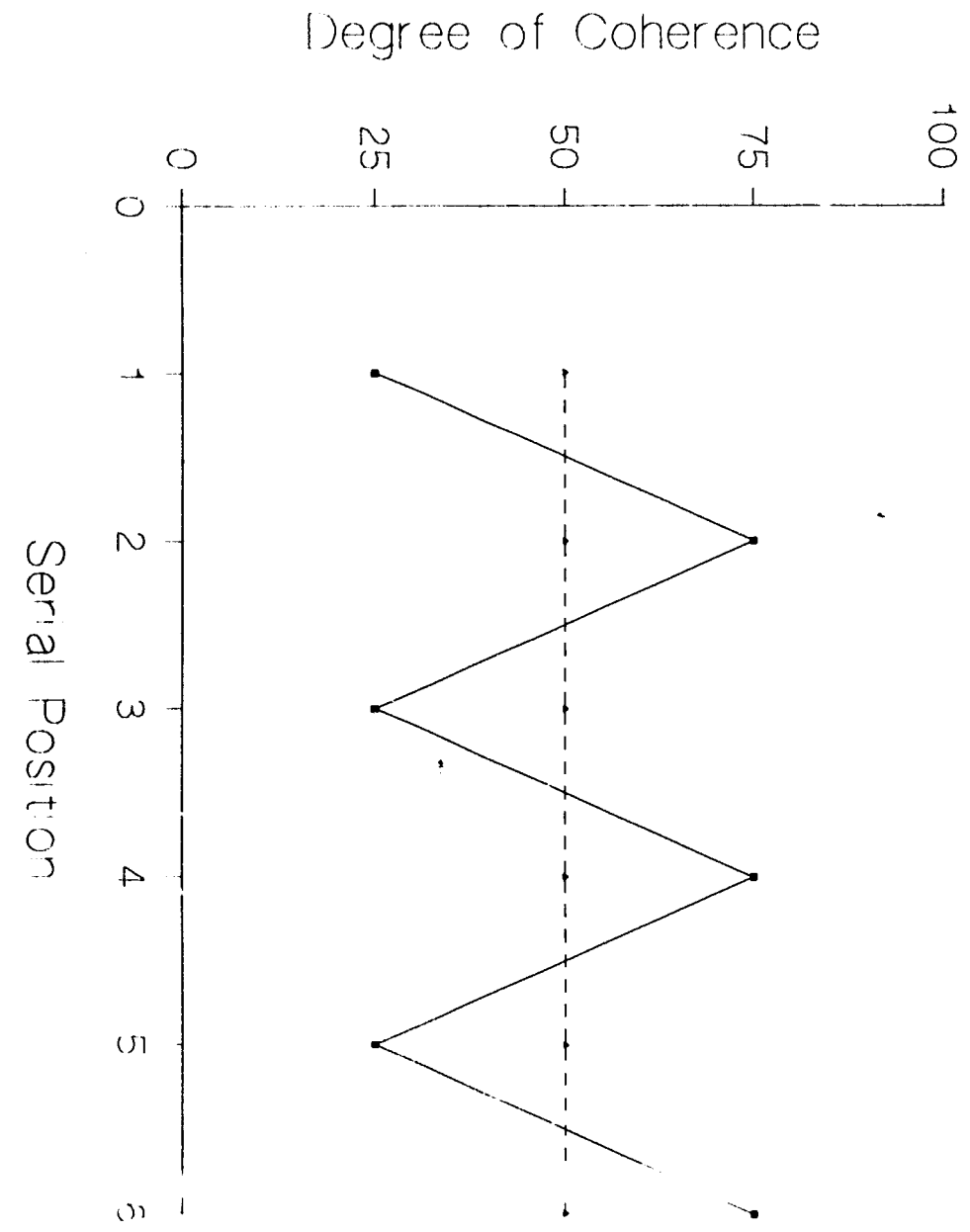


Figure 3.8. Distribution of coherence relations with the simplest (two-step) pattern.



complicated (least optimal) pattern of coherence relations, a sequence that requires six steps to replicate. The pattern of sequential coherence relations in Figure 3.7 is slightly less complicated than Figure 3.6 because the pattern contains only four elements. However, Figure 3.8 depicts how the pattern of local coherence relations in a conversation can be optimized with the simplest possible pattern: Alternation between periods of coherence and incoherence is a pattern that requires only two elements and a single rule; hence it is the simplest possible pattern.

III. Conversations optimize coherence at several different, hierarchical levels.

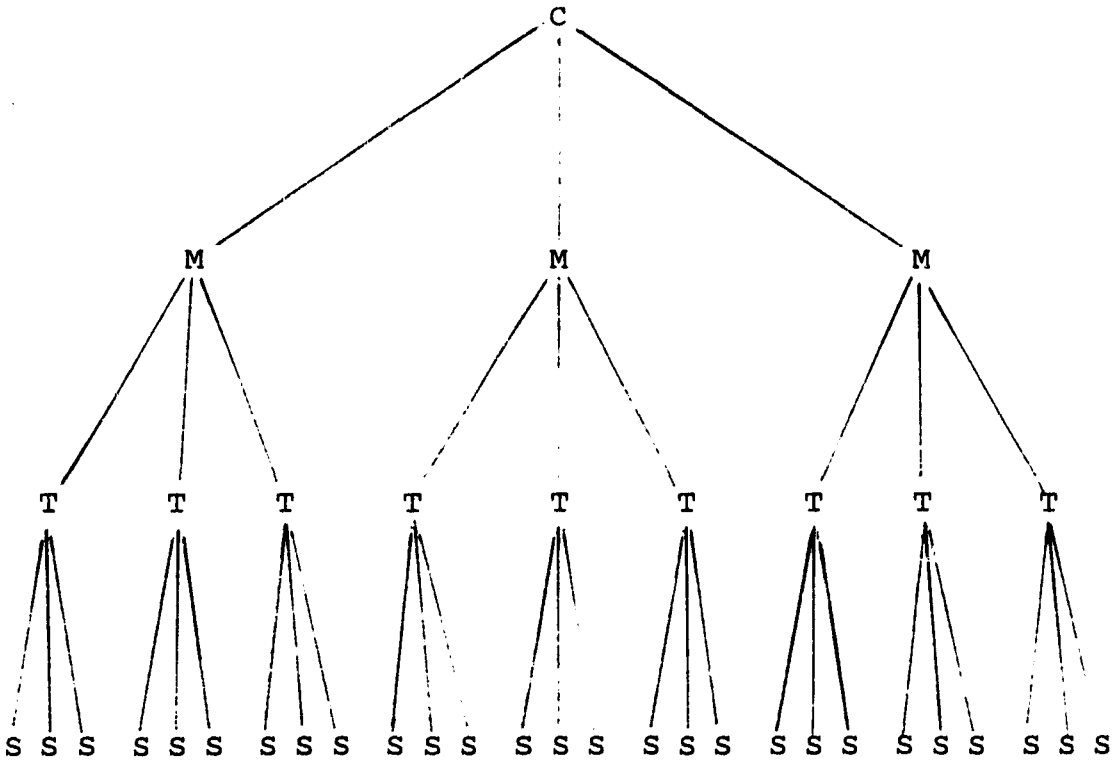
In the foregoing, most coherence relations have been illustrated with a unit roughly equivalent to a statement, although there have been occasional references to coherence or incoherence between topics (which subsume several statements). This usage implies, correctly, that my theory applies at different levels. That is, we can study coherence relations between any two units of discourse that are equivalent in size. Thus, the third axiom means that the first two axioms hold simultaneously at several different levels of conversation. In this dissertation, three levels of coherence relations will be examined: between statements, between topics, and between macrotopics.

The third axiom also describes the relationship among these different levels of conversation. I propose that their relationship to each other is hierarchical, as illustrated in Figure 3.9. The figure depicts the hierarchical organization of a hypothetical conversation consisting of 3 macrotopics, 9 topics, and 27 statements. The local coherence relations among statements are embedded within the topic that contains them. Similarly, the local coherence relations among topics are embedded within the macrotopic to which they belong. Finally, the local coherence relations between the three macrotopics are embedded in the largest unit, the conversation as a whole.

One implication of this structure is that we would expect large discontinuities (periods of incoherence) at the boundaries of next-larger units. Thus, while coherence will wax and wane between statements within a topic, adjacent statements that fall in different topics must be incoherent in relation to each other--a punctuation mark, so to speak, for a new topic.

In this hierarchical model of conversational coherence, global coherence can be identified and measured at several levels. The total degree of coherence between the statements that make up a topic is the global coherence of that topic. The degree of coherence between topics is the global coherence of the macrotopic that subsumes them.

Figure 3.9. Hierarchical arrangement of coherence relations in conversation.



C = Conversation

M = Macrotopic

T = Topic

S = Statement

Finally, the coherence relations between macrotopics yield the global coherence at the level of the conversation. The total global coherence of a conversation is the total of all of the coherence relations in a conversation at all three levels, that is, the simple sum of all of the coherence relations that occur at all levels in a conversation.

Actual conversations are not likely to follow the idealized structure depicted in Figure 3.9. Some topics consist of only two statements. Sometimes the boundaries of a topic and a macrotopic coincide; indeed, many conversations consist of only a single macrotopic. Despite the idiosyncrasies of any particular conversation, it is possible to describe the coherence relations between the units at each of the three levels: Within each of the topics, the local sequential coherence relationships build the global coherence of the topic. In turn, the semantic similarity and dissimilarity between topics builds the coherence of the conversation at a higher level. Finally, at the macrotopic level, the progression from "greeting" to "discourse about buying and selling" and then to "departure salutation" has a global coherence that is distinct from the local coherence between statements.

Empirical Verification of the Optimization Theory

By now, the reader is undoubtedly wondering whether it is possible to test and confirm this theory in actual

conversations. As shown in the previous chapter, most language scholars would probably take the first axiom as given; that is, they would agree that coherence and incoherence are both necessary for conversation to occur at all and that there are probably no absolutely coherent or incoherent conversations. An empirical search for the latter would not be very useful. Similarly, conceptual distinctions among different hierarchical levels in conversation (part of the third axiom) are not new, although no one has established that these different levels can be identified empirically. Even stipulating these particular predictions, the theory is rich in testable predictions.

The crucial empirical tests of the theory involve the second axiom, with its several ancillary hypotheses. To support the theory, conversational coherence must be optimal at both the global and local levels. Furthermore, to support the third axiom, global and local coherence must be optimal simultaneously within each hierarchical level. Thus, the two strong tests of the theory consist of two sets of predictions:

1. (a) The order of statements that occur in each topic must be the most globally coherent ordering of these statements within their topic. (b) The order of the topics that occur within each macrotopic must be the most globally coherent ordering of its constituent topics. (c) The

ordering of macrotopics must be the most globally coherent ordering of the macrotopics that make up the conversation.

2. (a) The actual sequence of local coherence relations between statements within a topic must be the simplest possible pattern of coherence relations that could occur, namely, alternation between coherence and incoherence. Similarly, (b) the actual sequence of local coherence relations between topics within a macrotopic and (c) the actual sequence of local coherence relations between macrotopics within the conversation must be the simplest possible patterns that could occur.

Testing the first prediction (1a) was the goal of my master's thesis (Black, 1986/1988). Four different kinds of very brief conversations served to test whether the order of statements that occurred in a conversation was the most globally coherent ordering of those statements. First, I segmented each conversation into its constituent statements. Then trained judges who were naive to the hypothesis rated the degree of coherence by means of a magnitude estimation scale of semantic similarity-dissimilarity. After demonstrating intra-class reliability, the judges rated the degree of coherence between each pair of statements in the conversation (i.e., between statements 1 and 2, 1 and 3, 2 and 3, etc.). The mean ratings across judges for each pair of statements in the conversation were the data for a

simulation program, which modeled all possible permutations of the statements that were more (or less) globally coherent than the order of statements that actually occurred. The results strongly confirmed the prediction of global optimization of coherence at the propositional level. In each of the four conversations, the actual order was more globally coherent than at least 96.3% of all possible alternative orderings. These findings are well within the limits set by measurement error. Moreover, graphic depictions of the sequence of local coherence relations over the course of the conversation strongly suggested a pattern of alternation between coherence and incoherence.

The discerning reader may have noted, however, that these tests did not precisely correspond to the first prediction as presently stated. In my master's thesis, there were only two units of analysis: the statement and the entire conversation; the two intervening units were not studied. Thus, the tests conducted did not determine whether the order of statements <u>within a single topic</u> was the most globally coherent ordering of the statements within the topic, nor did they address global optimization at the macrotopic level. On these grounds, one could argue that the results do not provide the strongest evidence for global optimization as outlined in the present elaboration of the theory.

Alternatively, the counterargument is that the results required global optimization at other levels. For example, if global optimization had not existed at the (unmeasured) topic level, it would not be possible to find global coherence in the statements embedded in these topics. However, the question is really an empirical one, so I have subsequently re-analyzed the data at the topic level. Because the conversations were so short, there were few topics and most of these contained fewer than four statements; only one topic (in the political interview) contained sufficient statements. Still, my re-analysis of the seven statements that made up this one topic confirmed that they were optimally ordered: Of the 720 possible permutations of the statements, only 7.7% (56) were more globally coherent than the one that actually occurred.

(The reader should note that there seems to be a systematic relationship between the number of statements and the degree to which global coherence is optimized as measured by the random permutation procedure. As the number of statements increases, the number of alternative permutations that are more globally coherent decreases dramatically; it is harder to find a more coherent "fit" with more statements in the equation. Therefore, given that the conversations studied were extremely short, the small number of statements may well have led to an underestimate

of the degree to which global coherence is maximized.)

One way to provide more evidence for my optimization theory of conversational coherence would be to conduct more tests of whether conversations optimize global coherence. Such tests would essentially be replications, albeit with needed improvements, and a law of diminishing returns could be invoked. More tests, and more precise tests, of one prediction that already has support might be aesthetically pleasing to any researcher, but they are not likely to add much to the broader theory of coherence.

Instead of obtaining incremental bits of the same kind of evidence for the theory, a better research strategy would be to obtain entirely different kinds of evidence--a strategy of converging evidence. Thus, the empirical purpose of this dissertation was to test the second prediction above, namely, that <u>local</u> coherence is optimized at the levels of statements within topics, of topics within macrotopics, and of macrotopics within conversations. At the operational level, this meant testing whether the sequence of coherence relations that occurred (within topic, macrotopic, and conversation) was the <u>simplest possible pattern</u> that could have occurred. The procedures developed to permit this test are described in the next two chapters.

Footnotes

1. This assertion is limited to statements only for expository reasons. It also applies to the ordering of topics and macrotopics in conversation.

2. To accurately depict coherence relations between all possible combinations of statements, it would be necessary to use N - 1 dimensional space.

3. Henceforth, maximizing will be used as a quantitative statement, i.e., yielding the most coherence possible. Optimizing refers to the additional requirement of doing so with the simplest possible pattern.

4. Parenthetically, the original observations of political interviews may have been crucial for discovering the optimizing pattern because of their extreme variation between coherence and incoherence.

CHAPTER FOUR

METHODS

The purpose of this dissertation was to gather evidence for the previously untested parts of the second and third axioms of my theory, namely, that sequential coherence relations in a conversation maximize local coherence with the simplest pattern. The proposed simplest pattern is alternation between coherence and incoherence. Moreover, this pattern should be found at several levels: statements within topics, topics within macrotopics, and macrotopics within conversations.

Such a test required four separate methods and procedures. The first was to obtain some conversations for analysis; ideally, these should be different from those used in earlier tests (Black, 1986/88), in order to build evidence of generalizability. The second task was to segment these conversations into statements, topics, and macrotopics and to demonstrate that the segmentation procedure was reliable at the three levels to which it was applied. The third was to train raters to scale the degree of coherence between pairs of statements, topics, and macrotopics; this scaling, too, must be reliable and also sensitive to variations in degree of semantic similarity-dissimilarity of content at all three levels of discourse. The final requirement was to test the predicted patterns

statistically; for this, a new statistical procedure was developed (see Chapter Five). This chapter will describe the first three procedures.

Obtaining Conversations

Rationale for sampling

Given the scope of my claim about how coherence is sequentially structured in conversations, it should be possible to test the hypotheses with any conversation. The ideal conversational sample would build generality in regard to topics, conversationalists, and settings. It is not possible, however, to specify formally the population from which to sample, because the parameters of the population of "conversations" are unknown. Still, there are samples that would be so atypical as to weaken any findings. For example, if the hypotheses were confirmed with conversations between baseball announcers, the results could be due to structure of the game rather than the nature of talk itself. Also, one could question the extent to which the talk of professional male sports broadcasters is like many other conversations.

In my master's thesis, I used a heterogeneous sampling technique to build generality, using four brief conversations that varied on several conversational parameters: one television political interview, one chat between friends, and two calls to a radio show where callers

buy and sell second-hand items. Thus, the conversations differed in relationship (friends, not friends), topics (buying/selling, politics, idle chatting), and the degree to which the conversationalists were professional speakers (not professional speakers, professional speakers, and mixed). The conversations did not differ in two respects. All consisted of mixed gender dyads, and one or both of the conversationalists was familiar with the other.

Even though this sample did build generality, it could not be fully representative and was inevitably vulnerable to potential biases. In three of the conversations (the political interview and the radio call-ins) there was an explicit agenda, so the participants had to cover a series of topics in a set period of time. It could be argued that optimizing coherence might be less important when people do not have an explicit agenda. (In fact, though, the casual chat between friends was the most globally coherent of the four conversations, that is, had the fewest orderings that were more coherent than one that occurred.) Another possible limitation of the results of these previous tests was that the conversationalists knew one another. Perhaps when people are unacquainted, they cannot predict what the other is going to say with any degree of certainty. Therefore, the conversations of strangers might be less than optimally coherent at local or global levels, because they

are unfamiliar with each other's conversational routines and cannot coordinate to optimize coherence.

The new sample, which consisted of getting-acquainted conversations, avoided several of these possible limitations or biases. Because the participants did not know one another, they could not predict with confidence what the other was going to say; they would also be unaware of any idiosyncratic conversational routines. Also, in getting-acquainted conversations, there is no explicit agenda or series of topics that the conversationalists must discuss (although, of course, there are constraints on what strangers can discuss). Using a sample of getting-acquainted conversations between young, same-gender dyads also provided generality by adding age, topic, and gender variation to the total sample of conversations used to test the theory.

Procedure for obtaining conversations

Eight students (four female, four male) were recruited from two different first-year undergraduate University of Washington Speech Communication classes. One of the original subjects did not arrive at the appointed time, and a young undergraduate male who was walking by the building kindly agreed to participate.

When each pair of students arrived at the office, the experimenter re-confirmed that they did not know each other,

then told them they were going to have a short getting-acquainted conversation with each other on the telephone, and explained that their conversation would be tape-recorded. After the instructions, the experimenter seated one subject in the office and took the other student to a nearby pay phone, where he or she was to call the office. After a short time (approximately five minutes), the experimenter interrupted the conversation, took the student at the pay phone back to the office, explained the study, and paid each of them $5.00 for their participation.

Of the four conversations obtained by this procedure, one (female-female) conversation turned out to be unsuitable for further analysis because one speaker's voice was too soft to be audible. This left one female-female and two male-male conversations for analysis. While this number may seem very small at first, recall that each conversation yields a large number of statements. The present sample contained a total of 325 statements.

The conversations

Appendix A contains complete transcripts of the three conversations. In general terms, the conversations consisted of polite and pleasant small talk in which the students tried to find experiences or other things they had in common. All of the conversations included questions about the classes the students were enroled in and the major

each had declared. In addition, each of the conversations also had unique content; for example, one of the conversations included a lengthy discussion about underage drinking.

Segmenting the Conversations

As shown in Chapter Two, there is little consensus or even discussion about the appropriate unit of analysis for studying coherence, much less adequate procedures for segmenting a conversation into units. This section describes the procedure by which another, independent judge (L.C.) and I segmented each of the three conversations into statements, topics, and macrotopics. (The fourth unit, the entire conversation, of course did not require segmentation.) The two segmenting judges used explicit definitions and rules (given in Appendix B) and then independently listened to a conversation several times and identified each unit on a transcript of the conversation.

This procedure has two advantages over current methods. First, there were explicit <u>semantic</u> criteria for segmentation that were separate from the designation of a particular kind of coherence relation (e.g., speaking turn was not a factor in segmentation, for the reasons discussed in Chapter Two). Second, the procedure demonstrated a high degree of inter-judge reliability.

Training to segment conversations

Training the second segmenting judge to identify statements, topics, and macrotopics in conversations consisted of defining what constitutes these units of speech and illustrating how they should be identified on a transcript. The instruction began with a list of definitions and procedures for identifying each of the three units (see Appendix B). The segementing judges then reviewed the instructions together, along with audiotaped examples of each unit (the first five statements and the first two topics and macrotopics from a nonsample conversation, transcribed in Appendix B).

After the instruction, the second judge identified the remaining segments in the training conversation, using a four-step procedure. The first was to listen to the conversation several times and read a transcript of the conversation that did not contain any identification of speaker or units (as in Appendix B). The second step was to mark on the transcript where each new topic began. The third was to denote the boundaries of each statement throughout the entire transcript. Finally, going back to the topics, she identified the macrotopics in the conversation and double-checked all previous decisions. The first judge identified any discrepancies and reviewed them with her.

Reliability of the segmentation

To establish the reliability of the segmentation procedure, both judges independently segmented a second conversation (contained in Appendix B). Their reliability depended on identifying the same boundaries of the units. If both judges identified the beginning of a new statement (or topic or macrotopic) at the same juncture between words, then this was an agreement. If the judges identified different beginnings of a statement (or topic or macrotopic), this was a disagreement.

The reliability of the judges' segmentations of the conversation into statements, topics, and macrotopics was high: They agreed on 89 out of 94 statements (93%); on 17 out of 20 topics (85%), and on all four macrotopics (100%). Most of the disagreements were systematic, in that one judge sometimes divided into two units a segment that the other judge had treated as one unit. For example, the following piece of conversation was identified as a single statement by one judge:

> well and it does take some bashing to because we don't um you can't be too subtle with us.

The other judge separated the conversation into two statements, the second beginning with the word "you." Given the very high reliability of the judges' segmentations, this small systematic difference did not justify further

training.

Segmenting the Sample Conversations

After the training and reliability test, the two judges independently segmented all three of the getting-acquainted conversations. The reliability of the judges' segmentation remained high (89 to 96% over the three conversations). There did not appear to be any systematic differences, so the first judge's segmentations were used when they differed (see Appendix A).

As seen in Appendix A, the conversations varied little in the number of macrotopics. However, they did vary in the number of topics embedded in the macrotopics. Although the conversation between the two female students only had one more macrotopic than the other two conversations, their conversation contained many more topics than the other two conversations. (This is somewhat surprising because it has been asserted that, in same-gender dyads, females tend to build and support the development of topics more than men; West & Zimmerman, 1985.) There was also considerable variation in the number of statements within the three conversations. This difference is undoubtedly due to the variation in total length of the conversations. Unfortunately, there were not enough macrotopics to test hypotheses about their sequential relations within the conversation as a whole. So this third level had to remain

untested in the present research.

Scaling the Degree of Coherence

In my master's thesis, I had developed a procedure for measuring the degree of coherence between statements. Naive raters scaled the degree of semantic similarity between pairs of statements on a "coherence continuum," using a magnitude estimation procedure similar to Bavelas and Smith's (1982) equivocation measure. Across four conversations, the intra-class correlations for agreement among raters ranged from .88 to .96. The measure also had construct validity in that it was used to confirm a hypothesis that allowed for little measurement error. The following sections describe a procedure that is only slightly different; the main difference is that the method also applies to units larger than statements (topics and, potentially, macrotopics).

Coherence between Statements

The procedure for obtaining coherence ratings at the statement level proceeded in three stages. First, naive raters learned to scale the degree of coherence between statements. Next, the reliability of the raters' scalings was established. Finally, the raters scaled the degree of coherance between the statements from the sample conversations that were used to test the hypothesis. (A.B.

was the experimenter for all of the statement scaling sessions.)

Subjects

Six students enroled in a fourth-year undergraduate Linguistics class at the University of Victoria volunteered when approached by the experimenter at the beginning of a class. They understood that their task would consist of rating the degree of coherence between pairs of statements and that they would meet with the experimenter several times, to be scheduled at their convenience. Each rater received $5.00 per hour. This group of coherence raters only scaled statements.

Coherence Continuum

Raters scaled the stimuli on a piece of masking tape placed across the 120 cm length of a standard office desk. Four labels underneath the masking tape conveyed the continuous nature of the coherence dimension. At the extreme left, the label read "This area is for messages that are very coherent. Messages like this are about the same things." At 40 and 80 cm were labels that read "This area is for messages that are quite coherent. Messages like this are related in that they are talking about similar things" and "This area is for messages that are quite incoherent. Messages like this may share a general topic, but are only indirectly related." At the extreme right side of the

scale, the label read "This area is for messages that are extremely incoherent. Messages like this do not even have a general topic in common." Thus, the raters scaled the degree of literal semantic similarity between statements on a physical scale of magnitude. Statements with a high degree of semantic similarity belonged on the left-hand side of the continuum, and statements with no semantic similarity went on the far right-hand side of the continuum.

Training Session

The coherence raters met with the experimenter individually. (The experimenter's script is in Appendix C.) He told each coherence rater that he was interested in conversational coherence and the structure of conversations. He then described the continuum and played the examples--a tape containing 10 pairs of statments that demonstrated the possible range of coherence relations. The tape had two examples each of extreme coherence, a fairly high degree of coherence, moderate coherence, a high degree of incoherence, and extreme incoherence (see Appendix C for the 10 examples). After the experimenter had presented the examples and stressed that the scaling should be based on a literal interpretation of the statements, he described the messages that the rater would be scaling and instructed them to make a pencil mark on the tape for each decision.

Coherence Scaling of Statements in the Sample Conversations

The raters scaled the degree of coherence between 121 pairs of audiotaped statements from the getting-acquainted conversations. For statistical reasons (discussed in the next chapter), there was no point to scaling topics with too few statements. So the topics scaled were (a) those with more than five statements and (b) smaller adjacent topics with a total of more than eight statements between them. This section includes a description of the preparation of the scaling tapes and the procedure for scaling the statments for degree of coherence.

Because previous experience had demonstrated that after 50 minutes, raters were no longer able to scale attentively, the 121 pairs of statements were copied onto three different tapes for three separate sessions. The first tape (presented immediately after training, in the same session) contained 18 pairs of statements; the second tape contained 53 pairs of statements, and the final tape contained 50 pairs of statements. Previous use of the measure had also demonstrated that the coherence raters are unable to work with a completely randomized order of pairs of statements (i.e., any pair from any topic in any conversation might follow any other such pair). Therefore, the randomization of order of statements on the tapes was done within topic and conversation. The raters heard a random ordering of the pairs of statements from one topic, then they heard a random

ordering of the pairs of statements in the next (analyzable) topic in the same conversation. The raters continued to hear a random ordering of the pairs of statements within sequential topics until completion of the conversation. Then they heard a random ordering of the pairs of statements in the first topic in the second conversation, and so forth until the last (analyzable) topic in the final conversation. An identifying number preceded each of the pairs of statements.

After hearing each pair of statements, the rater scaled the degree of coherence between the statements by making a mark at the appropriate point on the tape, identified the point with the pair's identifying number, and then proceeded to the next pair of stateemnts. If the rater had difficulty hearing either of the statements or had trouble making a decision, the experimenter would replay the pair of statements. At all times, the raters were encouraged to talk about their scaling, so that the experimenter would know what criteria were being used.

The experimenter monitored the coherence scaling in three ways. First, he checked that the rater wrote the correct number on the tape. Second, he ensured that the raters used a literal interpretation of the statements. If a rater made inferences about "what the speaker meant," the experimenter pointed out the inference and asked the rater

to reconsider, using a literal interpretation. Third, the experimenter monitored for consistency between how a rater described the coherence between two statements and where the pair was scaled. For example, if a rater described a pair of statements as coherent but placed the statements in the middle of the continuum, the experimenter would question the scaling. The rater could then either explain the rating more fully or change the scaling so that it was consistent with his or her own description of the degree of coherence.

The possibility of "experimenter bias" in monitoring the scaling is remote. The experimenter would have to (1) mentally unscramble the random pairings, (2) perform several several statistical operations on the reordered pair values, and (3) clearly and consistently convey the calculated expected result to each rater by indirect or nonverbal means. The best evidence that this did not happen is that judges used the scale differently. That is, they placed a given pair at different points. Because they had different "frames of reference" (Winer, 1962, p. 128), their scores had to be transformed to standard scores (see below).

Assessment of the Raters' Scaling of Coherence between Statements

The final step of the measurement procedure was to transform each of the six raters' scalings into standard scores and then to compute the mean across raters for each

pair of statements. This average represents the degree of coherence between two statements: a negative score signifies coherence and a positive score signifies incoherence. Appendix C contains the averaged standard score for each of the coherence ratings.

Quantitative assessment. Because the final score is the average across coherence raters, the appropriate reliability coefficient is intraclass correlation (Ebel, 1951; Wiener, 1971). The R's for the raters' scalings were very high: first tape = .93, second tape = .97, third tape = .99. These reliabilities are particularly satisfying because of the relatively small number of raters (6). In general, the use of fewer raters decreases the reliability of the measure (Nunnally, 1967) because one idiosyncratic decision can result in proportionately greater error variance than the same idiosyncratic decision within a larger set of raters. To achieve high reliability with a small N implies a robust method.

Qualitative assessment. On inspection, the coherence raters' scalings reflect sensitivity to the similarity or difference of the literal semantic content of the statements. For example, the pair of statements "are you in a house or anything" and "yeah I'm and Sigma Chi a Sigma Chi yeah" were rated as coherent because both of the statements were about one person's membership in a fraternity (rating =

-1.27). An example of the raters' sensitivity to semantic dissimilarity is seen later in the same topic, where they rated the following two statements as extremely incoherent (1.57): "my Dad was a Tek oh really mumm at the at Washington at oh really" and "so I'm rush chairman right now and ah eeping pretty darn busy oh yeah." The raters also scaled statements as incoherent when one of the statements was ambiguous and there was little obvious semantic link between the two. For example, the following two statments were rated as extremely incoherent (1.68): "that that's what we do to" and "I mean if there wasn't money involved I mean I wouldn't be doing it right?"

By no means all of the raters' scalings were at the extremes of coherence or incoherence. Most the values fell in the middle of the continuum. For example, raters scaled the following two statements as moderately coherent because the mention of the father and the specification of location in the second statement constitute a slight change: "yeah, I was a Tek really yeah" and "my Dad was a Tek oh really mumm at the at Washington at really yeah." The following two statements were also moderately incoherent, because they both tangentially refer to work (the amount of work and the kind of compensation): "that's a lot of work oh it can definitely oh well yeah" and "do they do the compensate you

like do they yeah like you're a free house bull [sic] that kinda thing yeah."

Coherence between Topics

The procedure just described for scaling degree of coherence at the statement level was adapted to scale the degree of coherence at the topic level. While the basic principles were the same, the changes in procedure included a new set of coherence raters, a new script, a different set of training stimuli, a different number of pairs to scale, and a different experimenter (L.C.). There were two scaling sessions. In the first session, the raters received instructions and examples and then (in an initial reliability test) scaled the degree of coherence between 13 pairs of nonsample topics. In the second session, the raters scaled the degree of coherence between topics for all of the analyzable macrotopics from the sample conversations.

Subjects

Seven University of Victoria undergraduates volunteered for participation in the study. All were naive to the hypothesis and were paid $5.00 for each hour of participation. After the initial training session, one of the students indicated that he would not be able to continue because of work commitments. The final number who scaled all of the messages was therefore six.

Coherence Continuum

Many aspects of the procedure were similar to the coherence scaling of statements just described above. The raters scaled the degree of coherence between topics on a physical scale of magnitude, which was represented by a strip of masking tape placed across the 120 cm length of a standard office desk. Topics with a high degree of semantic similarity were placed at the left-hand side of the scale, and topics with no semantic similarity were placed on the far right-hand side of the scale. Four labels defined the continuum: At the extreme left, the label read "This area is for pairs of topics that are very coherent. Topics like this are about the same thing." At 40 and 80 cm were labels that read "This area is for messages that are quite coherent. Topics like this are related in that they are about very similar things" and "This area is for topics that are quite incoherent. Topics like this have a little in common, but are indirectly related." At the extreme right-hand side of the scale, the label read "This area is for topics that are extremely incoherent. These topics have nothing in common."

Topic Coherence Training and Scaling Sessions

Raters met with the experimenter separately. At the outset, the raters were told that the investigator was interested in conversational coherence. The experimenter

then described the coherence continuum and played the examples (see Appendix D for the experimenter's script). The example tape included one instance each of extreme coherence, a high degree of coherence, moderate coherence, moderate incoherence, and extreme incoherence. (See Appendix D for the five examples.) After she had presented the examples and stressed that the scaling should be based on a literal interpretation of the statements, the experimenter described the general content of the topics that the rater would be scaling and instructed them to make a pencil mark on the tape for each decision.

Then the raters scaled the first (reliability) tape, which contained a random ordering of 13 pairs of topics in a single macrotopic from an entirely different set of getting-acquainted conversation (see Appendix D).

In the second session, the raters scaled the degree of coherence between 13 pairs of topics from the sample getting-acquainted conversations. For statistical reasons, which are discussed in the next chapter, only the two macrotopics containing five or more topics were included in the analysis. (These topics are given in Appendix D.) The raters heard a random ordering of the sequential coherence relations of one macrotopic, and then they heard a random ordering of the sequential coherence relations of another macrotopic. Thus, the randomization procedure preserved the

topics within their macrotopic. (An identifying number preceded each pair of topics in the stimulus tapes.)

In both scaling sessions, the experimenter presented the stimulus tape, and the raters made their coherence scalings. After hearing each pair of topics, the rater scaled the degree of coherence between the topics by making a mark at the appropriate point, identified the point by number, and then proceeded to the next pair or topics. If the rater had difficulty hearing either of the topics or trouble making a decision, the experimenter replayed the pair. The raters were encouraged to talk about their decisions as they made them. As with the scaling of coherence at the statement level, the experimenter monitored the raters' decisions to ensure that they wrote the right number, used a literal interpretation of the topics, and made ratings consistent with how they described the coherence between two topics.

Assessment of the Raters' Scaling of Coherence between Topics

As with the statments, the final step of the measurement process was to transform each of the cohernece six raters' scalings into standard scores and to compute the mean of all raters' scalings for each pair of topics. This average represents the degree of coherence between two topics: a negative score signifies coherence and a positive

score signifies incoherence. Appendix D contains the averaged standard score for each of the coherence ratings.

Quantitative assessment. The intraclass correlations for both sessions were high, .87 (reliability test) and .93 (sample conversations). Again, this is particularly encouraging with such a small number of raters and stimuli.

Qualitative assessment. The raters' scalings revealed their sensitivity to the similarity or difference of the literal semantic content of the topics. The following pair of topics was scaled as extremely coherent (-1.08), because they are both about gymnastic workouts (statements within topics are indicated by diagonal slashes):

> Topic 1. how long is gymnastic season is it all year round or/ we train all year do you but the season's from January to April/ January to April ow yeah gees that'd be I that's pretty exhausting isn't it/ I mean it takes a lot of time (laugh) yeah/ I mean I've heard about like the football players and all the practice they have to put in/ but I mean yeah but I never hear about gymnastics yeah/
>
> Topic 2. What kind of workouts do you do/ well right now it's our off season/ and we have three-hour workouts everyday um er so it's like we do three and half hours in the gyn and the we go lift for like half an hour/ but it's not bad/ usually during the season

it's like four four and half hour workouts/ do you do a variety of stuff like just just swimming or jogging or/ uh uh like it's all in the gym training like yeah/ floors bars vault and beam I see/

In contrast, the following two topics were scaled as incoherent (1.38), because they share little semantic content in common:

Topic 1. so um what year are you/ I'm a sophmore/ me too are you yeah cool/

Topic 2. who are you living with in your in you apartment, some friends?/ um some friends um I'm on the gymnastics team and then another was our manager/ and then the other one's just a girl that I met last year and so/

Discussion

Overall, the three procedures required to test my hypotheses about the optimization of local coherence were successful but not without problems. Four getting-acquainted conversations were obtained, but one had to be excluded from analysis because of poor sound quality. More important, the three remaining conversations did not yield enough macrotopics suitable for testing the optimization hypothesis at the conversational level. Thus, this step was moderately successful because it produced three conversations that could be used, especially at the

statement level.

The procedure for segmenting the conversations was both new and successful. Two independent raters were able to segment the conversation at all three levels with high reliability. The procedures for scaling the degree of coherence between statements within topics and between topics within macrotopics were reliable at both levels; the raters were sensitive to a continuum of similarity and difference in semantic content.

Ultimately, the criterion for the validity of these procedures is whether they produced an unbiased set of data that could be used to test the optimization hypothesis. If anything, the procedures were biased against confirmation of the hypothesis: The getting-acquainted conversations were quite varied in content and structure; they were certainly not formulaic. The segmentation procedure resulted in a pool of topics and macrotopics with very few statements or topics within each. Given that the power of most statistical tests is inversely related to N, the resulting set of topics and macrotopics can be seen as a conservative set. The procedure for scaling coherence was not biased toward the hypothesis because the raters were naive and two different experimenters were used. Finally, the reliabilities were high by ordinary standards, but the hypothesis being tested permits little measurement error.

CHAPTER FIVE

A TIME-SERIES STATISTIC FOR SMALL-N SERIES

Ideally, analysis of the data described in the previous chapter would be a straightforward task. A suitable statistic would determine whether a particular sequence of coherence relations consisted of alternations between coherence and incoherence. Unfortunately, none of the existing statistical techniques could do this, so a new technique was developed.

Limitations of Available Statistics for These Data

A hypothesis about sequence suggests a time series analysis; spectral analysis or Fourier analysis (Gottman, 1981) would be the best tests of the present hypothesis. Either of these would determine the period of the series and reveal whether the series was composed of a simple alternating wave. A different time-series technique, autocorrelation (Gottman, 1981), could find a large negative correlation at the first lag (i.e., every low value followed by a high value, and every high value followed by a low value). A less direct test of the hypothesis would be an autoregression (Ott & Hildebrand, 1983), which would reveal the extent to which the series consisted of a linear component, a cyclical (seasonal) component, and error. The optimal (alternating) series should contain a large seasonal component. Finally, the simplest and least direct

statistical analysis would be a runs test, which determines whether a series is random (Siegal, 1956).

The typically small number of coherence relations obtained in each of the topics and macrotopics presents two barriers to the above analytic techniques. First, there is a serious constraint on statistical power. The minimum N for a spectral analysis is usually about 100 observations, with an absolute minimum of 64 (Box & Jenkins, 1970; Gottman, 1981). Similarly, 50 is the minimum N recommended for the use of autocorrelation and autoregession statistics (Huitema & McKean, 1991). When a single-series runs test is applied to a sample less than 10, even one violation of the proposed series (alternation between coherence and incoherence) would mandate accepting the null hypothesis.

Compounding the problem of low statistical power with a small-N series is the possibility of statistical bias. Autocorrelation and autoregression analyses are biased with small-N samples (Huitema & McKean, 1991). When N is small (less than 10), the Bartlett formula seriously overestimates the error variance--thereby rendering the discovery of a negative lag-one autocorrelation virtually impossible. In contrast, with spectral analysis, as N decreases the probability of discovering a single-frequency sinusoidal wave increases even when the series is composed of two or more sinusoidal processes (Granger & Hughes, 1968). Because

the bias of spectral techniques favours the predicted hypothesis, interpretation of a confirmatory result would be problematic. Thus, for the small-N series that are typical of natural conversation (including my data), there were no suitable statistics.

A Statistic for Small-N Series

Given that the available time-series statistics are inadequate for testing the optimization hypothesis in the present data, it was necessary to develop a (presently) descriptive statistic to analyze small-N series. Consideration of the geometric properties of graphical representations of data sets, in conjunction with the proposed hypothesis, led to a statistical technique for analyzing small-N sequences.

Consider a series consistent with the optimizing hypothesis. As illustrated in Figure 5.1, the series would consist of alternatiors between large (75) and small (25) values around a mean (50). Considering the depicted sequence in relation to the mean, one can see that the sequence contains a number of interior angles that face toward the mean (see Figure 5.2). The addition of arbitrary vertical beginning and ending points (alpha and omega) makes all of the data points useable and yields a total of six such interior angles. The sum of the interior angles for the sequence depicted in Figure 5.2 is 228 degrees.

Figure 5.1. An optimal sequence.

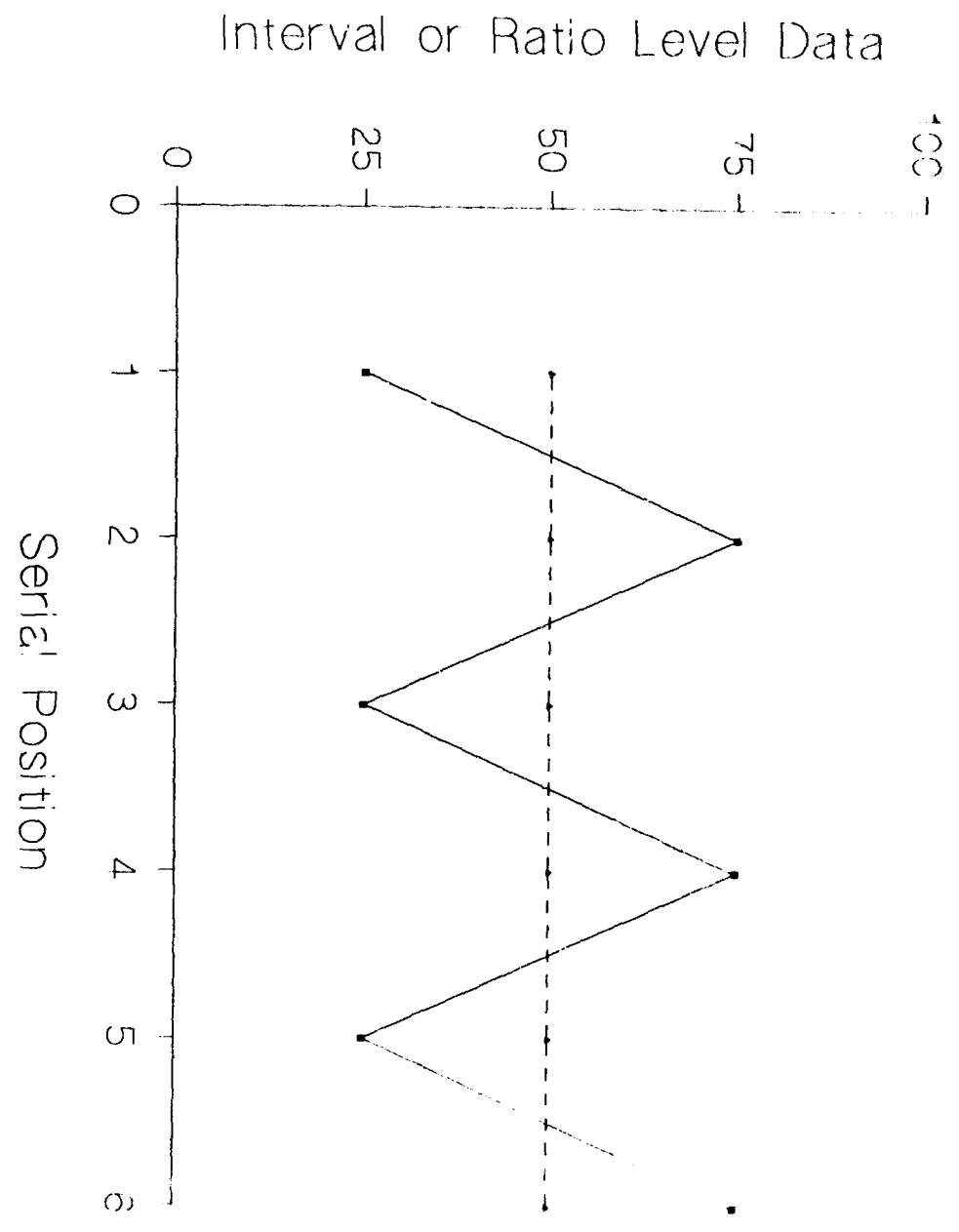
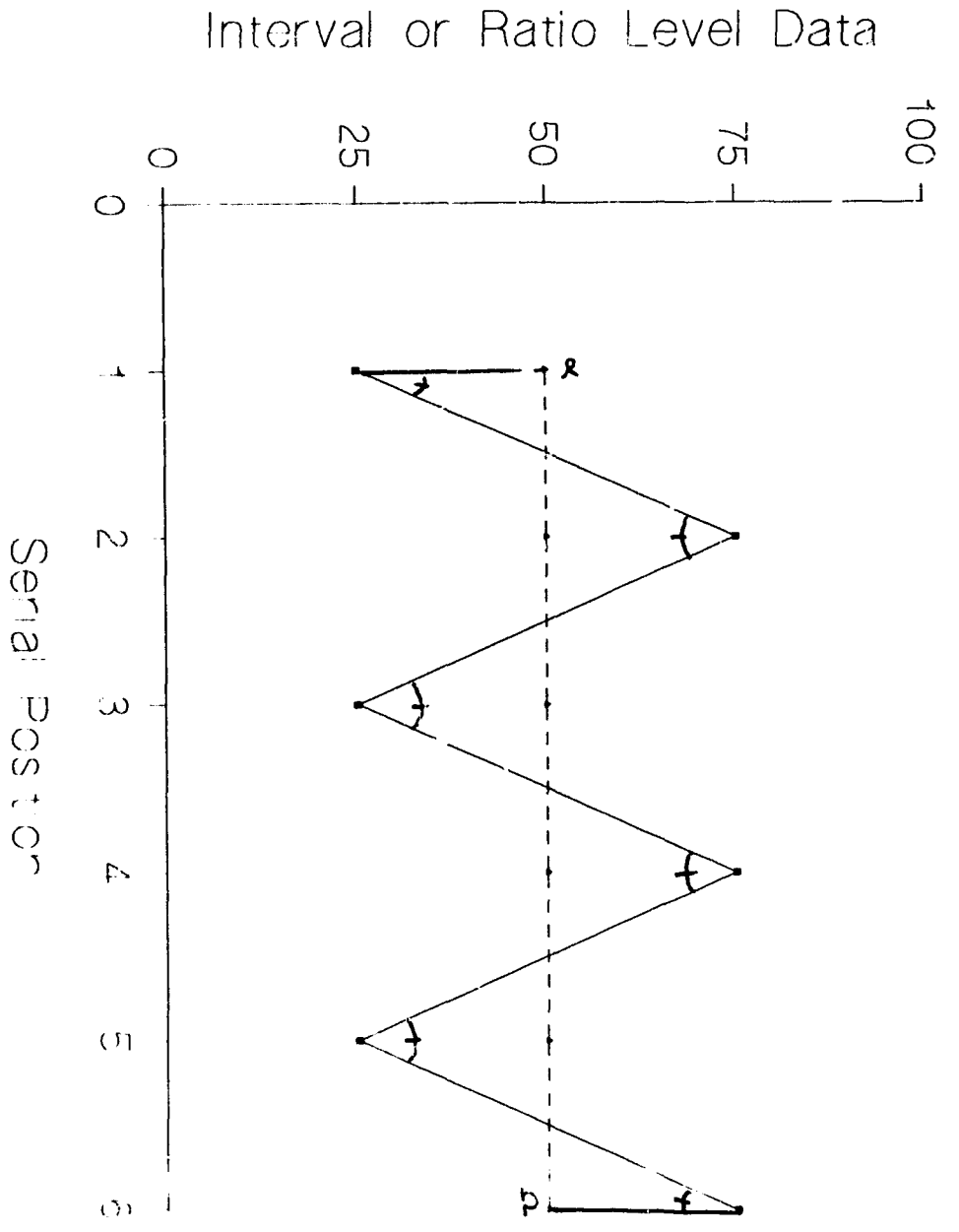


Figure 5.2. Geometric properties of an optimal sequence.



In contrast, consider two series, discussed in Chapter Three, which are not consistent with the optimizing hypothesis; they contain the same values in a different order. Figure 5.3 depicts a six-step ordering of the values in Figure 5.1. Geometrically, this series also contains six interior angles, but the sum of the interior angles is 768 degrees (see Figure 5.3). Another alternative arrangement of the values used so far, one that also has a non-optimal pattern, is depicted in Figure 5.4; the sum of the interior angles of this alternative non-optimal series is 630 degrees.

I propose that the fact that the sum of the interior angles increases when the sequential pattern of the same data points departs from simple alternation can lead to a statistic that describes the degree to which local coherence is optimized in conversation. Specifically, I propose a permutation test (Edgington, 1987; May, Masson, & Hunter, 1990) which compares the sum of the interior angles of the sequence that occurred to sum of the interior angles for all of the other possible permutations of the data. Such a statistic would iterate the calculation of the sum of the interior angles for all possible permutations of the data in

Figure 5.3. Geometric properties of a non-optimal sequence.

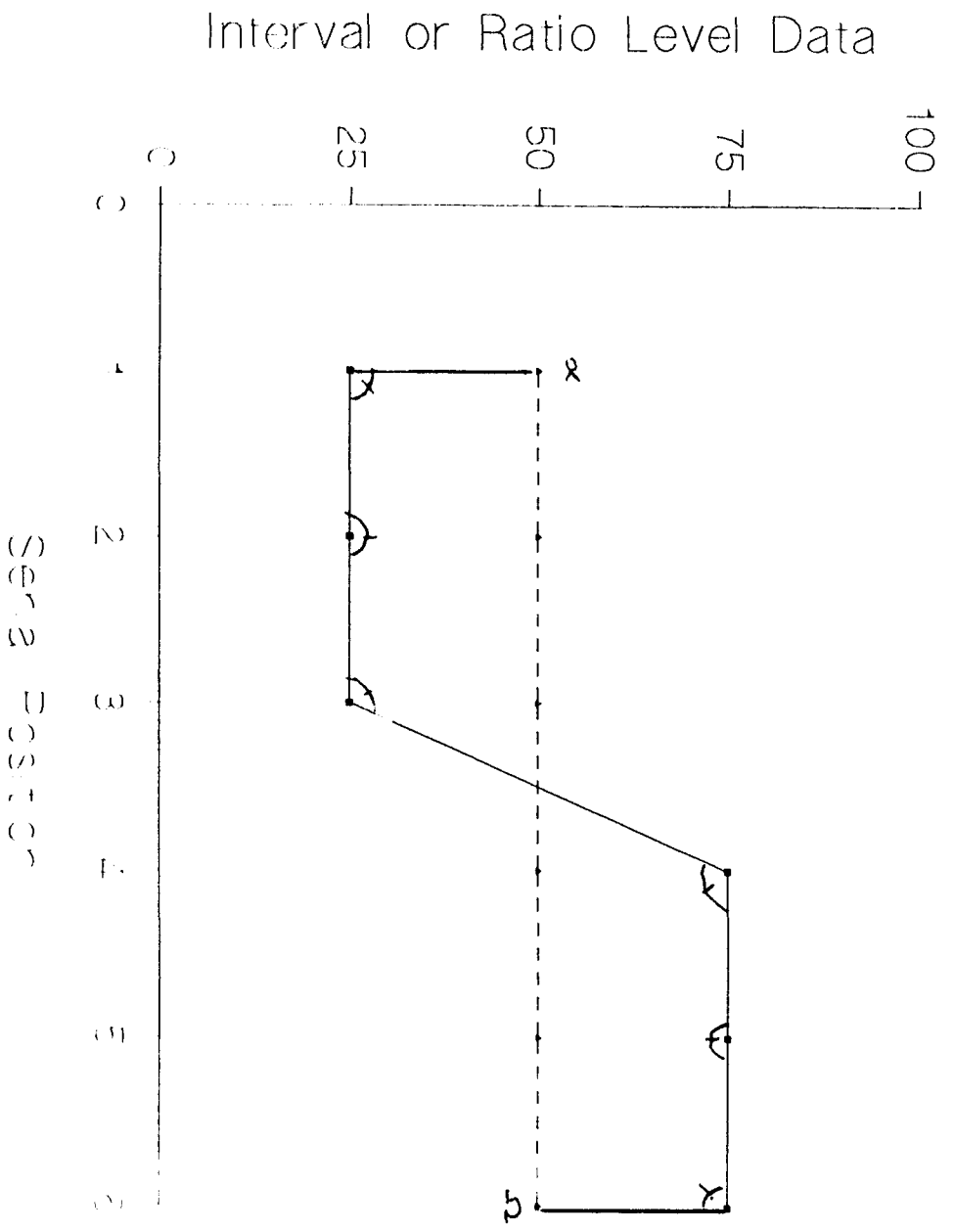
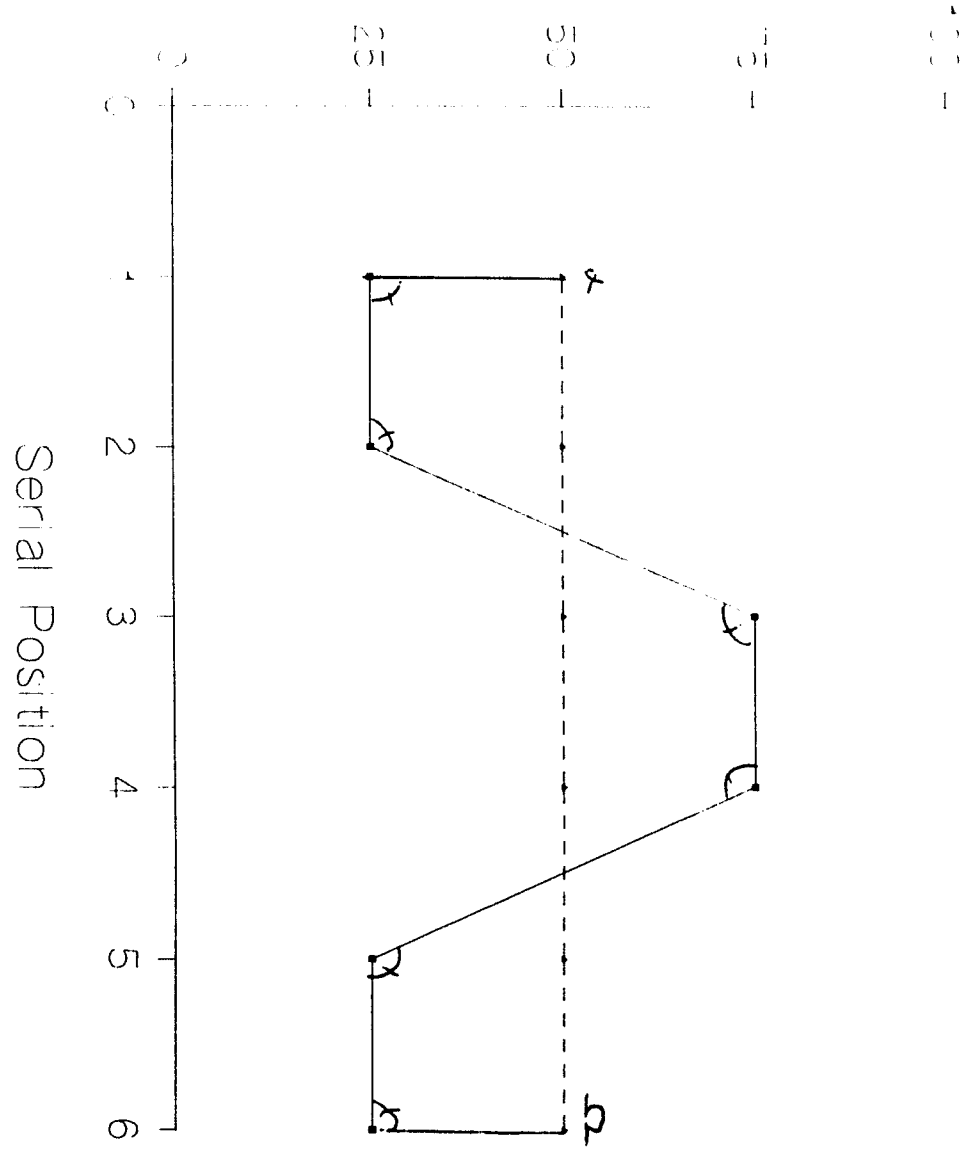


Figure 5.4. Geometric properties of a moderately optimal sequence.



order to determine how many possible series have simpler patterns than the one that occurred. ("Simpler" is used here in the same sense as in Chapter Three, where it was shown that alternation between coherence and incoherence requires the fewest steps.) If the optimizing hypothesis is correct, then relatively few permutations of the data will have a sum of interior angles that is smaller than the sum of interior angles of the series that actually occurred.

Appendix F contains a computer program to determine the number of permutations of a given series that have a simpler cycle than the one that actually occurred. The program begins by calculating the sum of interior angles for the actual series and storing this sum in memory. The program then permutes the actual values exhaustively, each time calculating the sum of interior angles, comparing it to the sum of the angles that actually occurred, and storing the results of the comparison. The final output of the program lists the number (in percentiles) of series that have a sum of interior angles that are smaller than, equal to, and greater than the sum of the angles that occurred.[1]

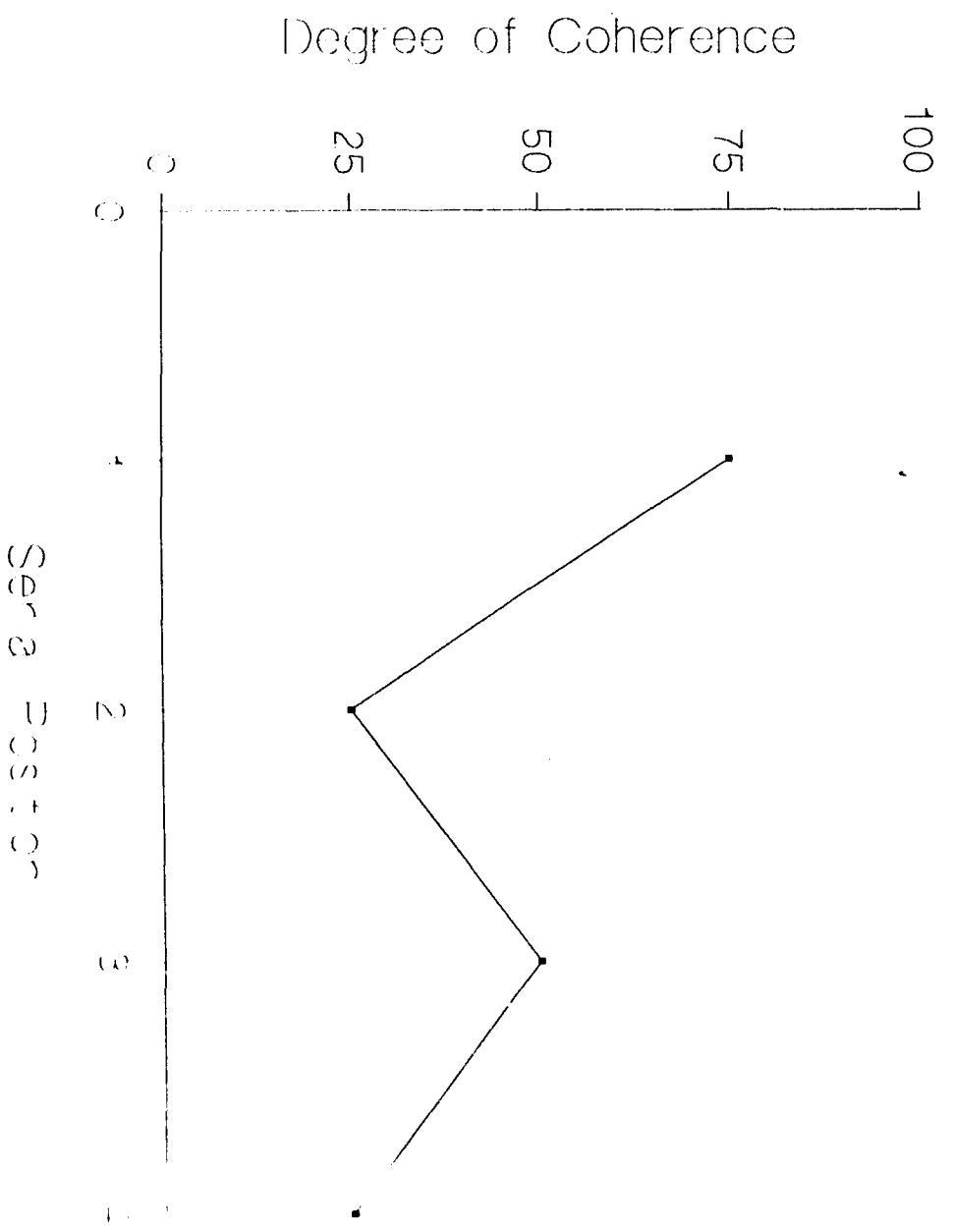
Although this analytic procedure provides a direct way to test the optimization hypothesis with the small-N data described in the previous chapter, it is not perfect. First, as with any other exhaustive permutation calculations, obtaining the solution for longer data sets

requires considerable computer time. For example, using a personal computer (e.g., a Zenith 386), it would take over two months to obtain the results for a series of 12 data points. Thus, data sets with an N greater than 10 require a mainframe computer and considerable amounts of CPU time. However, recall that the purpose of this technique was to fill a niche below those covered by existing statistics, that is, N's well below 50.

Second, this is a descriptive and not (yet) an inferential analytic technique. The probability of obtaining a given result by chance can only be estimated once the overall distribution is known, either by analytic or Monte Carlo techniques.

Finally, as will be discussed further below, it is not known whether the statistic is biased. In particular, the statistic may be biased against the hypothesis when the data set contains extreme outliers. The data presented in Figure 5.5 illustrate the potential bias. Although consistent with the maximization hypothesis, these data contain a single outlier--and the statistic finds 33% of the permutations have a sum of interior angles smaller than the sum that occurred. Because examination and elimination of this potential bias would require Monte Carlo studies well beyond

Figure 5.5. An alternaing sequence containing an outlying data point.



the scope of the present dissertation, and because the bias would be against my hypothesis, its potential presence is only noted here.

Results

Appendix E contains individual graphs and statistical analyses of the sequential coherence relations data described in the previous chapter. That is, each page contains a graph of the sequential coherence relations for a particular topic or macrotopic, along with their mean and standard deviation. (The reader will note that all of the graphs are drawn to the same scale in order to facilitate the comparison between topics and macrotopics containing different number of elements.) Finally, each page gives the percentage of permutations of the data that have a smaller sum of interior angles than the series that actually occurred. Smaller percentages are more supportive of the optimizing hypothesis.

Table 5.1 summarizes the statistical analyses of the data for statements within topics (along with other information which will be discussed later). The results tended to support the hypothesis that the order of coherence relations that occured at this level was one of the more optimal orderings of the statements. As seen in the table, the pairs of statements in half of the topics had sums smaller than 30% of their alternative permutations.

Table 5.1. The frequency of permutations of statments within topics that are more optimal than the order that occurred, with standard deviations and presence of outliers.

Percent of permutations more optimal than the actual order.	Frequency	Standard deviation	Presence of outliers
< 10%	3	1.01, .69, .62	No
< 20%	5	1.20, 1.05 .86, .70, .49	Yes
< 30%	2	.77, .70	Yes
< 40%	2	.55, .46	Yes
< 50%	3	1.05, .74, .40	Yes
< 60%	1	1.23	Yes
< 70%	0	--	--
< 80%	1	1.38	Yes
< 90%	1	1.1	Yes
< 100%	2	1.05, 1.02	Yes

Three quarters of the topics had sums smaller than 50% of the alternatives. The range of results includes a topic (C1,T16) in which the order of coherence relations that actually occurred was the most optimal ordering of the coherence relations and another conversation (C1,T5) in which 95% of the permutations of the data set were more optimal. Most of the results, as noted above, lay between these two extremes and definitely toward the low end.

The results described in Table 5.1 do not confirm a conservative interpretation of the hypothesis about the optimization of coherence at the local level. Recall that the second axiom dictated that the sequence of coherence relations that occurred within a topic would consist of alternations between coherence and incoherence and, statistically, would have a sum of interior angles less than any other possible permutation of the data. Obviously, it is necessary to reject the hypothesis on the basis of the current data, because only two topics met this statistical criterion.

However, the results do confirm a less stringent interpretation of optimization hypothesis. If the optimization hypothesis is treated as a statement about a tendency toward optimization, then less stringent criteria can be used. Specifically, if 50% is used as a criterion for confirmation, then the results do confirm this weaker

version of the hypothesis. Fifteen of the 20 topics have a sum of interior angles that is less than 50% of the alternative permutations of their coherence values. By a binomial test, this result is significant at $p = .032$.

At the level of topics within macrotopics, the results of the only two possible analyses did not confirm the optimization hypothesis. One of the macrotopics contained an ordering of the coherence relations between topics that approached an optimal ordering (19%). For the other macrotopics, a large percentage of the possible orderings of the coherence relations were more optimal than the one that occurred (79%). Because of the small N and divided results, it is not possible to draw any conclusions about the optimization hypothesis at the macrotopic level.

Given these results, it is relevant to consider several plausible problems--some statistical and some methodological. These will be considered in turn.

Table 5.1 presented the overall distribution of the topic results in conjunction with both the standard deviations of the data sets and the presence of outliers. There was a small correlation ($r = .39$, $df = 8$, $p = .09$) between the standard deviation of the data set and the number of permutations that were more optimal than the order of coherence relations that occurred. In addition, the data presented in Table 5.1 were consistent with the suspicion

expressed earlier that the presence of outliers may bias the statistic. All of the topics for which more than 10% of permutations were more optimal than the permutation of the data that actually occurred also contained at least one data point that would be considered an outlier. It seems that the presence of an outlying data point can dramatically skew the results against the hypothesis. Thus, it may be that the statistic developed here underestimates support for the opimizing hypothesis.

A second statistical issue is inherent in the use of a descriptive rather than inferential statistic, that is, the unknown probability distributions of the results for the various permutations. Thus, the choice of a cut-off point for support of the hypothesis (e.g., 5% versus 30%) can at present only be an arbitrary one. We simply do not know how probable any of the findings are. This can be established by either analytic or Monte Carlo work, or both.

The primary methodological problem affecting the results is the possible effect of using University of Victoria coherence raters to scale the conversations of University of Washington students. This lent an inadvertent cross-cultural twist to the coherence scaling, one that could plausibly go against the hypothesis, by the following reasoning: All of conversations contained references to fraternities and sororities and to local places. Given that

the students are from two different speech communities, it would not be surprising if some of the references seemed obscure and incoherent to the University of Victoria student raters. Such incidents would bias the results against the optimization hypothesis because seeming incoherencies that were caused by a lack of common idiomatic reference may mask actual coherence. Given a hypothesis of alternation between coherence and incoherence, the conversion of only one coherence relation into incoherence would dramatically alter the result for a particular topic. Collectively, the problem might well account for the lack of confirmation. The obvious solution is to have the data rescaled by University of Washington undergraduates.

The other potential methodological problem is the choice of only getting-acquainted conversations. These conversations, with their frequent awkward pauses and searches for new topics, may be an excessively harsh test of the optimization hypothesis. Certainly, it often seemed that after a series of incoherent relations had occurred, the topic changed; perhaps the series was driven by a search for a new topic. Other indirect evidence can be found in conversations among people at least somewhat acquainted (Black, 1986/88), where alternation was more obvious. It may be that the axioms do not apply (or do not apply as strongly) for unstructured conversations between strangers.

Fortunately, this possibility, like the other potential problems, can be verified in future research.

Footnotes

1. The program was checked three ways. First, the results of the program were performed on data sets where the actual results were known (i.e., the series of the data used in the examples). Secondly, the results of the program to hand calculations of some short series ($N = 5$) where none of the five values were the same. Finally, the program was checked by comparing the permutations performed during the calculation with actual number of permutations of the data. In all instances, the results of the program were the same as the expected results.

CHAPTER SIX

SUMMARY AND CONCLUSIONS

My own interests and current issues in the coherence literature shaped the three objectives of this dissertation, which were theoretical, methodological, and empirical. In this chapter, I will review these goals in light of what needed to be done, what has been accomplished, and what remains.

Theory

Rich as the coherence literature is, it seems to contain few theories that take discourse as their primary focus. Many theories focus on the cognitive processes that might produce coherence, and others focus on how individuals connect their utterances. Indeed, the fact that the utterance is the most common unit of analysis reveals the implicit importance of who said what. In contrast, the present theory examined what is said, regardless of who said it; the theory treated coherence as a property of conversations rather than individuals.

Also, in contrast with most of theories of coherence, the present theory spelled out definitions, fundamental assumptions, and how empirical tests followed from these assumptions. In brief, I proposed to describe the structure of coherence and incoherence in conversations with three axioms:

I. Both coherence and incoherence are necessary for conversation to occur.

I began by uniting coherence and incoherence, by assuming that these are endpoints of a continuum of semantic similarity and difference between two units of discourse. At one end of the continuum, two units of discourse with the same literal referential content are coherent. At the other end of the continuum, any two units of discourse with no referential similarity are incoherent. In contrast to traditional theories that put coherence and incoherence in opposition with each other, the first axiom makes explicit that both are necessary. Complete coherence could only occur by repetition of the same statement over and over; every new response must introduce some degree of incoherence. Complete incoherence would be a semantic random number table, with no connection between statements and no possibility of predicting from one statement to the next. Conversations require both novelty and consistency; that is, both coherence and incoherence are necessary.

II. Conversations optimize coherence both globally and locally.

Given that both coherence and incoherence are necessary, the second axiom addresses their distribution in conversations, both globally and locally. First, global coherence is optimal; that is, the order of statements that

occurs in conversation is the most globally coherent possible ordering of the statements--more globally coherent than any random ordering of the statements. Even the displacement of a single statement will result in more global incoherence. (This part of the second axiom--that conversational coherence is optimally coherent at a global level--had already been confirmed; Black, 1986/1988).

The other part of the second axiom is that local coherence also follows an optimal pattern. That is, considering adjacent discourse units, the sequential pattern of coherence relations consists of variations between coherence and incoherence in the simplest possible pattern. Specifically, I proposed that the optimal pattern of local coherence relations would consist of an alternation between coherence and incoherence and tested this hypothesis in the present research.

III. Coherence is optimized at several different, hierarchical levels of conversation.

The coherence literature contains a bewildering array of units, from the statement to the entire conversation. The choice of which level to study coherence at has not been a systematic one. I propose that conversations are hierarchically organized, so that coherence is optimized (globally and locally) at several different levels, namely, the statement, topic, macrotopic, and entire conversation.

This is a strong statement of the hypothesis, requiring the optimization of global and local coherence at each of these levels. This dissertation tested the local maximizing hypothesis at statement and topical levels.

Methods

Testing the axioms chosen from the above theory required methods not available in the current literature, specifically, the measurement of coherence/incoherence and the segmentation of conversation into suitable units. Experts have usually made these decisions by fiat. I developed an explicit method for segmenting conversations into statements, topics, and macrotopics and demonstrated high reliability with an independent judge. I also extended my previous method for training naive raters to scale the degree of coherence between statements (Black, 1986/1988) to the scaling of degree of coherence between topics and macrotopics as well. The scaling method, too, was explicit and highly reliable. Both of these methods--for segmenting conversations and especially for scaling the degree of coherence--may be useful to other researchers, regardless of theoretical orientation. The new methods are time-consuming and exacting, but they meet essential psychometric standards.

The final methodological development was a statistic for identifying the predicted alternating pattern in short

sequences of local coherence relations. None of the existing time-series analytic techniques was suitable for analysis of the small- N series in my data. The analytic procedure compares the obtained sum of the interior angles facing toward the mean of data series with the sum of the interior angles facing the mean for all other permutations of these data points. The data suggest that the statistic is a valid measure of optimization, although it seems susceptible to a conservative bias when extreme outliers are present.

Empirical Findings

The data were both encouraging and disappointing. Conversations or parts of conversation were unusable for technical reasons (inaudibility) or because they produced too few units (e.g., too few statements within some topics and too few macrotopics in all conversations). So the data base to which I was committed did not permit me to test the chosen hypotheses extensively.

After segmentation, coherence scaling, and application of the optimization statistic, there was moderate support for the optimizing hypothesis. Three quarters of the topics contained statements with a sum of interior angles that was smaller than the sum of half of alternative permutations. So, at the level of statements within topics, the results tended toward optimization. At a macrotopical level, the

hypothesis was not supported. Thus, it is accurate to claim that sequential coherence relations tend toward optimization, but it is not accurate to assert that sequential coherence relations have an optimal distribution. A conservative conclusion from the present data would be that the hypothesis is not true. Several possible explanations, both statistical and methodological, were discussed and solutions proposed.

In summary, the contributions of the present dissertation were more theoretical and methodological than empirical. The theory and results do contribute to coherence literature as a whole, although not dramatically. The segmenting and coherence scaling procedures developed in this dissertation can be easily adapted by other researchers. The procedures may start a trend toward establishing explicitly what constitutes coherence and at what levels coherence occurs. The possibility that sequential coherence may tend toward optimization does contribute to our empirical knowledge about coherence. Indeed, because all theorists have assumed that coherence relations are not random in conversations, the results of the present dissertation do partially confirm one of the basic assumptions of all coherence theories.

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APPENDIX A:
SAMPLE CONVERSATIONS

The following appendex contains two versions of the conversations used for analysis. The first version of the conversations is a transcription which idendifies the speaker by number. The vocal quality of the speakers is not characterized in either of the transcripts. However, in the first transcript periods denote terminal phrasing or intonation or the end of a spaking turn, and question marks denote rising intonation.

A1: Complete Transcripts

Conversation 1 (2 females).

1: Hi.
2: How're you doing?
1: Good how are you?
2: How's your day going?
1: Pretty good.
2: Good.
1: How's yours?
2: Oohh okay.
1: Ok. Just okay?
2: Well yeah okay its kind of sick but you know.
1: Oh.
2: That's okay colds you get over 'em.
1: Yeah (laugh) It's going around (laugh).
2: Yeah it is. Where do you live?
1: Um on 22nd in an apartment.
2: Oh do you?
1: Yeah.
2: Well I live on 21st and and AGD and [undecipherable] street.
1: In a sorority?
2: Yeah.
1: How do you like it?
2: It's it's fun.
1: Yeah.
2: I enjoy it. I mean it's different lifestyle than living you know on your own but
1: Yeah.
2: It's kind of nice.
1: Yeah.
2: What courses are you taking?
1: Um I'm taking speech 220. Um let's see psych 209 and a classics 430.
2: So you're in 432?
1: Yeah. Do you have that?

2: Yeah. I do.
1: In the mornings?
2: No. I have it in the evening actually.
1: Oh. I think the professor in the evening must be better.
2: Why?
1: Cause I studied with this guy I know who has it at night and um but for the midterm and his notes were a lot better than mine (laugh) like the stories were more complete and stuff.
2: Oh really.
1: Yeah.
2: It also helps cause when you guys take the test we're able to look at the test.
1: I know (laugh).
2: It's kind of unfair but it's a choice you let they let you take the test out.
1: Was it the same?
2: Um there were some questions that were you know really similar.
1: Uh huh.
2: They were exactly the same.
1: Oh wow.
2: Plus all the past tests some of the questions were exactly the same.
1: Yeah. I know I used old tests too.
2: So I mean if I hadn't read any of the old tests I probably (laugh) would have done really bad.
1: Yeah. How did you do?
2: Um I got like a 83.
1: Cool.
2: So. Yeah. It's okay if you're point yea but
1: Yeah.
2: I need to study more next time (laugh).
1: I know. I know kind of fun cause this guy that I studied with he made all the stories seem really funny so it was easy to remember everything that we studied together.
2: That's yeah it makes it a lot easier.
1: Yeah. So what other classes are you taking?
2: Oh I've got speech 220 also.
1: Um huh.
2: And uh yea (both laugh). I like speech classes butt um I don't know they just get so monotonous having to always write out and outline and then
1: Yeah.
2: And then give your speech and
1: How how many speeches have you done so far?
2: Um I've done two my third is next week.
1: Yeah.
2: How bout you?
1: I just I did my third one yesterday and so I have one more

to go.
2: That must be a big relief.
1: Yeah. I'm really glad. I'll be done the 29th
2: Wow.
1: Of this month so I'm glad. I go like the first day of the next speech so.
2: Oh wow. Do you get out pretty early for finals?
1: Um.
2: Finals too?
1: No because my classics one is like the 14th.
2: Oh that's right.
1: So. Wh what about you?
2: Um well classics classics of course is probably my last one.
1: Yeah.
2: Other than that I'm like done the first day of finals.
1: Oh.
2: So.
1: Lucky. Where where you from?
2: I'm from Gig Harbor down by Tacoma.
1: Uh huh.
2: How bout you?
1: Um I'm from Southern California.
2: Oh are you?
1: Yeah.
2: I was born down there.
1: Really.
2: Down by Palm Springs area.
1: Uh huh.
2: How bout you?
1: Um I'm from like Anahiem Haliveria Anahiem Disneyland area (laugh).
2: Disneyland.
1: Disneyland then everybody knows where I'm talking about (both laugh).
2: Yeah that's pretty easy to describe.
1: Yeah.
2: Disneyland oh yeah okay.
1: Yeah. Um.
2: Been there thousands of times.
1: Laugh.
2: Grandma.
1: Grandma (laugh)
2: Yeah Grandma take me to Disneyland you know (laugh).
1: Yup.
2: So.
1: Um what year are you?
2: I'm a sophomore.
1: Me too.
2: Are you?

1: Yeah.
2: Cool. Who you living with in your in you apartment? Some friends?
1: Um some friends um I'm on the gymnastics team here at the U and um one of my roommates is on the gymnastics team and then another was our manager and then the other one's just a girl that I met last year and so.
2: How long is the gymnastic's season? Is it all year round or?
1: (laugh) We train all year.
2: Do you?
1: But the seasons from January till April.
2: January till wow.
1: Yeah.
2: Gees [I think this is the first word] that'd be I that's pretty exhausting isn't it? I mean to like
1: Takes a lot of time (laugh).
2: Yeah. I mean I've heard about like the football players and all the practice they have to put in but I mean
1: Yeah.
2: But I never really heard about gymnastics.
1: Yeah.
2: What kind of workouts do you do?
1: Um well right now its our off season and we have 3 hour work outs everyday.
2: Um huh.
1: So it's like we do two and half hours in the gym and then we go lift for like a half an hour but it's not bad. Usually during season it's like four four and half hour workouts.
2: Do you do a variety of stuff like just
1: Just
2: swimming or jogging or
1: Uh uh. It's like all in the gym training like
2: [talks over "training" but can't make it out]
1: Yeah floor bars, vault and beam.
2: I see what what's your favorite?
1: Um probably beam.
2: Oh the beam?
1: Yeah.
2: Yeah. I used to want to do gymnastics when I was little but nope I went the swimming route and then
1: Really?
2: Got out of that when I was about a sophomore in high school.
1: Yeah.
2: I got tired of it so many years.
1: Yeah. I know. A lot of time (laugh).
2: Yeah. Are you getting are you still excited with the sport?
1: Um it's getting kind of old. It's kind of a sport that you

outgrow.
2: Uh huh.
1: So I'm kind of ready to move on to other things but I'll probably stick with it for one more year.
2: What's gonna be your field of study?
1: Um psychology.
2: Psychology?
1: Yeah.
2: Cool what area do you know?
1: Um I'd like to stay um like with sports and do sports psychology.
2: Um.
1: So. What about you? What's your major?
2: Um it's probably well I've still got to apply but hopefully speech communication or English.
1: Um huh. Do you know what you want to do with that?
2: No (laugh).
1: Yeah.
2: I mean I would love to do some things like go in the lines of journalism.
1: Um huh.
2: And things like that but I'm if anything I can always fall back on being a teacher hey.
1: Yeah.
2: So so happy to go soon? Or are you gonna go home?
1: No I'm only going to go home for a week cause I'm gonna I'm staying up here in the summer.
2: Are you?
1: Yeah so. Do you have plans for summer?
2: Um no I'm just gonna stay up here in Seattle in work instead of going down to Gig Harbor and
1: Yeah.
2: Hang out and live in a fraternity.
1: Really. Which one?
2: [can't hear first word] I'll probably stay with Delta Chi.
1: Oh wow. Know some people in there. I'm gonna be living in um okay let me see if I can remember. Wait. Psi Kappa Psi. Yeah. Psi Psis.
2: Okay. Yeah.
1: It's like I can't remember.
2: There's some girls in my house that are gonna be living in there too you'll probably get to know.
1: Oh cool.
2: Yeah it's I guess they're a lot of fun just because you go on road trips.
1: Yeah.
2: And do all that kind of thing.
1: I stayed four months last summer in Psi U.
2: [question can't hear - two words]
1: Yeah and it was it was fun but um I knew a lot of guys in

there beforehand so.
2: Cool. You have any advice for first time fraternity stayer?
1: Um just don't be disgusted by the dirt.
2: (laugh) Okay.
1: Just remember how little you're paying and and you know that it's a lot of fun and and eventually you'll live somewhere clean again (both laugh).
2: People are always saying well you know bring bring your own mattress.
1: Uh huh.
2: And bring this and that and I'm like ohh.
1: Yeah.
2: Great.
1: It's so cheap though.
2: Yeah.
1: You know it's like okay can't find any cheaper um $250 for the whole summer.
2: I know. I mean I should just be taking classes in the summer and you know (laugh).
1: Yeah.
2: It's so cheap.
1: Yeah.
2: Classes I don't know living in a sorority.
1: Will you live in your sorority next year?
2: Yeah. I will.
1: Yeah.
2: [something] and do the rush thing again.
1: Yeah. Do you know um oh my gosh okay Vicky um ohh I can't remember her last name.
2: Manderville?
1: Yeah.
2: Yeah.
1: Yeah.
2: How do you know her?
1: She um walked on to the gymnastics team for a while at the beginning of the year.
2: Oh really?
1: Yeah.
2: Cool.
1: So I kind of got to know her (both laugh).
2: A girl a friend of mine is approaching right now he's probably wondering what the heck I'm doing on the phone.
1: I know (laugh). Are you like standing outside by the
2: Yeah standing outside just sitting there going hanging out talking to strangers. Basically yeah we're hanging
1: Yeah.
2: More than you know. So.
1: Kind of cool cause it's like almost passing time (laugh).
2: Yeah. Great. Well at least I get to go in time for lunch

(laugh).
1: Yeah do you are you done? For the day?
2: Yeah. For today well except for classes tonight.
1: Yeah.
2: But pretty much for the day.
1: Yeah.
2: So. I don't know I'm kind of happy about it.
1: That's cool.
2: So where are you gonna work this summer? Do you know?
1: Um I don't know. I get my um scholarship throughout through the summer if as long as I'm taking six credits or more. So I know I have that but I wanta work and I just have been too lazy (laugh) to go out getting a job.
2: Yeah.
1: Do you know where you're working?
2: Well I I just recently went and picked up some applications and like to the bookstore and and to another little store down on the Ave. called La Tienda.
1: Uh huh. Oh that's a cool store.
2: Yeah I'd love to work there anyways well I guess it's sounds like time we can get off the phone.
1: Ok (laughs).
2: See you.
1: Bye.

Conversation 2 (2 males).

1: What's your last name?
2: Ruiz.
1: Ruiz?
2: Yeah.
1: Hi. I'm Doug Macono.
2: Macono. Yeah. Ss
1: So let's see. You go here at the U Dub.
2: Uh I think so (both laugh).
1: And what year are you?
2: Um I'm in my third year um junior with uh undecided major right now so.
1: Okay is there any interest that you're
2: Um who knows whatever pops up in whatever department excepts me I'll I'll take it (laugh).
1: Oh.
2: What about yourself?
1: Yeah I'm a senior this year but I'll be graduating next spring.
2: Uh huh.
1: And I'm in the electrical engineering department.
2: Oh really?
1: Yeah.
2: How did you find out about this?

1: About?
2: This experiment.
1: Oh um Al came into our speech class. I'm in speech 220
2: Oh.
1: Introduction to public speaking.
2: Oh.
1: Um you wanted to volunteer yourself thought it'd be something I'd like to do.
2: Oh. So what was a EE major doing taking speech then?
1: Well
2: (laugh)
1: I figure in engineering they say that fifty percent of your engineering is oral communication or written communication.
2: Right.
1: And I thought wow I need a lot of help on my oral communication so
2: Uh huh.
1: I thought it be something you know I should take and I challenged myself this quarter uh to make public speeches it's not it's not something I like to do.
2: Yeah.
1: But.
2: Who [some utterance, not a word] which who are you teacher?
1: Uh Ruth Huwe.
2: Oh do you have that um the eight thirty?
1: Yeah.
2: Yeah. I was I was in the class for one day.
1: Oh.
2: And then I switched sections.
1: Oh okay. So you're in which section?
2: Oh I'm section A with Lisa.
1: Oh okay.
2: Yeah but see Ruth was my um my sister's roommate so
1: Oh.
2: That's why
1: I see.
2: I didn't stick around for the extra day.
1: Oh I see.
2: So.
1: Why are you taking public speaking?
2: Um humanities distribution.
1: Oh yeah. Is it something you wanna take?
2: Yeah. It's something I wanna take um cause it's it's I I I feel really comfortable talking in front of people and it doesn't bother me and it I like it a lot. It might be my major who knows.
1: Oh that's good.
2: Yeah.
1: What kind of things are you talking about? Is it persuasive speeches?

2: Yeah. I've we've already done my two persuasives and one informal and my informal was on baseball cards and so
1: Oh.
2: It's it's a hobby of mine so and then my two persuasives were uh drinking and driving and automobile insurance.
1: Oh.
2: So.
1: So you only have one left?
2: Well I have one more left but don't know what to do it on.
1: Is it a value speech?
2: It doesn't matter we're just any persuasive so.
1: Oh that's good. Yeah our last one has to do with value.
2: Oh. Which which topics have you done?
1: Let's see I did the first one informative on negotiation.
2: Uh huh.
1: And two persuasive, one was on the last one was on the biasness of the SAT.
2: Uh huh.
1: And before that was actually I don't even remember (both laugh softly) um oh it was cheating in school about cheating in school.
2: And why and why what how can that how is that persuasive?
1: Well how that a lot of teachers and they don't take measures to uh to stop cheating or students you know they don't do anything about it.
2: Oh that's cool. What are you gonna do for your last one? Do you know?
1: Um I think something to do with affect [can't hear this last word]
2: Uh huh.
1: And how each one of us has a responsibility um I'm gonna give an example of if you're in sports such as Dale Ellis
2: Right.
1: And he was doing a lot of you know just say no to drugs and stuff but he got um in drunk driving accident and
2: Right.
1: And I thought well that's not very good responsibility on his part because it's showing kids you know you know just how he's being a hypocrit and you know the values just aren't you know
2: Yeah.
1: The values aren't getting expressed.
2: That sounds pretty cool. And you use the the the stay in school one too cause of the ba um like Isiah Thomas and Michael Jordon.
1: Yeah.
2: Finished finished their de finished their years too.
1: Yeah.
2: Sounds pretty cool.
1: Do you live on cam or near the campus?

2: No well my first two years I lived in a in the dorms.
1: Uh huh.
2: And then I got into a car accident this summer so I bought a new and so I'm living at home so.
1: Oh where's that?
2: Renton.
1: Oh not not far?
2: Yeah it's about a half hour or forty minute commute every morning.
1: Oh. Oh well. Al says five minutes is up.
2: Oh that's good (laugh).
1: In that case.
2: Ok.
1: Ok.
2: Bye.
1: Bye.

Conversation 3 (two males).

1: Not much not much.
2: Just hanging out or what?
1: I'm just hanging out.
2: Right.
1: Right.
2: Really?
1: Right.
2: Wow!
1: So you're a student at the University of Washington?
2: Yeah, I'm a junior a junior (uhhuh) and yourself?
1: I'm a 5th year senior and I'm [something] I'm heading I'm six years wow. I got a couple of more quarters at go.
2: Wow. What happened were there a lot of drops in your path?
1: Um actually what happened was I I went to University of Washington my freshman year and then I transferred to Santa Clara for 2 years.
2: Oh.
1: And then I I transferred back yeah. So I lost credits going down there and I lost more coming back too.
2: Yeah that's that's rough.
1: Plus I declared kind of late plus I just decided to go into education hmmm. I had to pick up an extra I I'm also a sp ahh I'm a speech major and an have an English minor oh that I just decided to pick up.
2: Gees.
1: How about you what's your major?
2: Well I'm planning speech in ahh fall uhuh.
1: So ahh you haven't got into the school though.
2: I I'm pretty sure I'll get in yeah. So that's not really concern right now it just a matter of getting all the 16 odd

required credits out of the way right you know do that right.
1: Uhm lets see what ahh what did you do last last night? I ahh do you go out Thursday nights or what?
2: I sometimes last night I watched the Blazer game and then I pouted the rest of the night cuz oh you're they lost.
1: Yeah I'm from Vancouver Washington which is right outside of Portland uhhuh. How bout you where you from?
2: I'm from Spokane.
1: Really.
2: Yeah just east of the mountains you know.
1: What what high school?
2: Faris high school.
1: Oh really uhhuh.
2: Are you are you in a house or anything?
1: Yeah I'm ah sigma chi
2: A sigma chi yeah.
1: Yeah.
2: I was a tek.
1: Really?
2: Yeah.
1: My dad was a tek.
2: Oh really.
1: Mhmm at the at washington at.
2: Oh really yeah. So I'm rush chairman right now and ah keeping pretty darn busy oh yeah.
1: That's alot of work.
2: Yeah it really is that's alot of work.
1: I wouldn't wanna I would never wanted to be rush chairman.

2: Yeah?
1: Well a little bit.
2: Yeah.
1: I don't know. Were you rush chairman last summer or no this is your first year.
2: We started February uhhuh February 1st going to September 1st uhhuh so.
1: Wow. That's a lot of work.
2: Oh it can definitely.
1: Oh well.
2: Yeah.
1: Do they do the compensate you like do they?
2: Yeah.
1: Like you're?
2: A free house bill.
1: That's good.
2: That kinda thing.
1: Yeah. That that's what we do too.
2: I'm mean if there there wasn't money involved I mean I wouldn't be doing it right. It I just remember in the summer time like it at functions and stuff just having the hardest

time just talking to one pledge let alone kinda escorting them around you know.
1: Oh yeah.
2: I mean most of the time I was ready for it but there was just always those days when you would rather not have to talk to anybody that.
1: Oh yeah.
2: You don't know burn out.
1: Yeah.
2: You just kinda you gotta deal with it you know.
1: Right.
2: Like oh well. Right. So ahh what what do you do on your free time free time?
1: Well I work at Cacheena Cacheenas.
2: Oh you do yeah. Do you wait?
1: Uhm no I don't wait yet. I'm I'm still busing yeah but ahh that's in the future. How about you?
2: I go into the fraternities once and awhile
1: Oh do you yeah.
2: The last the last night I went to the Keg and.
1: Oh really.
2: And listened to tunes. They played ahh I like the atmosphere there. They play like you know like Steele Dan and like like some of the music I like to listen to in bars. 1: Oh that's cool.
2: Yeah I don't really really like going to the Lock Stock and listen to the Beatnicks you know.
1: Right yeah. I kinda like the Blue Moon sometimes myself.
2: Yeah? Ever been there on Sundays?
1: Yeah I go on Sunday's alot yeah. I I'm a big dead head.
2: Oh really.
1: Yeah in fact today I'm calling to order tickets to a show in Denver.
2: Really. When's that?
1: It's a June 28th.
2: Wow.
1: And like this quarter my girlfriend and I drove down to las Vegas and saw 2 shows.
2: That's great.
1: But when to went to school in Santa Clara I I I started I got really into them because they played alot of shows right down in that area.
2: Yeah.
1: So I got to see alot of shows and now I got hooked and now I'm always broke because I go to shows.
2: Right.
1: Have you been to a show?
2: No. I've seen, the thing is I ha I had tickets to Eugene last summer uhhuh and something happened in the family. And I oh that's so like the day before so I was really bummed out.

1: Oh thats too bad.
2: I was at street fair awhile ago and this guy who ahh was selling his own tie dye was ah ahh telling me that their ahh coming to Seattle in October for three shows.
1: I heard that rumour too it was halloween weekend yeah. 2: And ahh I don't know I haven't heard anything since then. And he told me for sure their coming to Eugene in August.
1: Yeah I heard that that there's a good chance of that too yeah that'll be cool [10 million] fans. Yeah you're gonn you're gonna really start liking them alot after you see them live yeah so it's really different.
2: So I've heard yeah.
1: Aft after my first live show I that was when I said I wanna have to go and see them yeah I had to of back yeah. But so do you work or uhm?
2: No rush chairman's pretty much the job. Yeah that pretty much takes up alot of my time uhhuh all my time basically.
1: Yeah I started out at Cacheenas working working the door actually. I I was checking ID's.
2: Oh yeah.
1: And it was terrible but I knew that was the only way that I could get on yeah and I did that.
2: They don't usually try Cacheenas to get in?
1: Its kinda of a more I mean you've been there its you know. Drinks are more expensive.
2: Yeah.
1: More of a yuppie crowd yeah more of a yuppie crowd so they don't usually try. But I've had some I used to have these kids come in sometimes they would dress up. They were too young to try to play off for being older.
2: Right.
1: Right cause half the people in there were like in business suits of just coming home from work right or something. So and ah I had a few fake I.D.s but I really I I mean I I most I went most nights without having to turn people down.
2: Cool.
1: Yeah. Which surprised me yeah because I just because like when you're in in a house and stuff you know of so many people that have fake ID n everything.
2: Oh yeah.
1: That you just I guess you kinda just lose sight of how many people actually do have it.
2: Yeah I know.
1: I had a fake ID you know.
2: Yeah?
1: I did at right. I took my brothers birth certificate down.
2: That's exactly what I did.
1: And got my picture taken you know so they had it with his

name and I had his old an old bank card of his too. So they couldn't
2: Right.
1: Mark it down.
2: Yeah that's exactly what I did too.
1: Oh?
2: Right.
1: I at first. I okay. Uhmm is that it? Yeah I think he's giving us the okay to stop.
2: Okay.
1: Okay, then good talking to you.
2: Alright.
1: Bye bye.
2: Take care.

A 2: Segmented Conversations

The following sections contains the final versions of the conversations segemented into propositions, topics, and macrotopics. New topics and macrotopics are identified at the beginning by the abreviated parenthetical comments. Each prcpostion begins on a new line and ends with a slash.

Conversation 1.

{macro} hi how're you doing good/
how are you/
(NT) how's your day going/
pretty good good/
how's yours/
ohh okay ok/
just okay/
(NT) well yeah okay/
its kind of sick but you know oh/
that's okay colds you get over 'em yeah (laugh)/
it's going around (laugh)/
yeah it is/

{macro) (NT) where do you live/
on 22nd in an apartment/
oh do you yeah/
well I live on 21 st and and AGD and street/
in a sorority yeah/
(NT) how do you like it/
it's it's fun yeah/
I enjoy it/

I mean it's different lifestyle than living you know on your own but yeah/
it's kind of nice yeah/
(NT) what courses are you taking/
um I'm taking speech 220 um let's see psych 209 and a classics 430/
(NT) so you're in 430 too/
yeah do you have that/
yeah I do/
in the mornings/
no I have it in the evening actually oh/
(NT) I think the professor in the evening must be better/
why/
cause I studied with this guy I know who has it at night hmmmm and um but for the midterm and his notes were a lot better than mine (laugh)/
like the stories were more complete and stuff oh really yeah/
(NT) it also helps cause when you guys take the test we're able to look at the test I know (laugh)/
it's kind of unfair but it's a choice you let they let you take the test out/
(NT) was it the same/
um there were some questions that were you know really similar uh huh/
they weren't exactly the same oh wow/
plus off of the past tests some of the questions were exactly the same yeah/
I know I used old tests too/
so I mean if I hadn't read any of the old tests I probably (laugh) would have done really bad yeah/
(NT) how did you do/
om I got like a 83 cool/
so yeah it's okay if you're point yea but yeah/
I need to study more next time (laugh)/
(NT) I know I know kind of fun cause this guy that I studied with he made all the stories seem really funny/
so it was easy to remember everything that we studied together/
that's yeah it makes it a lot easier yeah/
(NT) so what other classes are you taking oh I've got speech 220 also um huh/
(NT) and uh yea (both laugh) I like speech classes/
but um I don't know they just get so monotonous having to always write out and outline and then yeah/
and then give your speech and how/
(NT) how many speeches have you done so far/
um I've done two my third is next week yeah/
how bout you/
I just I did my third one yesterday and so I have one more to go/

(NT) that must be a big relief yeah/
I'm really glad I'll be done the the 29th wow of this month/
so I'm glad I go like the first day of the next speech so oh wow/
(NT) do you get out pretty early for finals um finals too/
no because my classics one is like the 14th oh geez right yeah so/
wh what about you/
um well classics classics of course is probably my last one yeah/
other than that I'm like done the first day of finals oh so lucky/

{macro} (NT) where where you from/
I'm from Gig Harbor down by Tacoma uh huh/
how bout you/
um I'm from Southern California oh are you yeah/
I was born down there really down by Palm Springs area uh huh/
how bout you um/
I'm from like Anahiem Haliveria Anahiem Disneyland area (laugh) Disneyland/
(NT) Disneyland then everybody knows where I'm talking about (both laugh)/
yeah that's pretty easy to describe yeah/
Disneyland oh yeah okay yeah um been there thousands of times laugh/
grandma grandma (laugh) yeah Grandma take me to Disneyland you know (laugh) yup/

{macro} (NT) so um what year are you/
I'm a sophomore/
me too are you yeah cool/
(NT) who you living with in your in you apartment some friends/
um some friends um I'm on the gymnastics team here at the U/
and um one of my roommates is on the gymnastics team and then another was our manager/
and then the other one's just a girl that I met last year and so/

{macro} (NT) how long is the gymnastic's season is it all year round or (laugh)/
we train all year do you but the seasons from January till April/
Januarary till April wow yeah gees that'd be I that's pretty exhausting isn't it/
I mean to like takes a lot of time (laugh) yeah/
I mean I've heard about like the football players and all the practice they have to put in/
but I mean yeah but I never really heard about gymnastics

yeah/
(NT) what kind of workouts do you do/
um well right now its our off season/
and we have 3 hour work outs everyday um huh so it's like we do two and half hours in the gym and then we go lift for like a half an hour/
but it's not bad/
usually during season it's like four four and half hour workouts/
do you do a variety of stuff like just just swimming or jogging or/
uh uh it's like all in the gym training like yeah floor bars, vault and beam I see/
(NT) what what's your favorite/
um probably beam oh the beam yeah yeah/
(NT) I used to want to do gymnastics when I was little but nope I went the swimming route/
and then really got out of that when I was about a sophomore in high school yeah/
I got tired of it so many years yeah/
I know a lot of time (laugh) yeah/
(NT) are you getting are you still excited with the sport/
um it's getting kind of old/
it's kind of a sport that you outgrow uh huh so I'm kind of ready to move on to other things/
but I'll probably stick with it for one more year/

{macro} (NT) what's gonna be your field of study/
um psychology psychology yeah cool what area do you know/
um I'd like to stay um like with sports and do sports psychology um so/
(NT) what about you what's your major/
um it's probably well I've still got to apply but hopefully speech communication or English um huh/
do you know what you want to do with that no (laugh)/
yeah I mean I would love to do some things like go in the lines of journalism um huh and things like that/
but I'm if anything I can always fall back on being a teacher hey yeah/

{macro} (NT) so happy to go soon or are you gonna go home/
no I'm only going to go home for a week cause I'm gonna I'm staying up here in the summer/
are you yeah that's not so/
(NT) do you have plans for summer/
um no I'm just gonna stay up here in Seattle and work instead of going down to Gig Harbor and yeah/
(NT) hang out and live in a fraternity really will be an experience/
which one/

I'll probably stay with Delta Chi oh wow/
I know some people in there/
I'm gonna be living in um okay let me see if I can remember wait Psi Kappa Psi/
yeah Psi Psis okay yeah it's like I can't remember/
(NT) there's some girls in my house that are gonna be living in there too you'll probably get to know oh cool/
(NT) yeah it's I guess they're a lot of fun just because you go on road trips yeah and do all that kind of thing/
(NT) I stayed four months last summer in Psi U did you yeah and it was it was fun/
but um I knew a lot of guys in there beforehand so cool/
you have any advice for first time fraternity stayer/
um just don't be disgusted by the dirt (laugh) okay/
just remember how little you're paying and and you know that it's a lot of fun/
and and eventually you'll live somewhere clean again (both laugh)/
people are always saying well you know bring bring your own mattress uh huh and bring this and that and I'm like ohh yeah great/
(NT) it's so cheap though yeah/
you know it's like okay can't find any cheaper um $250 for the whole summer/
I know I mean I should just be taking classes in the summer and you know (laugh) yeah/
it's so cheap yeah/
classes I don't know living in a sorority/
(NT) will you live in your sorority next year/
yeah I will yeah/
and do the rush thing again yeah/
(NT) do you know um oh my gosh okay Vicky um ohh I can't remember her last name/
Manderville yeah yeah yeah/
how do you know her/
she um walked on to the gymnastics team for a while at the beginning of the year oh really yeah cool/
so I kind of got to know her (both laugh)/

{macro} (NT) a girl a friend of mine is approaching right now/
he's probably wondering what the heck I'm doing on the phone I know (laugh)/
are you like standing outside by the yeah/
standing outside just sitting there going hanging out talking to strangers/
basically yeah we're hanging yeah more than you know so kind of cool/
cause it's like almost passing time (laugh) yeah/
great well at least I get to go in time for lunch (laugh) yeah/

(NT) do you are you done for the day yeah/
for today well except for classes tonight yeah/
but pretty much for the day yeah so I don't know I'm kind of happy about it that's cool/

{macro} (NT) so where are you gonna work this summer do you know/
um I don't know/
I get my um scholarship throughout through the summer/
if as long as I'm taking six credits or more ohh/
so I know I have that but I wanta work/
and I just have been too lazy (laugh) to go out getting a job yeah/
(NT) do you know where you're working/
well I I just recently went and picked up some applications and like to the bookstore and and to another little store down on the Ave called La Tienda uh huh/
oh that's a cool store yeah/
I'd love to work there/

{macro} (NT) anyways well I guess it's sounds like time we can get off the phone/
ok (laughs)/
see you/
bye/

Conversation 2.

{macro} (NT) what's your last name/
Ruiz Ruiz yeah/
hi I'm doug Macono macono yeah/

{macro} (NT) Ss so let's see you go here at the u dub/
uh I think so (both laugh)/
and what year are you/
um I'm in my third year um junior with uh undecided major right now so okay/
is there any interest that you're/
um who knows whatever pops up in whatever department accepts me I'll I'll take it (laugh) oh/
(NT)what about yourself/
yeah I'm a senior this year but i'll be graduating next spring uh huh/
and I'm in the electrical engineering department oh really yeah/

{macro} (NT) how did you find out about this about this experiment/
oh um Al came into our speech class/
I'm in speech 220 oh introduction to public speaking oh/

um he wanted volunteers so I thought it'd be something I'd like to do oh/

{macro} (NT) So what was a EE major doing taking speech then/
well (laugh) I figure in engineering they say that fifty percent of your engineering is oral communication or written communication right/
and I thought wow I need a lot of help on my oral communication so uh huh I thought it be something you know I should take/
and I challenged myself this quarter uh to make public speeches/ it's not it's not something I like to do yeah/
(NT) but who [some utterance not a word] which who are you teacher/
uh Ruth Huwe/
oh do you have that um the eight thirty/
yeah yeah I was I was in the class for one day oh and then I switched sections oh okay/
so you're in which section/
oh I'm section a with Lisa oh okay/
yeah but see Ruth was my um my sister's roommate so oh that's why I see I didn't stick around for the extra day oh I see so/

(NT) why are you taking public speaking/
um humanities distribution oh [CANT'T HEAR]/
is it something you wanna take/
yeah it's something I wanna take um cause it's it's I I I feel really comfortable talking in front of people/
and it doesn't bother me and it I like it a lot/
it might be my major who knows oh that's good yeah/

{macro} (NT) what kind of things are you talking about is it persuasive speeches/
yeah I've we've already done my two persuasives and one informal and my informal was on baseball cards and so/
oh it's it's a hobby of mine so/
and then my two persuasives were uh drinking and driving and automobile insurance oh/
so so you only have one left/
well I have one more left but don't know what to do it on/
is it a value speech/
it doesn't matter we're just any persuasive so oh that's good/
yeah our last one has to do with value oh/

{macro} (NT) which which topics have you done/
let's see I did the first one informative on negotiation uh huh and two persuasive one was on the last one was on the biasness of the S.A.T uh huh and before that was actually I don't even remember (both laugh)/
um oh it was cheating in school about cheating in school/

and why and why what how can that how is that persuasive/
well how that a lot of teachers and they don't take measures to uh to stop cheating or students you know they don't do anything about it oh that's cool/
what are you gonna do for your last one do you know/
um I think something to do with ethics uh huh and how each one of us has a responsibility um I'm gonna give an example of if you're in sports such as dale Ellis right and he was doing a lot of you know just say no to drugs and stuff/
but he got um in drunk driving accident and right/
and I thought well that's not very good responsibility on his part/
because it's showing kids you know you know just how he's being a hypocrit and you know the values just aren't you know yeah the values aren't getting expressed that sounds pretty cool/
and you use the the the stay in school one too cause of the ba um like Isiah Thomas and Michael Jordon yeah finished finished their de finished their years too yeah sounds pretty cool/

{macro} (NT) do you live on cam or near the campus/
no well my first two years I lived in a in the dorms uh huh/
and then I got into a car accident this summer so I bought a new and so I'm living at home so/
oh where's that/
Renton oh not not far/
yeah it's about a half hour or forty minute commute every morning oh/

{macro} (NT) oh well Al says five minutes is up oh that's good (laugh) in that case ok ok bye/
bye/

Conversation 3.

{macro} (NT) not much not much just hanging out or what/
I'm just hanging out right right really right wow/

{macro} (NT) so you're a student at the University of Washington yeah/
I'm a junior a junior uhhuh/
and yourself I'm a 5th year senior and I'm [something] I'm heading I'm six years wow/
I got a couple of more quarters at go wow/
what happened were there a lot of drops in your path/
um actually what happened was I I went to University of Washington my freshman year and then I transferred to Santa Clara for 2 years oh and then I I transferred back yeah/
so I lost credits going down there and I lost more coming back too yeah that's that's rough/

plus I declared kind of late plus I just decided to go into education hmmm/
I had to pick up an extra I I'm also a sp ahh I'm a speech major and an have an English minor oh that I just decided to pick up gees/
(NT) how about you what's your major/
well I'm planning speech in ahh fall uhuh/
so ahh you haven't got into the school though/
I I'm pretty sure I'll get in yeah/
so that's not really concern right now it just a matter of getting all the 16 odd required credits out of the way right you know do that right/

{macro} (NT) uhm lets see what ahh what did you do last last night/
I ahh do you go out thursday nights or what/
I sometimes last night I watched the Blazer game and then I pouted the rest of the night cuz oh you're they lost/

{macro} (NT) yeah I'm from Vancouver Washington which is right outside of Portland uhhuh/
how bout you where're you from/
I'm from Spokare really yeah just east of the mountains you know/
what what high school Faris high school oh really uhhuh/

{macro} (NT) are you are you in a house or any thing/
yeah I'm ah sigma chi a sigma chi yeah/
yeah I was a tek really yeah/
my dad was a tek oh really mhmm at the at washington at oh really yeah/
so I'm rush chairman right now and ah keeping pretty darn busy oh yeah/
that's alot of work yeah it really is that's alot of work/
I wouldn't wanna I would never wanted to be rush chairman/
yeah well a little bit yeah I don't know/
were you rush chairman last summer or no this is your first year/
we started February uhhuh February 1st going to September 1st uhhuh so wow/
that's a lot of work oh it can definitely oh well yeah/
do they do the compensate you like do they yeah like you're a free house bull that's good that kinda thing yeah/
that that's what we do too/
(?; I'm mean if there there wasn't money involved I mean I wouldn't be doing it right/

{macro} (NT) (?) it I just remember in the summer time like it at functions and stuff just having the hardest time just talking to one pledge let alone kinda escorting them around

you know oh yeah [that's right]/
I mean most of the time I was ready for it but there was just always those days when you would rather not have to talk to anybody that oh yeah/
you don't know burn out yeah you just kinda you gotta deal with it you know right like oh well right/

{macro} (NT) so ahh what what do you do on your free time free time/
well I work at Casheena Casheena's oh you do yeah/
do you wait/
uhm no I don't wait yet I'm I'm still busing yeah but ahh that's in the future/
how about you/
I go into the fraternitites once and awhile oh do you yeah/
the last the last night I went to the Keg and oh really and [listen to tunes/
they played ahh I like the atmosphere there they play like you know like Steele Dan and like like some of the music I like to listen to in bars oh that's cool/
yeah I don't really really like going to the Lock-Stock and listen to beatnicks you know right yeah/
I kinda like the Blue Moon sometimes myself yeah/
ever been there on Sundays/
yeah I go on Sunday's alot yeah/
(NT) I I'm a big dead head oh really yeah in fact today I'm calling to order tickets to a show in Denver really/
when's that/
it's a June 28th wow/
and like this quarter my girlfriend and I drove down to las Vegas and saw 2 shows that's great/
but when to school in Santa Clara I I I started I got really into them because they played alot of shows right down in that area yeah/
so I got to see alot of shows and now I got hooked and now I'm always broke because I go to shows right/
have you been to a show no [I've seen?] the thing is I ha I have tickets to Eugene last summer uhhuh and something happened in the family and I oh that's so like the day before so I was really bummed out oh that too bad/
I was at street fair awhile ago and this guy who ahh was selling his own tye dye was ah ahh telling me that their ahh coming to seattle in October for 3 shows/
I heard that rumour too it was halloween weekend yeah/
and ahh I don't know I haven't heard anything since then/
and he told me for sure their coming to Eugene in August/
yeah I heard that that there's a good chance of that too yeah that'll be cool [10 million] fans/
yeah you're gonn you're gonna really start liking them alot after you see them live yeah so it's really different so I've

heard yeah/
aft after my first live show I that was when I said I wanna have to go and see them yeah I had to of back yeah/

{macro} (NT) but so do you work or uhm no rush chairman's pretty much the job/
yeah that pretty much takes up alot of my time uhhuh all my time basically/
yeah I started out at Casheena's working working the door actually/
I I was checking ID's oh yeah and it was terrible but I knew that was the only way that I could get on yeah and I did that/
(NT) they don't usually try Casheena' to get in/
its kinda of a more I mean you've been there its you know drinks are more expensive yeah more of a yuppie crowd yeah more of a yuppie crowd so they don't usually try/
but I've had some I used to have these kids come in sometimes they would dress up they were too young to try to play off for being older right right cause half the people in there were like in business suits of just coming home from work right or something/
so and ah I had a few fake IDS but I really I I mean I I most I went most nights without having to turn people down cool yeah/
which surprised me yeah because I just because like when you're in in a house and stuff you know of so many people that have fake ID n everything oh yeah that you just I guess you kinda just lose sight of how many people actually do have it yeah I know/
I had a fake ID you know yeah I did at night I took my brothers birth certificate down that's exactly what I did and got my picture taken you kr. w so they with his name had his old had an old bank card of his too so they couldn't right [mark it] down/
yeah that's exactly what I did too oh right/

{macro} (NT) I at first I okay uhmm is that it/
yeah I think he's giving us the okay to stop/
okay okay then good talking to yeah alright bye bye/
take care/

APPENDIX B:
SEGMENTING PROCEDURE

The following appendix contains all of the materials used for training judges to segment conversations into statements, topics, and macrotopics. The first section contains the instructions for identifing statements, topics, and macrotopics. The second section contains the uneditied version of the training conversation. (Please note that I have identified the the first couple of topics and statements on the version included here. The actual copy given to the judge did not contain any markings.) The third section contains the unedited versions of the conversations that were used when the judges segemented the conversations.

B 1: Defintions and Rules

What is a statement?

A statement is a unit of speech that is greater than word and smaller than a topic. In terms of content, a statement usually contains a single idea, and makes sense when seen independent of the surrounding discourse. It is the spoken equivalent of a simple sentence, because the statement contains a subject, verb and object. Statements are usually preceded by a short silence, begin with a stressed word, and end with a change in intonation. (see examples of statements.)

When identifying statements follow a simple rule: each statement must be able to stand as a <u>complete</u> single idea. Thus, a statement that is followed by a specification would be judged as a single statement. Or, an assertion followed by a list of elements would also be considered a single statement, because each of the listed elements are part of the over riding assertion. Finally, a statment followed by a conditional qualification are treated as a single statement.

What to do with troublesome situations:

1) Two speakers overlaping in speech. If the interruption consists of a single word or two, then the interruption is included in the statement. If the overlap is a statement in and of itself, then score it as such. It is possible to have two statements going on at the same time.
2) Uhhuhs or other such comments by the listener at the end of a statement. Include the listener comments in the statement which it comments on.
3) "Well"s and false starts which are followed statement. In these instances, include the false

start or "misspeakings" along with the following statement.

What is a topic?

A topic is a unit of talk larger than a sentence with a fairly specific referent. A topic almost always contains at least three statements. Topics are always bounded by a incoherent statement, and often these statements refer to a topic change. Thus the boundary for a topic will always coincide with the beginning of a new statement. When identifying topics it important to not include digressions; when more than three sentences these digressions are another topic.
(see examples.)

What is a macrotopic?

A macrotopic is a large unit of speech with a very general referent. Macrotopics often contain several topics, although it can coincide with a single topic. (For example, with greetings.)
(see examples.)

B2: Training Conversations

{macro} [topic] (statement) hear it's still beating (laugh) (statement) geez geez if nobody knew what we were talking about they'd wonder (Laughs) (statement) everybody's is still no it's still beating uh fast Be still my heart [new topic] well gosh you should have that checked out for one thing I have had it checked out well what have they say they what have they say they said it's praxismal atrial tachiacardia you uh coders try to spell that yeah really (Laugh) transcribe that little bad boy but is there a shortened term for that a lay lay person's term fast heartbeat fast fast heartbeat yeah rapid heartbeat yeah I think I can they say that it I mean they say well you know its pretty normal for um or not uncommon for healthy young people um huh and to just stay away from stress and things that induce art you know artificial stimulants or things like alcohol and drugs uh yeah now wha wha what were you doing this weekend yeah ummm I beg your pardon no incriminating information on this well but you can exercise yeah so that's yeah not a problem no geez well it's just stress it's the last two weeks of school hum yeah that'll do it well I want to hear about the uh the movies that you saw (Laugh) I already told you no you didn't have you seen Bull Durham I thought it was I have seen it I thought it was better the first time I saw you did well the part I like about it Bull Durham and that's the one with Tim Robbins and uh Costner yeah there's a part that I like where on the bus and Tim Robbins is sing is is singing a song about something about wh what is is and he gets wooly (laugh) and then Dennis or uh

what's his name Kevin Costner says not wooly you idiot it's weary (both laugh) that's right He's gettin weary so that's your favorite part of the whole movie well one of my favorites yeah but that definitely was the highlight so yeah I thought it was good but I'm not sure I'd spend money to go see it again but I thought big Kevin Costner no we didn't go see it we rented it oh well I wouldn't even spend money to rent it probably yeah there other things higher on my list but Thelma and Louise you should go see which one is Thelma um I can't remember I think Gena Davis is Thelma Um yeah I might maybe Jo would want to go see I I that that be um there was some guy on the on the news some critic that I didn't recognize that said something to the effect that that it's a women's movie and the only reason would go to see it is if there spouse or spouse equivalent would drag them to it so which is not really a compliment he wasn't to to excited about it he felt it was yeah that they were slamming men to excess they were and it's like finally about time yeah um good thank you well no I'm I'm serious though the media doesn't and you know the man's always the good guy and the women's always the sex kitten you know uh huh in most movies I mean think of a movie when the man's not the when a women's not necessarily betrayed as some kind of well how bout Woody Allen's movie Mia Farrow is she yeah I mean that I mean Hannah and Her Sisters still the object of his love or whatever I don't know (Laugh) it's I don't know its just it is kind of men bashing but they deserve it (laugh) well and it does take some bashing to because we don't um you can't be too subtle with us otherwise we miss it completely right so you have to be well no the the things are really important I mean the the underlying theme about the movie is that these two women get in trouble because they don't think anyone's gonna believe 'em that the one women's raped oh and that's like a ooo real thing you know that happens all the time that we that women don't feel safe and they feel like anyone's gonna believe 'em and that in our society if you're um having a good time and and kissing and having fun with a man um that that you deserve what you get if you get raped uh yeah oh that's and that's like the uh and that's an important theme I didn't know that was a part of the film I I thought it was kind of a comedy it is it's really funny but that's like the underlying oh I have something else for the transcribers to try to transcribe [She burps disgustingly!!!!] oh it didn't come oh man (Laugh) man that is that that is Al just came over here okay we'll get off the phone now okay nice talkin to you bye bye

B 3: Reliability Conversation

good morning good morning nah well Ontario your province is going to have to bear the biggest brunt in these cuts of to

transfer payments does that worry you well it certainly does stewert because um we ah of course are concerned very much with the municipal taxpayers and people who live in the the cities and we really I guess the term municipal dumps comes to mind when you think about where these tax increases will ultimately end up everybody is talking about them being passed on to the provinces that's right downloading I think there's a whole new series of trends developing and uh downloading taxes is one of them with respect to this process what you think the provinces are going to pass them on to the municipalities ah certainly they are um we've already experienced this in Ontario where ah number of cuts have been passed down to the municipalities this is what what concerns you about that I mean we're all wh wether we are Canadians Ontarian's or ab oh Torontonian's or whatever we're all the same person does it matter which level of government we pay these taxes to well I think that the problem that it creates is well you know the tax system that has been developed over many years is one that ostensibly tries to tax people who can afford to pay in other words you're taxed according to income now when you become when ah when ah governments do bottom feeding on taxes which is going down to the municipal level which is the lowest level in the taxation structure they're hitting at fixed income people people on old age pensions who who are not able to who don't have flexible income options ahead and so they end up paying more proportionally because they happen to own a house ah so we're also concerned about those kind of problems you're you're speaking to me from Ottawa Ontario is one of the richest provinces in the country shouldn't Ontario expect to be shouldering more of the cuts if the cuts have to be made well ah I think that ah the this concept that shouldn't Ontario be shoulder more of the cuts probably we already have been shouldering the larger responsibility in terms of ah tax transfer payments etc etc over the years so ahm this is another I think it is ah another five hundred million dollars that we are losing this year ahm I don't really think it is ah fair on the Ontario taxpayer let me talk about interest rates for a moment ah Mr. Barden Mr. Wilson is working under the assumption in his budget the rate is going to be about eleven percent this year what's that going to mean to me well I think ahm again ah thinking of the ah people who I often work with one of the biggest expenditures in our household is indeed our mortgage and then probably next biggest is the car loan or ah major loan and then of course there's the credit cards so it means that we are going to have to continue to pay more money for nonproductive things like interest it doesn't produce anything for us its somewhere along the line someone makes some profit out of it but we who have to pay mortgages and loans we'll just have to dig dig deeper into our saving or cut some

expenditures somewhere people were talking about over the last few months about the ah symbolic cuts that Mr. Wilson might make to Ottawa to ah the kinda this business about not buying a new pair of shoes the kind of cuts to show that he's serious or the government's serious do you think did he do that the phrase that people bandy around is fat city is ottawa fat city is that still a fair description of the capital well I think it is a very unfair description of the city of Ottawa uh I was just listening this morning to the fact that there are a thousand homeless families and people here in this city ah and that was where some body was talking about the cuts to the Canada assistance program which would cost our city he estimated ten to fifteen million dollars ahm so ah I have to say um that that Ottawa gets this label very unfairly um I think that ah the people here work hard and they do a good job the reference to Ottawa and cuts really should be the government of Canada and cuts and not just to Ottawa because that's what we are working for we are working for the people of Canada thank you so much for joining us this morning thank you

B 4: Transcripts for Segmenting Conversations

Segmenting Conversation 1

hi how're you doing good how are you how's your day going pretty good good how's yours ohh okay ok just okay well yeah okay its kind of sick but you know oh that's okay colds you get over 'em yeah (laugh) it's going around (laugh) yeah it is where do you live on 22nd in an apartment oh do you yeah well I live on 21 st and and AGD and street in a sorority yeah how do you like it it's it's fun yeah I enjoy it I mean it's different lifestyle than living you know on your own but yeah it's kind of nice yeah what courses are you taking um I'm taking speech 220 um let's see psych 209 and a classics 430 so you're in 430 too yeah do you have that yeah I do in the mornings no I have it in the evening actually oh I think the professor in the evening must be better why cause I studied with this guy I know who has it at night hmmmm and um but for the midterm and his notes were a lot better than mine (laugh) like the stories were more complete and stuff oh really yeah it also helps cause when you guys take the test we're able to look at the test I know (laugh) it's kind of unfair but it's a choice you let they let you take the test out was it the same um there were some questions that were you know really similar uh huh they weren't exactly the same oh wow plus off of the past tests some of the questions were exactly the same yeah I know I used old tests too so I mean if I hadn't read any of the old tests I probably (laugh) would have done really bad yeah how did you do om I got like a 83 cool so yeah it's

okay if you're point yea but yeah I need to study more next time (laugh) I know I know kind of fun cause this guy that I studied with he made all the stories seem really funny so it was easy to remember everything that we studied together that's yeah it makes it a lot easier yeah so what other classes are you taking oh I've got speech 220 also um huh and uh yea (both laugh) I like speech classes but um I don't know they just get so monotonous having to always write out and outline and then yeah and then give your speech and how how many speeches have you done so far um I've done two my third is next week yeah how bout you I just I did my third one yesterday and so I have one more to go that must be a big relief yeah I'm really glad I'll be done the the 29th wow of this month so I'm glad I go like the first day of the next speech so oh wow do you get out pretty early for finals um finals too no because my classics one is like the 14th oh geez right yeah so wh what about you um well classics classics of course is probably my last one yeah other than that I'm like done the first day of finals oh so lucky where where you from I'm from Gig Harbor down by Tacoma uh huh how bout you um I'm from Southern California oh are you yeah I was born down there really down by Palm Springs area uh huh how bout you um I'm from like Anahiem Haliveria Anahiem Disneyland area (laugh) Disneyland Disneyland then everybody knows where I'm talking about (both laugh) yeah that's pretty easy to describe yeah Disneyland oh yeah okay yeah um been there thousands of times (laugh) grandma grandma (laugh) yeah Grandma take me to Disneyland you know (laugh) yup so um what year are you I'm a sophomore me too are you yeah cool who you living with in your in you apartment some friends um some friends um I'm on the gymnastics team here at the U and um one of my roommates is on the gymnastics team and then another was our manager and then the other one's just a girl that I met last year and so how long is the gymnastic's season is it all year round or (laugh) we train all year do you but the seasons from January till April Januarary till April wow yeah gees that'd be I that's pretty exhausting isn't it I mean to like takes a lot of time (laugh) yeah I mean I've heard about like the football players and all the practice they have to put in but I mean yeah but I never really heard about gymnastics yeah what kind of workouts do you do um well right now its our off season and we have 3 hour work outs everyday um huh so it's like we do two and half hours in the gym and then we go lift for like a half an hour but it's not bad usually during season it's like four four and half hour workouts do you do a variety of stuff like just just swimming or jogging or uh uh it's like all in the gym training like yeah floor bars, vault and beam I see what what's your favorite um probably beam oh the beam yeah yeah I used to want to do gymnastics when I was little but nope I went the swimming route and then really got out of that when

I was about a sophomore in high school yeah I got tired of it so many years yeah I know a lot of time (laugh) yeah are you getting are you still excited with the sport um it's getting kind of old it's kind of a sport that you outgrow uh huh so I'm kind of ready to move on to other things but I'll probably stick with it for one more year what's gonna be your field of study um psychology psychology yeah cool what area do you know um I'd like to stay um like with sports and do sports psychology um so what about you what's your major um it's probably well I've still got to apply but hopefully speech communication or English um huh do you know what you want to do with that no (laugh) yeah I mean I would love to do some things like go in the lines of journalism um huh and things like that but I'm if anything I can always fall back on being a teacher hey yeah so well they're needed so yeah which is really cool but so happy to go soon or are you gonna go home no I'm only going to go home for a week cause I'm gonna I'm staying up here in the summer are you yeah that's not so do you have plans for summer um no I'm just gonna stay up here in Seattle and work instead of going down to Gig Harbor and yeah hang out and live in a fraternity really will be an experience which one I'll probably stay with Delta Chi oh wow I know some people in there I'm gonna be living in um okay let me see if I can remember wait Psi Kappa Psi yeah Psi Psis okay yeah it's like I can't remember there's some girls in my house that are gonna be living in there too you'll probably get to know oh cool yeah it's I guess they're a lot of fun just because you go on road trips yeah and do all that kind of thing I stayed four months last summer in Psi U did you yeah and it was it was fun but um I knew a lot of guys in there beforehand so cool you have any advice for first time fraternity stayer um just don't be disgusted by the dirt (laugh) okay just remember how little you're paying and and you know that it's a lot of fun and and eventually you'll live somewhere clean again (both laugh) people are always saying well you know bring bring your own mattress uh huh and bring this and that and I'm like ohh yeah great it's so cheap though yeah you know it's like okay can't find any cheaper um $250 for the whole summer I know I mean I should just be taking classes in the summer and you know (laugh) yeah it's so cheap yeah classes I don't know living in a sorority will you live in your sorority next year yeah I will yeah and do the rush thing again yeah do you know um oh my gosh okay Vicky um ohh I can't remember her last name Manderville yeah yeah yeah how do you know her she um walked on to the gymnastics team for a while at the beginning of the year oh really yeah cool so I kind of got to know her (both laugh) a girl a friend of mine is approaching right now he's probably wondering what the heck I'm doing on the phone I know (laugh) are you like standing outside by the yeah standing outside just sitting there going hanging out talking to

strangers basically yeah we're hanging yeah more than you know so kind of cool cause it's like almost passing time (laugh) yeah great well at least I get to go in time for lunch (laugh) yeah do you are you done for the day yeah for today well except for classes tonight yeah but pretty much for the day yeah so I don't know I'm kind of happy about it that's cool so where are you gonna work this summer do you know um I don't know I get my um scholarship throughout through the summer if as long as I'm taking six credits or more ohh so I know I have that but I wanta work and I just have been too lazy (laugh) to go out getting a job yeah do you know where you're working well I I just recently went and picked up some applications and like to the bookstore and and to another little store down on the Ave called La Tienda uh huh oh that's a cool store yeah I'd love to work there anyways well I guess it's sounds like time we can get off the phone ok (laughs) see you bye

Conversation 2

what's your last name Ruiz Ruiz yeah hi i'm doug Macono macono yeah Ss so let's see you go here at the u dub uh i think so (both laugh) and what year are you um i'm in my third year um junior with uh undecided major right now so okay is there any interest that you're um who knows whatever pops up in whatever department accepts me i'll i'll take it (laugh) oh what about yourself yeah i'm a senior this year but i'll be graduating next spring uh huh and i'm in the electrical engineering department oh really yeah how did you find out about this about this experiment oh um Al came into our speech class i'm in speech 220 oh introduction to public speaking oh um you wanted to volunteer yourself thought it'd be something i'd like to do oh so what was a EE major doing taking speech then well (laugh) i figure in engineering they say that fifty percent of your engineering is oral communication or written communication right and i thought wow i need a lot of help on my oral communication so uh huh i thought it be something you know i should take and i challenged myself this quarter uh to make public speeches it's not it's not something i like to do yeah but who [some utterance not a word] which who are you teacher uh Ruth Huwe oh do you have that um the eight thirty yeah yeah i was i was in the class for one day oh and then i switched sections oh okay so you're in which section oh i'm section a with Lisa oh okay yeah but see Ruth was my um my sister's roommate so oh that's why i see i didn't stick around for the extra day oh i see so why are you taking public speaking um humanities distribution oh [yeah-CANT'T HEAR] is it something you wanna take yeah it's something i wanna take um cause it's it's i i i feel really comfortable talking in front of people and it doesn't bother me and it i like it a lot it might be my major who knows oh that's good yeahwhat

kind of things are you talking about is it persuasive speeches yeah i've we've already done my two persuasives and one informal and my informal was on baseball cards and so oh it's it's a hobby of mine so and then my two persuasives were uh drinking and driving and automobile insurance oh so so you only have one left well i have one more left but don't know what to do it on is it a value speech it doesn't matter we're just any persuasive so oh that's good yeah our last one has to do with value oh which which topics have you done let's see i did the first one informative on negotiation uh huh and two persuasive one was on the last one was on the biasness of the S.A.T. uh huh and before that was actually i don't even remember (both laugh softly) um oh it was cheating in school about cheating in school and why and why what how can that how is that persuasive well how that a lot of teachers and they don't take measures to uh to stop cheating or students you know they don't do anything about it oh that's cool what are you gonna do for your last one do you know um i think something to do with affect [ETHICS] uh huh and how each one of us has a responsibility um i'm gonna give an example of if you're in sports such as dale Ellis right and he was doing a lot of you know just say no to drugs and stuff but he got um in drunk driving accident and right and i thought well that's not very good responsibility on his part because it's showing kids you know you know just how he's being a hypocrit and you know the values just aren't you know yeah the values aren't getting expressed that sounds pretty cool and you use the the the stay in school one too cause of the ba um like isiah Thomas and Michael Jordon yeah finished finished their de finished their years too yeah sounds pretty cool do you live on cam or near the campus no well my first two years i lived in a in the dorms uh huh and then i got into a car accident this summer so i bought a new and so i'm living at home so oh where's that Renton oh not not far yeah it's about a half hour or forty minute commute every morning oh oh well Al says five minutes is up oh that's good (laugh) in that case ok ok bye bye

Conversation 3

not much not much just hanging out or what I'm just hanging out right right really right wow so you're a student at the University of Washington yeah I'm a junior a junior uhhuh and yourself I'm a 5th year senior and I'm [something] I'm heading I'm six years wow I got a couple of more quarters at go wow what happened were there a lot of drops in your path um actually what happened was I I went to University of Washington my freshman year and then I transferred to Santa Clara for 2 years oh and then I I transferred back yeah so I lost credits going down there and I lost more coming back too

yeah that's that's rough plus I declared kind of late plus I just decided to go into education hmmm I had to pick up an extra I I'm also a sp ahh I'm a speech major and an have an English minor oh that I just decided to pick up gees how about you what's your major well I'm planning speech in ahh fall uhuh so ahh you haven't got into the school though I I'm pretty sure I'll get in yeah so that's not really concern right now it just a matter of getting all the 16 odd required credits out of the way right you know do that right uhm lets see what ahh what did you do last last night I ahh do you go out thursday nights or what I sometimes last night I watched the Blazer game and then I pouted the rest of the night cuz oh you're they lost yeah I'm from Vancouver Washington which is right outside of Portland uhhuh how bout you where're you from I'm from Spokane really yeah just east of the mountains you know what what high school Faris high school oh really uhhuh are you are you in a house or any thing yeah I'm ah sigma chi a sigma chi yeah yeah I was a tek really yeah my dad was a tek oh really mhmm at the at washington at oh really yeah so I'm rush chairman right now and ah keeping pretty darn busy oh yeah that's alot of work yeah it really is that's alot of work I wouldn't wanna I would never wanted to be rush chairman yeah well a little bit yeah I don't know were you rush chairman last summer or no this is your first year we started February uhhuh February 1st going to September 1st uhhuh so wow that's a lot of work oh it can definitely oh well yeah do they do the compensate you like do they yeah like you're a free house bull that's good that kinda thing yeah that that's what we do too(?) I'm mean if there there wasn't money involved I mean I wouldn't be doing it right (?) it I just remember in the summer time like it at functions and stuff just having the hardest time just talking to one pledge let alone kinda escorting them around you know oh yeah [that's right] I mean most of the time I was ready for it but there was just always those days when you would rather not have to talk to anybody that oh yeah you don't know burn out yeah you just kinda you gotta deal with it you know right like oh well right so ahh what what do you do on your free time free time well I work at Casheena Casheena's oh you do yeah do you wait uhm no I don't wait yet I'm I'm still busing yeah but ahh that's in the future how about you I go into the fraternitites once and awhile oh do you yeah the last the last night I went to the Keg and oh really and [listen to tunes they played ahh I like the atmosphere there they play like you know like Steele Dan and like like some of the music I like to listen to in bars oh that's cool yeah I don't really really like going to the Lock Stock and listen to beatnicks you know right yeah I kinda like the Blue Moon sometimes myself yeah ever been there on Sundays yeah I go on Sunday's alot yeah I I'm a big dead head oh really yeah in fact today I'm calling to order tickets to a

show in Denver really when's that it's a June 28th wow and like this quarter my girlfriend and I drove down to las Vegas and saw 2 shows that's great but when to school in Santa Clara I I I started I got really into them because they played alot of shows right down in that area yeah so I got to see alot of shows and now I got hooked and now I'm always broke because I go to shows right have you been to a show no [I've seen?] the thing is I ha I have tickets to Eugene last summer uhhuh and something happened in the family and I oh that's so like the day before so I was really bummed out oh that too bad I was at street fair awhile ago and this guy who ahh was selling his own tye dye was ah ahh telling me that their ahh coming to seattle in October for 3 shows I heard that rumour too it was halloween weekend yeah and ahh I don't know I haven't heard anything since then and he told me for sure their coming to Eugene in August yeah I heard that that there's a good chance of that too yeah that'll be cool [10 million] fans yeah you're gonn you're gonna really start liking them alot after you see them live yeah so it's really different so I've heard yeah aft after my first live show I that was when I said I wanna have to go and see them yeah I had to of back yeah but so do you work or uhm no rush chairman's pretty much the job yeah that pretty much takes up alot of my time uhhuh all my time basically yeah I started out at Casheena's working working the door actually I I was checking ID's oh yeah and it was terrible but I knew that was the only way that I could get on yeah and I did that they don't usually try Casheena' to get in its kinda of a more I mean you've been there its you know drinks are more expensive yeah more of a yuppie crowd yeah more of a yuppie crowd so they don't usually try but I've had some I used to have these kids come in sometimes they would dress up they were too young to try to play off for being older right right cause half the people in there were like in business suits of just coming home from work right or something so and ah I had a few fake IDS but I really I I mean I I most I went most nights without having to turn people down cool yeah which surprised me yeah because I just because like when you're in in a house and stuff you know of so many people that have fake ID n everything oh yeah that you just I guess you kinda just lose sight of how many people actually do have it yeah I know I had a fake ID you know yeah I did at night I took my brothers birth certificate down that's exactly what I did and got my picture taken you know so they with his name had his old had an old bank card of his too so they couldn't right [mark it] down yeah that's exactly what I did too oh right I at first I okay uhmm is that it yeah I think he's giving us the okay to stop okay okay then good talking to yeah alright bye bye take care

APPENDIX C: SCALING COHERENCE BETWEEN STATEMENTS

The following contains the training instructions, training stimuli, and the final coherence ratings for statements.

C 1: Experimenters Script and Examples

Please note that in the following script the examples presented to the judges are underlined.

(Begin by seating the judge. Make sure the judge is comfortable. Be sure that the tape TRIAL 1 is rewound and the counter on the tape recorder is set at zero. Be sure you have the masking tape down, and a couple of working writing implements.)

As I (or Al) said on the phone, what we'll be doing here is scaling the coherence between some messages. In this session, I'll explain what we mean by coherence, give you some examples of various coherence relations, and then have you scale some messages. After this session, we'll be only scaling messages, so it is important that we get the procedure completely clear this time. So if you have any questions or confusions, then be sure to ask.

Let's begin by explaining what I mean by coherence. For present purposes, coherence is the degree to which two sentences or statements are about the same thing. So, on one hand, we have complete coherence when two sentences have exactly the same content. An example of completely coherent relation would be "This is a desk. This is a desk.". On the other hand, we are also interested in the extreme incoherence that occurs when the content of two statements have nothing in common. An example of complete incoherence is the two statements "This is a desk. The Montreal Canadians will win the Stanley Cup next year." Here the two sentences have nothing in common.

When you are scaling task you'll be listening to pairs of statements and deciding the degree to which they are coherent or incoherent. You will be rating the messages by making marks on the masking tape at the appropriate spot. I'll explain the mechanics of scaling in a while; right now, lets examine the continuum more closely by reading the labels above the masking tape.

(Give the judge some time to read all the labels.)

As you can see the length of the table represents the spectrum of coherence to incoherence. So as we move from left to right we move from messages that extremely coherent to messages that are pretty coherent to messages that are quite coherent to messages that are sort of incoherent to

messages that are quite incoherent to messages that are extremely incoherent. What we are going to next is look at each of these sections in more detail and provide some examples.

Extremely coherent This area is for messages that are extremely coherent. (Point to the endpoint.) The following two pairs of messages are examples of extreme coherence. (Play messages 1 and 2.)

1) How are you? How are you?
2) On wednesday we ran up the hill. We ran up the ill on wednesday.

In the first pair of messages both sentences are exactly the same. However, although the two sentences do not have the same syntax, they still contain the same semantic content.

Very Coherent This area is for messages that are very coherent. Messages that go in this area have nearly the same semantic content. For example. (Play message number three)

3) On wednesday we ran up the hill. We jogged up the hill on wednesday.

In the example, the two sentences contain roughly the same semantic content. However, the words running and jogging are not exactly the same, so it would be less coherent than the extreme.

Pretty Coherent This area is for pairs of messages that are pretty coherent. (Point to the area.) This area is for messages that are roughly about the same thing, but the subject of the sentence is referred to by pronoun in one of the sentences. You can only be sure that the content of the sentences is about the same thing if assume the pronoun referent is in the other sentence. For example. Play message number 4.

4) What day is it today? It's tuesday.

In this example both of the messages are what day it is, but you have to make an inference about the referent of the "its" in the second sentence. Notice that if you added a "goofy" to the second sentence, "its tuesday goofy", then it would be even less coherent. Adding even a single word would change the topic of the sentence considerably.

The following is an example of a slightly more incoherent relationship. (Play message number five.)

5 You like the Expo's game last night? Great game.

In the example the two sentences are about the same thing, the Expo's previous baseball game, but the second sentence does not explicitly contain the same subject or verb. Instead, the messages obtain coherence by the intonation and the context of the first sentence.

Sort of Coherent Now this area is for pairs of messages that are sort of coherent and sort of incoherent. (Point to the appropriate area.) Pairs of statements that go in this

area have similar but different literal content. Also, the messages in this area, could be seen a one longer sentence if a conjunction were supplied. For example. (Play message 6.)

6) Jack went up the hill. John went up the hill too.

In this example, both sentences are about two people going up. If an "and" were supplied, the two sentences could be combined into one. (Note that if "the hill" was deleted from the second sentence, then the messages would be slightly more incoherent.) (Play message 7.)

7) Jack went up the hill. Jack couldn't climb any higher.

In the example, both of the sentences share a content about climbing, but they are different in content and somewhat contradictory. They can, however, been seen as two parts of a single sentence if the conjunction "but" was place between the parts. Of course, the messages would be slightly more incoherent if the "Jack" in the second sentence were replaced with a "he". (Play message 8.)

8) John pushed the vase over. John got in trouble.

In pair eight, the content of the messages are quite dissimilar, but can be seen as coherent if we place a conjunction "then" between the two sentences. Again, if the second sentence contained he instead of John it would be more incoherent.

Pretty Incoherent This general area is for messages that have very little literal content in common. (Point to the area.) (Play message 9.)

9) How are you? Its a pretty dark day out.

These two messages have little content in common, however, the second message could be seen coherent if interpreted metaphorically. There is another kind of coherence relation that receives a similar or greater incoherence rating. When one of the sentences are quite ambiguous, the relation between the two messages is incoherent, because the number of inferences necessary to interpret the ambiguous sentence.

Very incoherent The area at the far right hand end of the continuum is for pairs of messages that share only a general topic in common. (Point to area and play message 10.)

10) I was chairman of the board or Exxon.
Small business was savaged in 1981, 1982, 1983.

In this example, the two sentences share the general topic of business. The speaker's position in a corporation has little explicit connection with the success rate of small business over those three years.

Extremely Incoherent: Sentences that have no literal or implicit coherence relation are scaled at the extreme right. For example, (point to the area and play message 11.)

11) How are you? The door is brown.
These two sentence do not even share a topic in common.

So that's the continuum of coherence to incoherence. In effect its a continuum of semantic similarity. As one moves from left to right, the literal content of messages becomes more and more dissimilar. Or you could look at it as a continuum of the amount of processing that is necessary for the messages to be coherent. You'll note, however, that in all instances we are interested in a literal interpretation of the messages. If you find that scaling to many messages as very coherent, then you're probably making inferences about what the messages mean rather than what was actually said.

Any questions?

Now I'd like you to scale some messages. I'll play the tape and you'll hear a number followed by a pair of statements. You'll then rate the degree of coherence between the messages by making a slash on the masking tape and writing the number underneath the slash. While you are making your judgement, I'd like you explain your scaling. That way I can make sure you following the rules of the scaling.

(Play the first message, and continue as per usual.)

C 2: Coherence Values

In the following section the statements are grouped by topic and conversation. The coherence values follow the slash of the first of the pair of statements.

Conversation 1, Topic 1.
so you're in 430 too/ -.91
yeah do you have that/ -1.34
yeah I do/ -1.04
in the mornings/ 1.63
no I have it in the evening actually oh/

Conversation 1, Topic 2.
was it the same/ -1.10
um there were some questions that were you know really similar uh huh/ -.57
they weren't exactly the same oh wow/ .21
plus off of the past tests some of the questions were exactly the same yeah/ -.69
I know I used old tests too/ -.11
so I mean if I hadn't read any of the old tests I probably (laugh) would have done really bad yeah/

Conversation 1, Topic 3.
where where you from/ -1.23

I'm from Gig Harbor down by Tacoma uh huh/ .01
how bout you/ -.28
um I'm from Southern California oh are you yeah/ -.78
I was born down there really down by Palm Springs area uh huh/ .01
how bout you um/ -.58
I'm from like Anahiem Haliveria Anahiem Disneyland area (laugh) Disneyland/

Conversation 1, Topic 4
what about you what's your major/ -.95
um it's probably well I've still got to apply but hopefully speech communication or English um huh/ -.58
do you know what you want to do with that no (laugh)/ -1.17
yeah I mean I would love to do some things like go in the lines of journalism um huh and things like that/ .05
but I'm if anything I can always fall back on being a teacher hey yeah/.

Conversation 1, Topic 5.
hang out and live in a fraternity really will be an experience/ -.25
which one/ -.95
I'll probably stay with Delta Chi oh wow/ -.31
I know some people in there/ .20
I'm gonna be living in um okay let me see if I can remember wait Psi Kappa Psi/ 1.78
yeah Psi Psis okay yeah it's like I can't remember/

Conversation 1, Topic 6.
do you know um oh my gosh okay Vicky um ohh I can't remember her last name/ -1.07
Manderville yeah yeah yeah/ .19
how do you know her/ -1.16
she um walked on to the gymnastics team for a while at the beginning of the year oh really yeah cool/ -.50
so I kind of got to know her (both laugh)/

Conversation 1, Topic 7.
a girl a friend of mine is approaching right now/ .44
he's probably wondering what the heck I'm doing on the phone I know (laugh)/ 1.70
are you like standing outside by the yeah/ -.49
standing outside just sitting there going hanging out talking to strangers/ 1.70
basically yeah we're hanging yeah more than you know so kind of cool/ -.52
cause it's like almost passing time (laugh) yeah/ 1.12
great well at least I get to go in time for lunch (laugh) yeah/

Connversation 1, Topic 8.
so where are you gonna work this summer do you know/ .33
um I don't know/ 2.14
I get my um scholarship throughout through the summer/ -.75
if as long as I'm taking six credits or more ohh/ -.28
so I know I have that but I wanta work/ -.65
and I just have been too lazy (laugh) to go out getting a job yeah/

Conversation 2, Topic 1.
Ss so let's see you go here at the u dub/ -.33
uh I think so (both laugh)/ 2.14
and what year are you/ -.82
um I'm in my third year um junior with uh undecided major right now so okay/ -.28
is there any interest that you're/ -.60
um who knows whatever pops up in whatever department accepts me I'll I'll take it (laugh) oh/

Conversation 2, Topic 2.
but who [some utterance not a word] which who are you teacher/ -1.06
uh Ruth Huwe/ 1.47
oh do you have that um the eight thirty/ -.08
yeah yeah I was I was in the class for one day oh and then I switched sections oh okay/ -.87
so you're in which section/ -.76
oh I'm section a with Lisa oh okay/ -.08
yeah but see Ruth was my um my sister's roommate so oh that's why I see I didn't stick around for the extra day oh I see so/ 2.14

onversation 2, Topic 3.
why are you taking public speaking/ -.75
um humanities distribution on [CANT'T HEAR]/ -.35
is it something you wanna take/ -.85
yeah it's something I wanna take um cause it's it's I I I feel really comfortable talking in front of people/ -.83
and it doesn't bother me and it I like it a lot/ .22
it might be my major who knows oh that's good yeah/

Conversation 2, Topic 4.
what kind of things are you talking about is it persuasive speeches/ -.22
yeah I've we've already done my two persuasives and one informal and my informal was on baseball cards and so/ .07
oh it's it's a hobby of mine so/ 2.11
and then my two persuasives were uh drinking and driving and automobile insurance oh/ .47

so so you only have one left/ -.74
well I have one more left but don't know what to do it on/ .22
is it a value speech/ -.84
it doesn't matter we're just any persuasive so oh that's good/ .37
yeah our last one has to do with value oh/

Conversation 2, Topic 5.
which which topics have you done/ -.98
let's see I did the first one informative on negotiation uh huh and two persuasive one was on the last one was on the biasness of the S.A.T uh huh and before that was actually I don't even remember (both laugh)/ -.49
um oh it was cheating in school about cheating in school/ .49
and why and why what how can that how is that persuasive/ 1.98
well how that a lot of teachers and they don't take measures to uh to stop cheating or students you know they don't do anything about it oh that's cool/ 1.20
what are you gonna do for your last one do you know/ -.65
um I think something to do with ethics uh huh and how each one of us has a responsibility um I'm gonna give an example of if you're in sports such as dale Ellis right and he was doing a lot of you know just say no to drugs and stuff/ -.16
but he got um in drunk driving accident and right/ -.51
and I thought well that's not very good responsibility on his part/ .01
because it's showing kids you know you know just how he's being a hypocrit and you know the values just aren't you know yeah the values aren't getting expressed that sounds pretty cool/ 1.39
and you use the the the stay in school one too cause of the ba um like Isiah Thomas and Michael Jordon yeah finished finished their de finished their years too yeah sounds pretty cool/

Conversation 2, Topic 6.
do you live on cam or near the campus/ -.54
no well my first two years I lived in a in the dorms uh huh/ .98
and then I got into a car accident this summer so I bought a new and so I'm living at home so/ -.60
oh where's that/ -.89
Renton oh not not far/ -.58
yeah it's about a half hour or forty minute commute every morning oh/

Conversation 3, Topic 1.

so you're a student at the University of Washington
yeah/ -.60
I'm a junior a junior uhhuh/ .60
and yourself I'm a 5th year senior and I'm [something] I'm heading I'm six years wow/ -.86
I got a couple of more quarters at go wow/ .66
what happened were there a lot of drops in your patn/ 1.07
um actually what happened was I I went to University of Washington my freshman year and then I transferred to Santa Clara for 2 years on and then I I transferred back
yeah/ -.74
so I lost credits going down there and I lost more coming back too yeah that's that's rough/ -.19
plus I declared kind of late plus I just decided to go into education hmmm/ .42
I had to pick up an extra I I'm also a sp ahh I'm a speech major and an have an English minor oh that I just decided to pick up gees/

Conversation 3, Topic 2.
how about you what's your major/ -.38
well I'm planning speech in ahh fall uhuh/ .62
so ahh you haven't got into the school though/ -.99
I I'm pretty sure I'll get in yeah/ -.51
so that's not really concern right now it just a matter of getting all the 16 odd required credits out of the way right you know do that right/

Conversation 3, Topic 3.
so ahh what what do you do on your free time free time/ -1.30
well I work at Casheena Casheena's oh you do yeah/ -1.00
do you wait/ -.43
uhm no I don't wait yet I'm I'm still busing yeah but ahh that's in the future/ 1.30
how about you / -.10
I go into the fraternitites once and awhile oh do you
yeah/ .40
the last the last night I went to the Keg and oh really and listen to tunes/ -.62
they played ahh I like the atmosphere there they play like you know like Steele Dan and like like some of the music I like to listen to in bars oh that's cool/ .85
yeah I don't really really like going to the Lock Stock and listen to beatnicks you know right yeah/ 1.17
I kinda like the Blue Moon sometimes myself yeah/ -.61
ever been there on Sundays/ -1.31
yeah I go on Sunday's alot yeah/

Conversation 3, Topic 4.

are you are you in a house or any thing/ -1.26
yeah I'm ah sigma chi a sigma chi yeah/ -1.27
yeah I was a tek really yeah/ -.77
my dad was a tek oh really mhmm at the at washington at oh really yeah/ 1.57
so I'm rush chairman right now and ah keeping pretty darn busy oh yeah/ .68
that's alot of work yeah it really is that's a lot of work/ .41
I wouldn't wanna I would never wanted to be rush chairman/ .49
yeah well a little bit yeah I don't know/ 1.17
were you rush chairman last summer or no this is your first year/ .39
we started February uhhuh February 1st going to September 1st uhhuh so wow/ -.21
that's a lot of work oh it can definitely oh well yeah/ .72
do they do the compensate you like do they yeah like you're a free house bull that's good that kinda thing yeah/ -1.02
that that's what we do too/ 1.68
I'm mean if there there wasn't money involved I mean I wouldn't be doing it right/

Conversation 3, Topic 5.
I I'm a big dead head oh really yeah in fact today I'm calling to order tickets to a show in Denver really/ -.73
when's that/ -1.24
it's a June 28th wow/ 1.83
and like this quarter my girlfriend and I drove down to las Vegas and saw 2 shows that's great/ 1.13
but when to school in Santa Clara I I I started I got really into them because they played alot of shows right down in that area yeah/ -.63
so I got to see alot of shows and now I got hooked and now I'm always broke because I go to shows right/ .20
have you been to a show no [I've seen/] the thing is I ha I have tickets to Eugene last summer uhhuh and something happened in the family and I oh that's so like the day before so I was really bummed out oh that too bad/ 1.13
I was at street fair awhile ago and this guy who ahh was selling his own tye dye was ah ahh telling me that their ahh coming to seattle in October for 3 shows/ -.16
I heard that rumour too it was halloween weekend yeah/ -.51
and ahh I don't know I haven't heard anything since then/ 1.58
and he told me for sure their coming to Eugene in August/ -.61
yeah I heard that that there's a good chance of that too yeah that'll be cool [20 million] fans/ .95

yeah you're gonn you're gonna really start liking them alot after you see them live yeah so it's really different so I've heard yeah/ -1.11
aft after my first live show I that was when I said I wanna have to go and see them yeah I had to of back yeah/

Conversation 3, Topic 6.
they don't usually try Casheena' to get in/ .12
its kinda of a more I mean you've been there its you know drinks are more expensive yeah more of a yuppie crowd yeah more of a yuppie crowd so they don't usually try/ .82
but I've had some I used to have these kids come in sometimes they would dress up they were too young to try to play off for being older right right cause half the people in there were like in business suits of just coming home from work right or something/ -.12
so and ah I had a few fake IDS but I really I I mean I I most I went most nights without having to turn people down cool yeah/ .30
which surprised me yeah because I just because like when you're in in a house and stuff you know of so many people that have fake ID n everything oh yeah that you just I guess you kinda just lose sight of how many people actually do have it yeah I know/ .11
I had a fake ID you know yeah I did at night I took my brothers birth certificate down that's exactly what I did and got my picture taken you know so they with his name had his old had an old bank card of his too so they couldn't right [mark it] down/ -.86
yeah that's exactly what I did too oh right/

APPENDIX D: SCALING COHERENCE BETWEEN TOPICS

The following contains the experimenter's script, training stimuli, and final coherence ratings of the topics.

D 1: Experimenter's Script and Training Examples

Let's begin by explaining what now I mean by coherence. For present purposes, coherence is the degree to which two topics or statements have the same referent. For example, a topic about horseback riding followed by a topic about equipment used (e.g., saddle etc.) when horseback riding would be an example of a coherent relation between two topics. On the other hand, we are also interested in the extreme incoherence that occurs when the content of two statements have nothing in common. An example of complete incoherence is a topic about horseback riding followed by a topic about music. Here the two topics have nothing in common.

When you are scaling you'll still be listening to pairs of topics and deciding the degree to which they are coherent or incoherent. You'll be rating the messages by making marks on the masking tape at the appropriate spot.

(Give the judge some time to read all the labels.)

As you can see the tape represents the spectrum of coherence to incoherence. So, as we move from left to right we move from topics that are very coherent to topics that are coherent to topics that are quite coherent to topics that are sort of incoherent to topics that are quite incoherent to topics that are very incoherent. What we are going to do next is look at each of these sections in more detail and provide some examples.

<u>How to judge coherence and some examples</u>

How I'd like you to judge coherence is a simple two step procedure. After listening to the pair of topics decide what each one is about and then decide to what degree they are about the same thing. Your scaling will reflect the degree of similarity. So lets work through some examples, so we can practice this. This area is for topics that are very coherent. Topics that go in this area are about the same thing. For example the following topics are both about psychology experiments:

a) // Nn not really. Political political science. Yeah. I'm taking a couple of courses--drugs and behaviour. So that's how they got my name. Thats how they got yours. Yeah I'm in second I'm in third year psych so (yeah) that's how they got my name.

b) // Actually this is the first one actually been in. I haven't been in others. So this is a learning a new experience for me. Yeah I did another one last term it was

ahh perception experiment I think. I can't really remember. I had to watch words flash at me and distinguish between them or something. Hhmm I can't really remember but fun one eh? Yeah
The first topic is about being contacted for the experiment and the second topic is also about an experiment. The only difference between the two topics is the first is about being contacted for the experiment and the second is about experience in psychology experiments.

This area is for pairs of topics that are pretty coherent. **(Point to the area.)** This area is for topics that are roughly about the same thing, but the theme of the second topic is slightly different from the first. For example,
a) // Are you second or third year? Yeah third I guess when I came here I was second and now I'm classified as third after I picked up a few credits uhhuh. So I transferred here from Douglas College. Oh yeah. Do you know oh I've forgotten what her name is. Donna something or other she's a political science theory major here she went to Douglas college I was in criminology actually. oh
b) // Are you from Victoria yourself. Yeah. Yeah. Did you go to Camosen or. No I straight here for rather a lot of years a lot of years struggling to get my degree. And this is my last term in ahh political science. I was doing a double major but I dropped the economics. Trashed the economics. Yeah right on I yeah was in criminology but now I'm ahh transferred to psychology I thought I'ld get a rounded education uhhuh.
The first topic is about what year the person is in and where he transferred from. The second topic of the second topic is about the both people's majors. This slight change in theme (i.e. from year to majors) means that the pair of topics are about slightly different things. So they would be scaled in the pretty coherent area.

Now this area is for pairs of topics that are sort of coherent and sort of incoherent. (Point to the appropriate area. and play the example.)
a) //Are you from Victoria yourself. Yeah Yeah Did you go to Camosen or No I straight her for rather a lot of years Struggling to get my degree and this is my last term in ahh political science. I was doing a double major but I dropped the economics Trashed the economics yeah right on I yeah was in criminology but now I'm ahh transferred to psychology I thought I'd get a rounded education uhhuh
B) // Why criminology and psychology? Well I always wanted to go into Law enforcement uhhuh. When I was a little kid Are you still thinking along those lines? Oh yeah still into that idea. But I was told I need to get into some social agency and they like psychology I noticed psyc was a

major thing and criminology was secondary hmm. So I thought hey I got my first two years of criminology I'll go for two years psych. And ah and get a well rounded education. And hopefully I thought.
The first topic is about time in school and majors in school. The second topic is about why the one person chose to major in criminology and psychology. Obviously the two have the theme of school in common but they differ in that the first majors in school and the second is about why a particular major was chosen.

This general area is for topics that have only a general theme in common. For example, in the next pair of topics the first is about where the RCMP station is located second is about taking the RCMP admittance tests.
a) //Where is the RCMP? The only RCMP in this area is what--Colwood? Well that's that's a regular detachment in Colwood but ah the subdivision is down ah you know where that construction at the corner of Hillside and Blanchard is just I guess towards Mayfair there's there's a big concrete edifice corner of Nanimo
B) //Have you taken you tests like the ah Do that on Tuesday? So I just Oh Yeah I don't know what they're gonna ask. Yeah I haven't actually done that. I was thinking RCMP when I first came out of high school Then of course when I graduated three-four years ago It was sort of a three to four year wait. And you have to get your degree and you've got to learn french. So I I thought I'ld go into school for a few years. And I took Douglas criminology. And I took some non-transferable courses hmmm. So that limited me. So I had to take an extra year to get my two years complete mhmm. And I thought well they're still not really hiring. Then I also thought that I didn't want to go RCMP I wanted to stay in BC. So I thought It it might be worthwhile going back and talking to them because they've got a new commissioner and I'm told they're (dropping) dropping their degree requirements? Well yes and no I was told that too. You've got to have some post secondary education. Yeah I think their still giving preference to people with degrees. Yeah although they take tons of applicants now they're no longer turning them away just because they don't have a degree.

The two topics are about two very different things, the first is about where the RCMP station is located and the second is about taking the RCMP admittance tests. The only commonality between these two topics is the general theme of policing.
This area is for topics that don't share a common theme--they are very incoherent. For example,
a) //Why criminology and psychology? Well I always wanted to go into Law enforcement uhhuh when I was a little kid.

Are you still thinking along those lines? Oh yeah still into that idea. But I was told I need to get into some social agency and they like psychology I noticed psyc was a major thing and criminology was secondary hmm so I thought hey I with my first two years of criminology I'll go for two years psych. And ah And get a well rounded education. And hopefully I thought.
b) //When we filled out those those pink forms did we have to put on there what our goals were or anything? Goals? Yeah why we were in school oh yeah.
The first topic is about school and the second topic is about filling out forms. The topics are about different things. These two have nothing in common.

So lets do some scaling....

VERY COHERENT // Nn not really. Political political science. Yeah. I'm taking a couple of courses--drugs and behaviour they got my name. Thats how they got yours. Yeah I'm in second I'm in third year psych so (yeah) that's how they got my name.
// Actually this is the first one actually been in. I haven't been in an other. So this is a learning a new experience for me. Yeah I did another one last term it was ahh perception experiment I think. I can't really remember. I had to watch words flash at me and distinguish between them or something. Hhmm, I can't really remember but fun one eh? Yeah

THIRD OF WAY DOWN COHERENCE SCALE
// Are you second or third year? Yeah third I guess when I came here I was second and now I'm classified as third after I picked up a few credits uhhuh. So I transferred here from Douglas College. Oh yeah. Do you know oh I've forgotten what Donna something or other She's a political science theory major here. She went to Douglas college I was in criminology actually. oh
// Are you from Victoria yourself? Yeah yeah, did you go to Camosen or. No I straight here for rather a lot of years. A lot of years struggling to get my degree. And this is my last term in ahh political science. I was doing a double major but I dropped the economics. Trashed the economics. Yeah right on Yeah was in criminology but now I'm ahh transferred to psychology. I thought I'ld get a rounded education uhhuh

MIDDLE COHERENCE //Are you from Victoria yourself. Yeah Yeah Did you go to Camosen or. No I straight her for rather a lot of years. A lot of years struggling to get my degree. And this is my last term in ahh political science. I was

doing a double major but I dropped the economics. Trashed the economics. Yeah right on Yeah was in criminology but now I'm ahh transferred to psychology I thought I'ld get a rounded education uhhuh
// Why criminology and psychology? Well I always wanted to go into Law enforcenent uhhuh when I was a little kid. Are you still thinking along those lines? Oh yeah still into that idea. But I was told I need to get into some social agency and they like psychology I noticed psyc was a major thing and criminology was secondary. Hmm so I thought hey I got my first two years of criminology I'll go for two years psych. And ah get a well rounded education. And hopefully I thought place

1/3 UP FROM INCOHERENT // Where is the RCMP? The only RCMP in this area is what--Colwood? Well that's that's a regular detachment in Colwood but ah the subdivision is down ah you know where that construction at the corner of Hillside and Blanchard is just I guess towards Mayfair there's there's concrete edifice corner of Nanimo
// Have you taken you tests like the ah. No do that on Tuesday. So I just Oh Yeah I don't know what they're gonna ask. Yeah I haven't actually done that. I was thinking RCMP when I first came out of high school. Then of course when I graduated three-four years ago it was sort of a three to four year wait. And you have to get your degree and you've got to learn french. So I I thought I'd go into school for a few years. And I took Douglas criminology and I took some non-transferable courses eh So that limited me. So I had to take an extra year to get my two years complete And I thought well they're still not really hiring. Then I also thought that I didn't want to go RCMP I wanted to stay in BC So I thought it it might be worthwhile going back and talking to them because they've got a new commissioner and I'm told they're (dropping) dropping their degree requirements?

VERY INCOHERENT // Why criminology and psychology? Well I always wanted to go into Law enforcement uhhuh when I was a little kid. Are you still thinking along those lines? Oh yeah still into that idea. But I was told I need to get into some social agency and they like psychology I noticed psyc was a major thing and criminology was secondary hmm so I thought hey I got my first two years of criminology I'll go for two years psych. And ah and get a well rounded education. And hopefully I thought.
// When we filled out those those pink forms did we have to put on there what our goals were or anything? Goals? Yeah why we were in school oh yeah.

D 2: Coherence Values

As in the previous chapter the coherence value for a particular pair of topics follwos the first part of the pair.

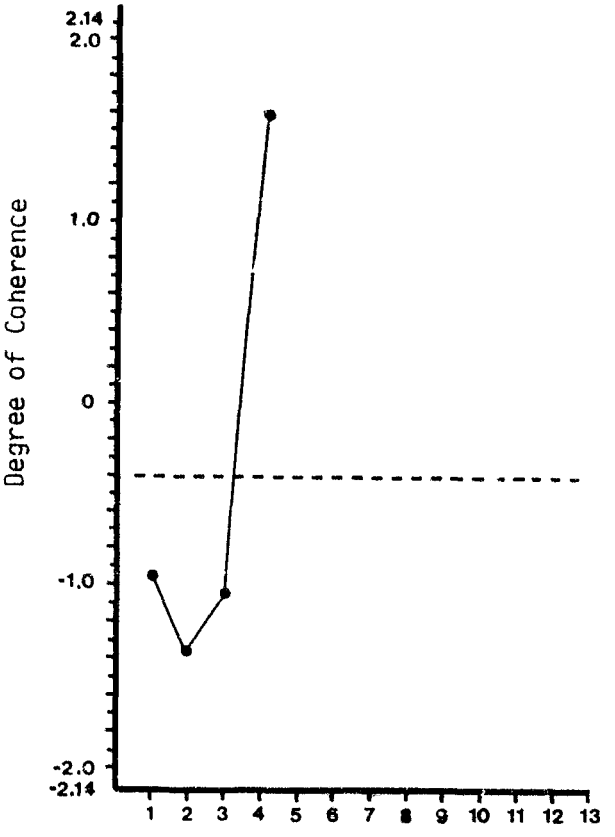
{macro} (NT) so um what year are you/
I'm a sophomore/
me too are you yeah cool/ 1.38
(NT) who you living with in your in you apartment some friends/
um some friends um I'm on the gymnastics team here at the U/
and um one of my roommates is on the gymnastics team and then another was our manager/
and then the other one's just a girl that I met last year and so/ .21
(NT) how long is the gymnastic's season is it all year round or (laugh)/
we train all year do you but the seasons from January till April/
Januarary till April wow yeah gees that'd be I that's pretty exhausting isn't it/
I mean to like takes a lot of time (laugh) yeah/
I mean I've heard about like the football players and all the practice they have to put in/
but I mean yeah but I never really heard about gymnastics yeah/ -1.08
(NT) what kind of workouts do you do/
um well right now its our off season/
and we have 3 hour work outs everyday um huh so it's like we do two and half hours in the gym and then we go lift for like a half an hour/
but it's not bad/
usually during season it's like four four and half hour workouts/
do you do a variety of stuff like just just swimming or jogging or/
uh uh it's like all in the gym training like yeah floor bars, vault and beam I see/ -.70
(NT) what what's your favorite/
um probably beam oh the beam yeah yeah/ .55
(NT) I used to want to do gymnastics when I was little but nope I went the swimming route/
and then really got out of that when I was about a sophomore in high school yeah/
I got tired of it so many years yeah/
I know a lot of time (laugh) yeah/ -.54
(NT) are you getting are you still excited with the sport/
um it's getting kind of old/
it's kind of a sport that you outgrow uh huh so I'm kind of ready to move on to other things/

but I'll probably stick with it for one more year/
(NT) so happy to go soon or are you gonna go home/
no I'm only going to go home for a week cause I'm gonna I'm staying up here in the summer/
are you yeah that's not so/ -1.34
(NT) do you have plans for summer/
um no I'm just gonna stay up here in Seattle and work instead of going down to Gig Harbor and yeah/ .10
(NT) hang out and live in a fraternity really will be an experience/
which one/
I'll probably stay with Delta Chi oh wow/
I know some people in there/
I'm gonna be living in um okay let me see if I can remember wait Psi Kappa Psi/
yeah Psi Psis okay yeah it's like I can't remember/ -.15
(NT) there's some girls in my house that are gonna be living in there too you'll probably get to know oh cool/ .1.01
(NT) yeah it's I guess they're a lot of fun just because you go on road trips yeah and do all that kind of thing/ .34
(NT) I stayed four months last summer in Psi U did you yeah and it was it was fun/
but um I knew a lot of guys in there beforehand so cool/
you have any advice for first time fraternity stayer/
um just don't be disgusted by the dirt (laugh) okay/
just remember how little you're paying and and you know that it's a lot of fun/
and and eventually you'll live somewhere clean again (both laugh)/
people are always saying well you know bring bring your own mattress uh huh and bring this and that and I'm like ohh yeah great/ -.67
(NT) it's so cheap though yeah/
you know it's like okay can't find any cheaer um $250 for the whole summer/
I know I mean I should just be taking classes in the summer and you know (laugh) yeah/
it's so cheap yeah/
classes I don't know living in a sorority/ 1.00
(NT) will you live in your sorority next year/
yeah I will yeah/
and do the rush thing again yeah/

APPENDIX E: GRAPHICAL REPRESENTATION OF THE DATA AND STATISTICAL ANALYSIS

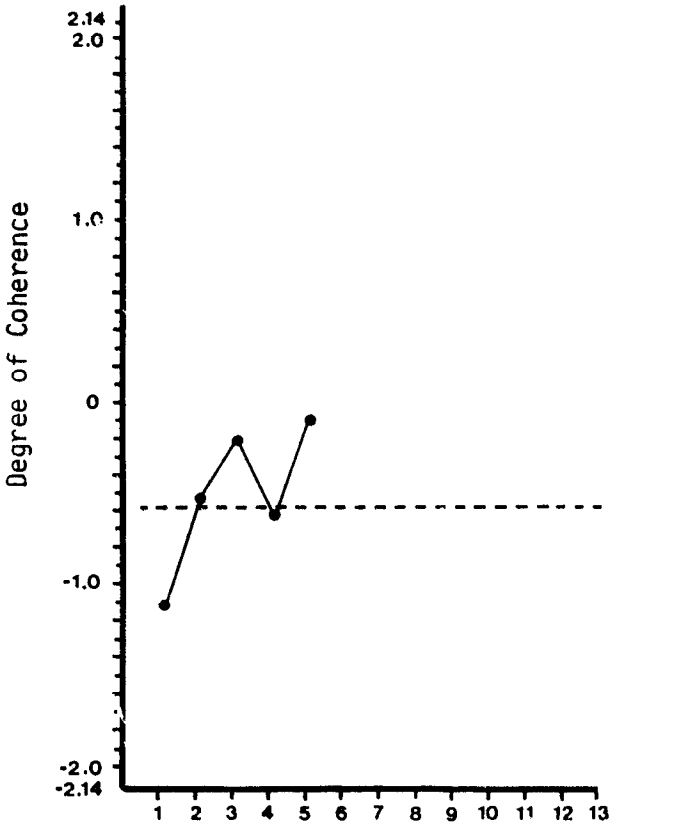
The following contains a graphical representation of the sequential coherence relations in each topic and macrotopic. Included with each representation is the mean of the data and the percentage of the permutations of the data values that are more optimal than the order of the data points that actually occurred.

Conversation 1, Topic 1.



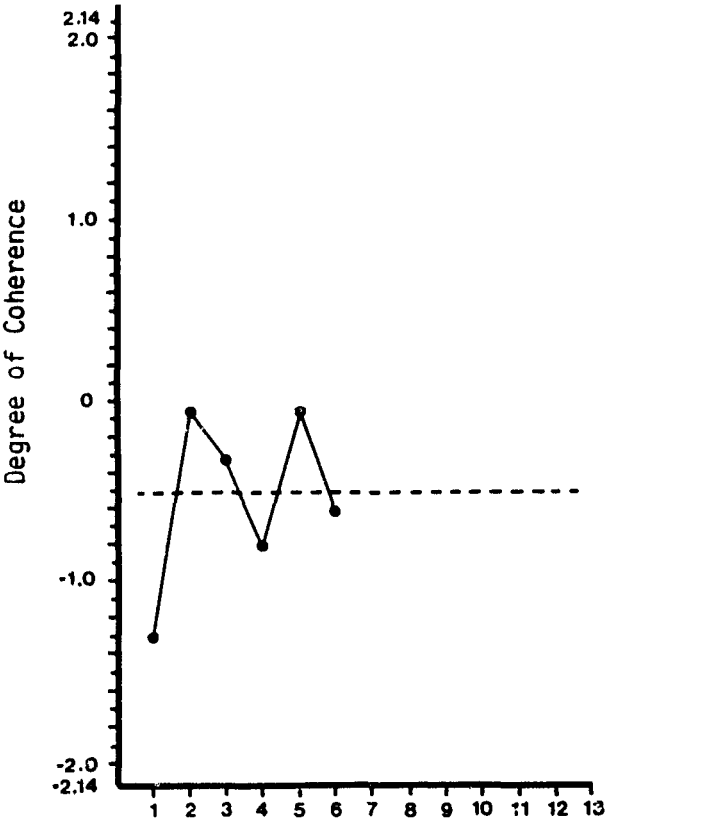
Mean = -.42 SD = 1.38 % = 79

Conversation 1, Topic 2.



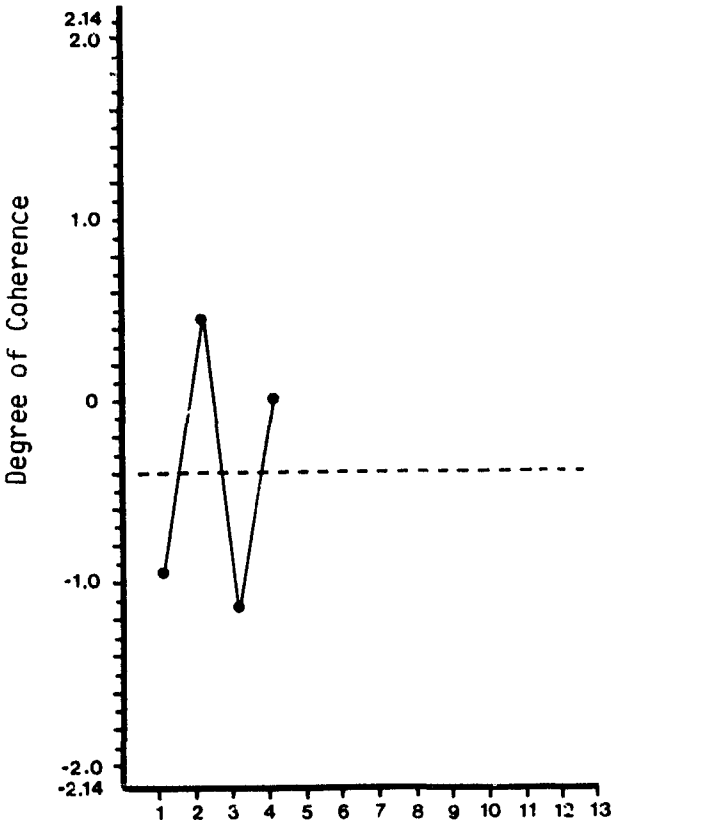
Mean = -53 SD = % = 79

Conversation 1, Topic 3.



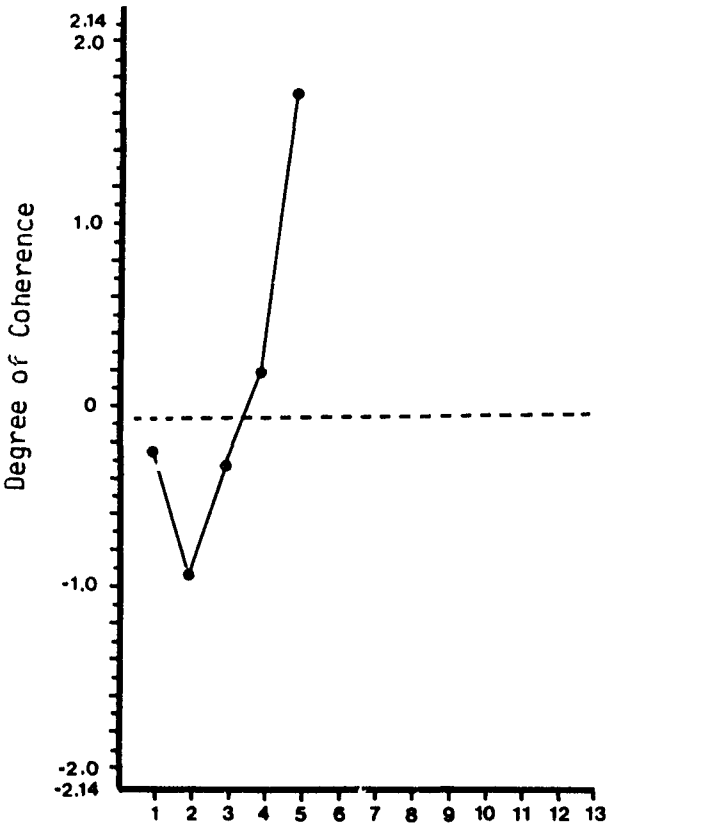
Mean = -.47 SD = .49 % = 18

Conversation 1, Topic 4.



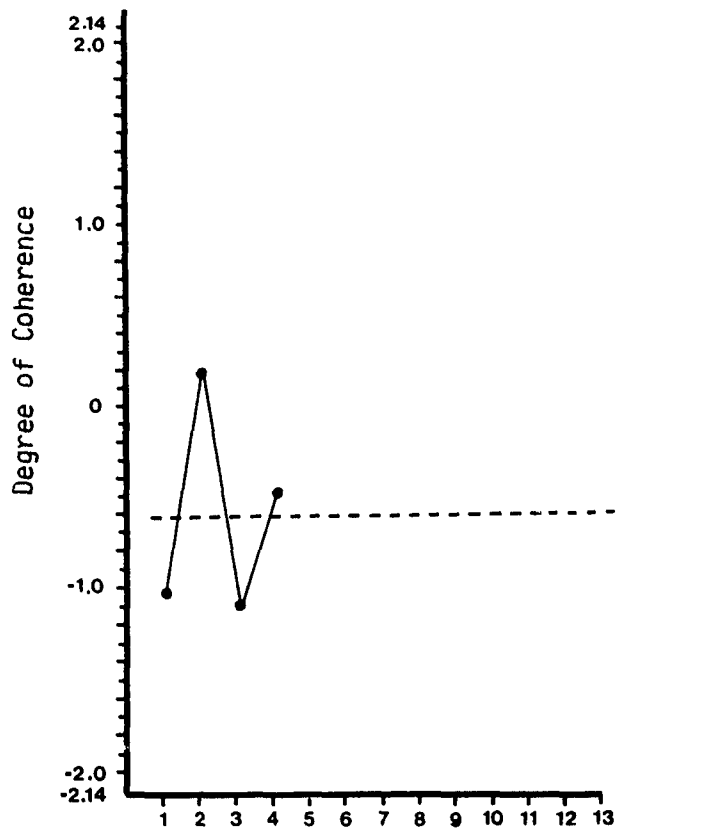
Mean = -.32 SD = .85 % = 4

Conversation 1, Topic 5.



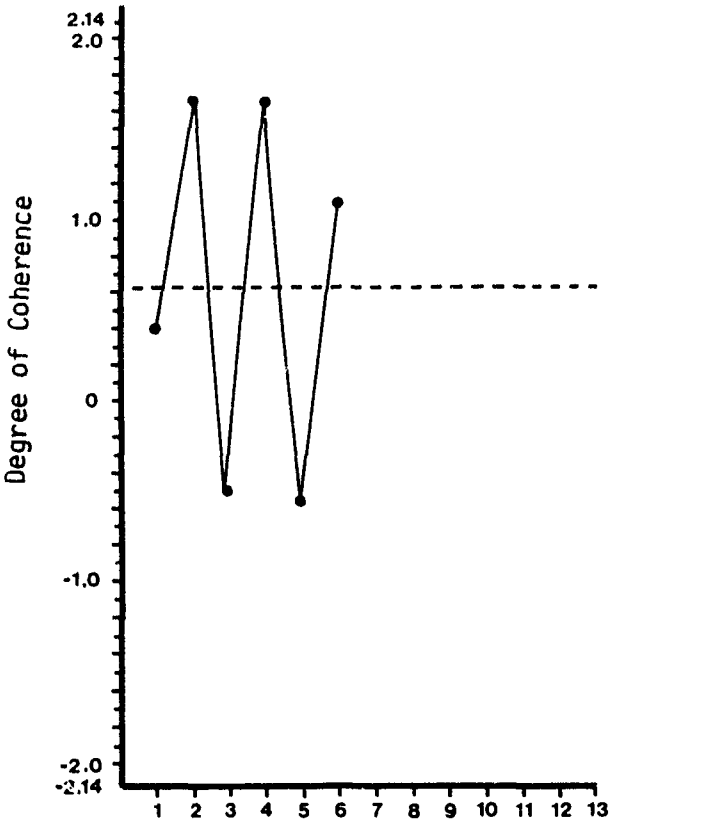
Mean = .09 SD = 1.02 % = 95

Conversation 1, Topic 6.



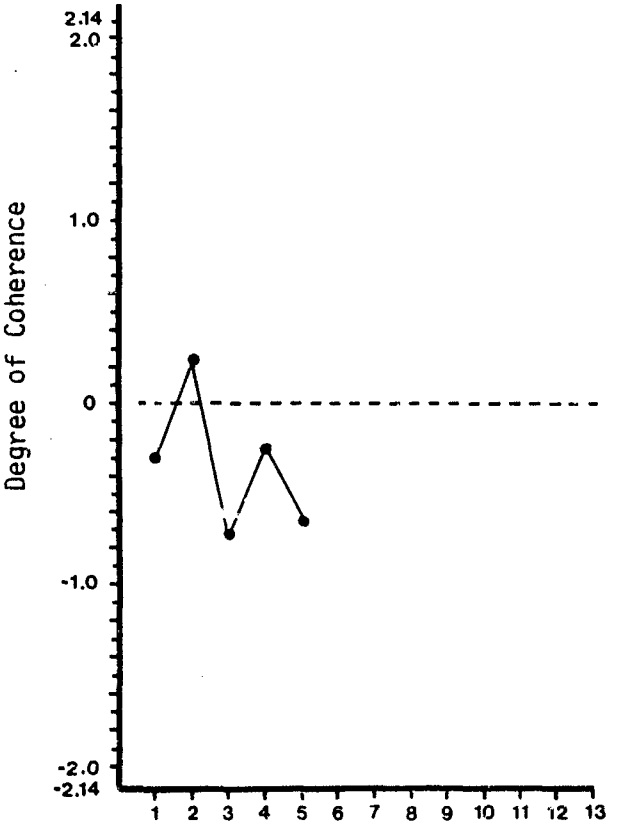
Mean = -.64 SD = .62 % = 0

Conversation 1, Topic 7.



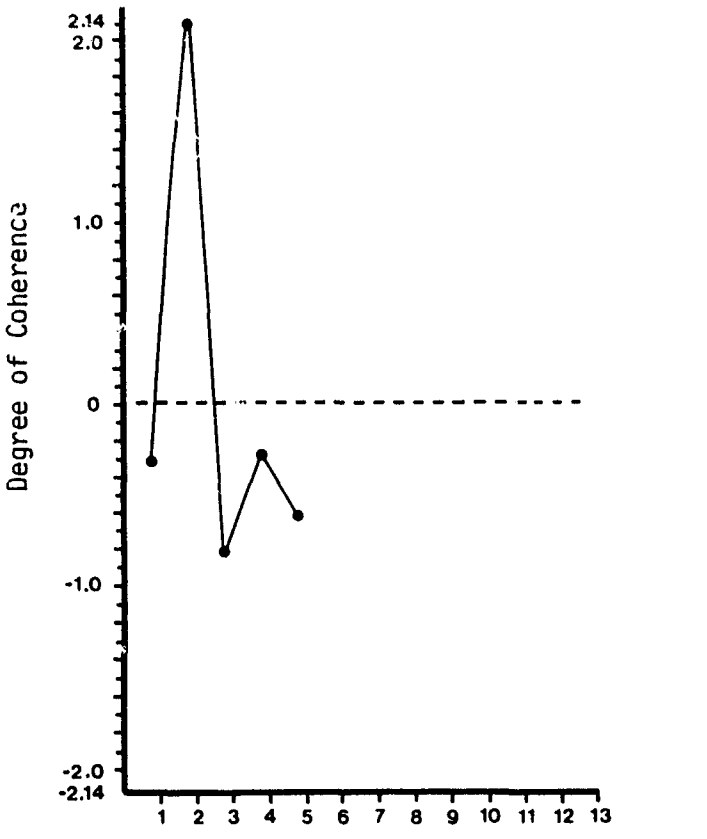
Mean = .68 SD = 1.01 % = 0.2

Conversation 1, Topic 8.



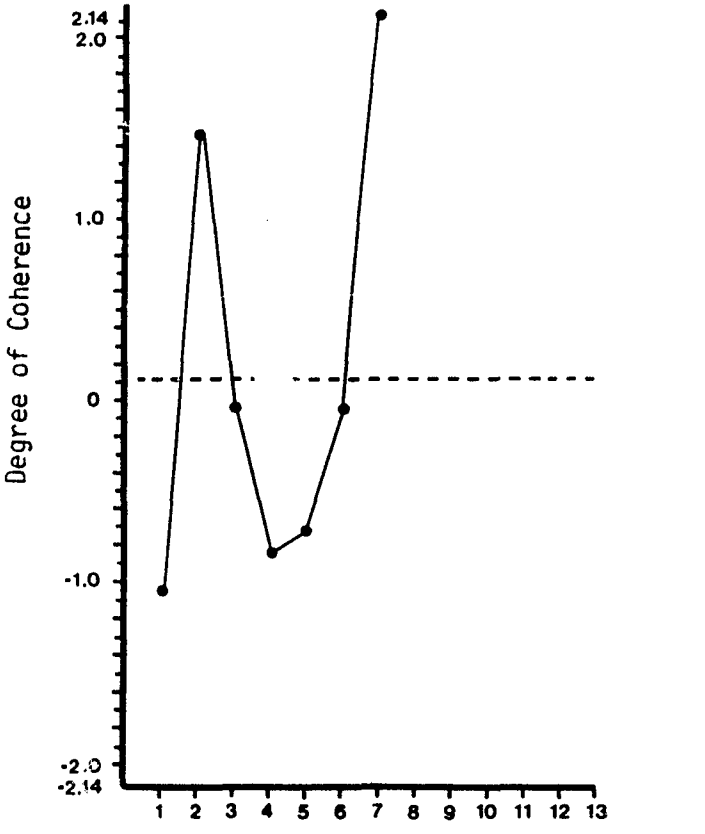
Mean = .02 SD = .70 % = 17

Conversation 2, Topic 1.



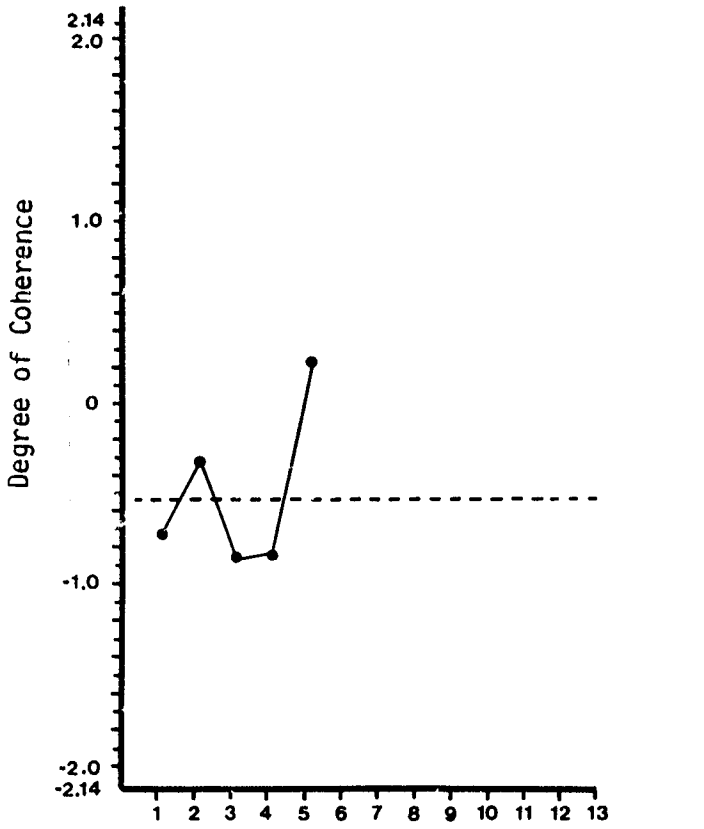
Mean = .02 SD = 1.20 % = 15

Conversation 2, Topic 2.



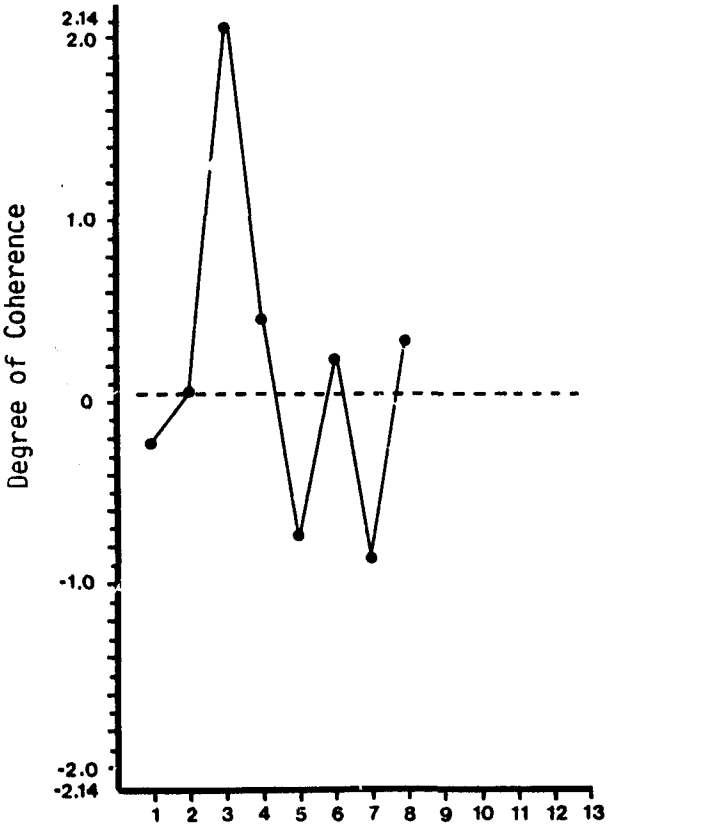
Mean = .11 SD = 1.23 % = 60

Conversation 2, Topic 3.



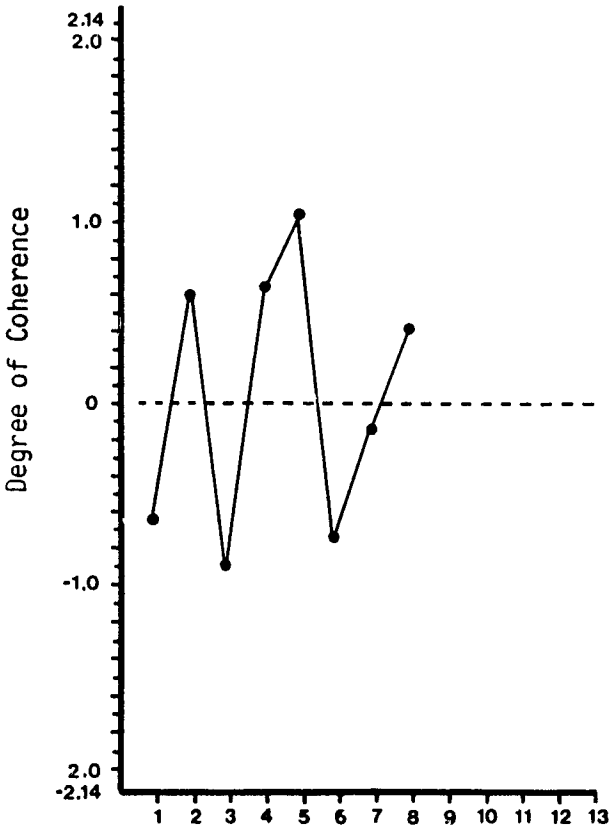
Mean = -.51 SD = .46 % = 38

Conversation 2, Topic 4.



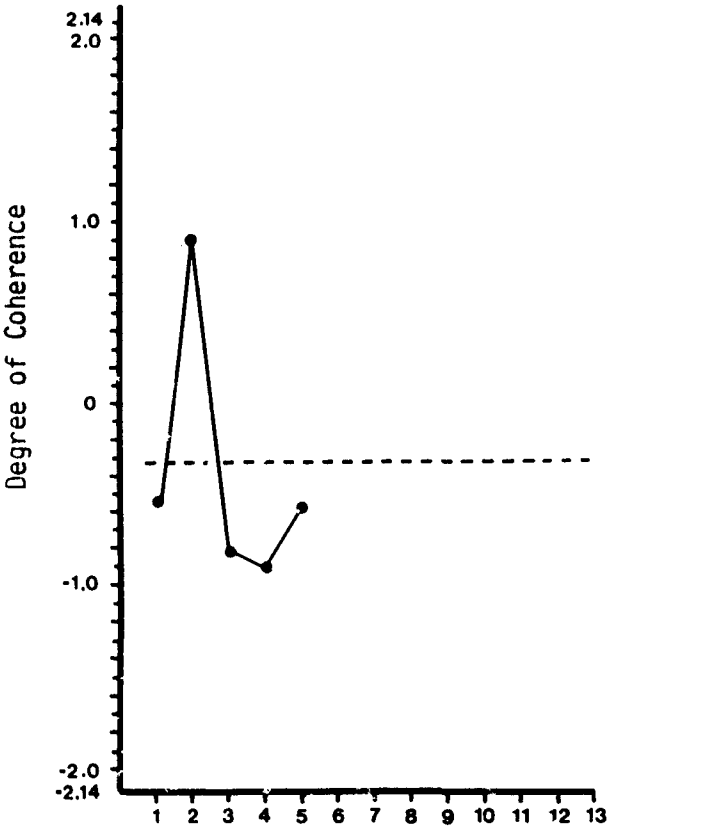
Mean = .18 SD = .92 % = 11

Conversation 2, Topic 5.



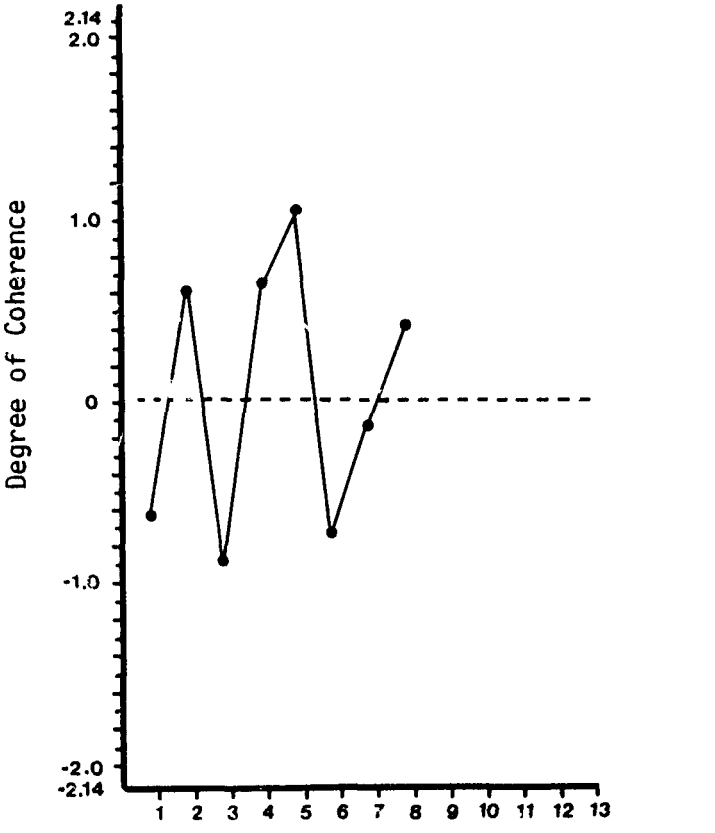
Mean = .23 SD = 1.10 % = 46

Conversation 2, Topic 6.



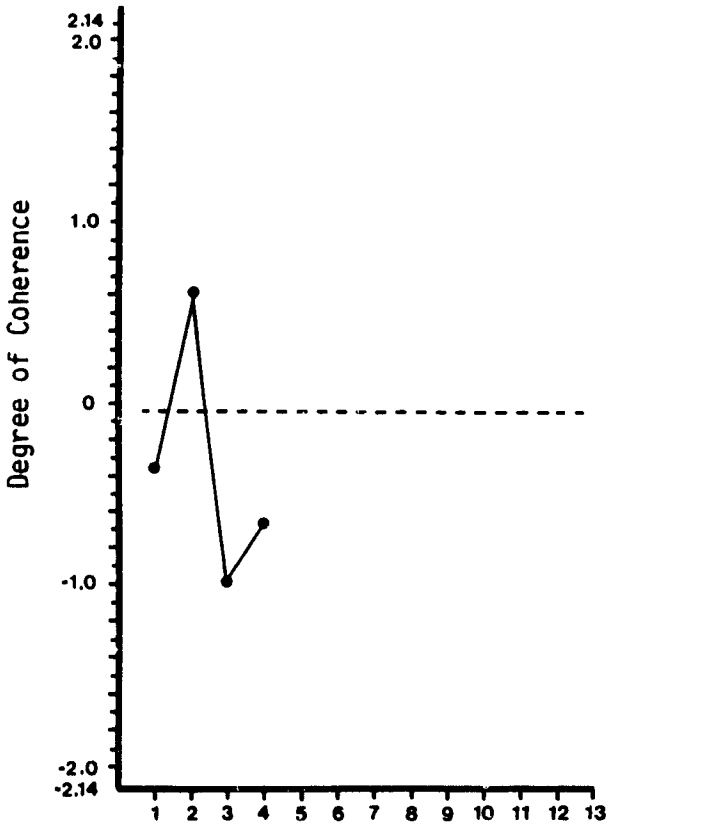
Mean = -.33 SD = .74 % = 22

Conversation 3, Topic 1.



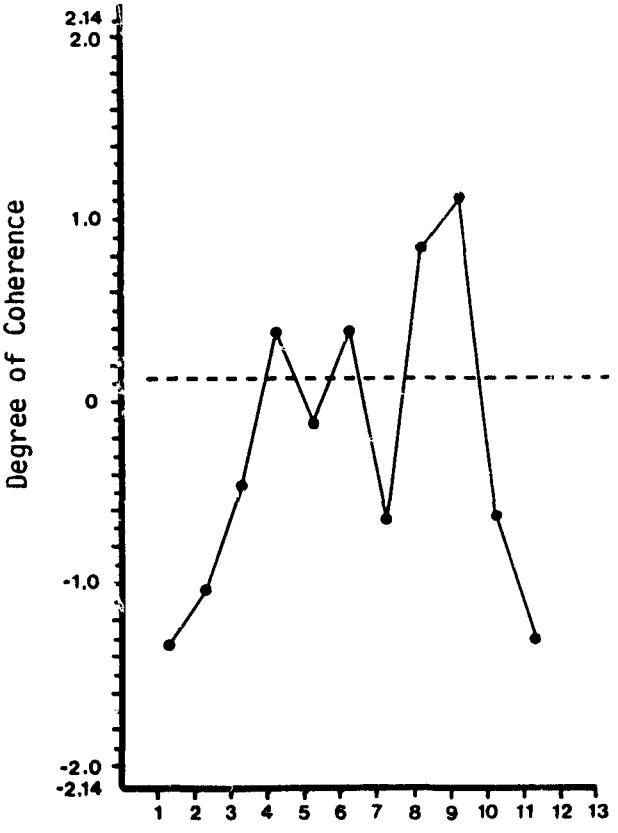
Mean = .02 SD = .70 % = 25

Conversation 3, Topic 2.



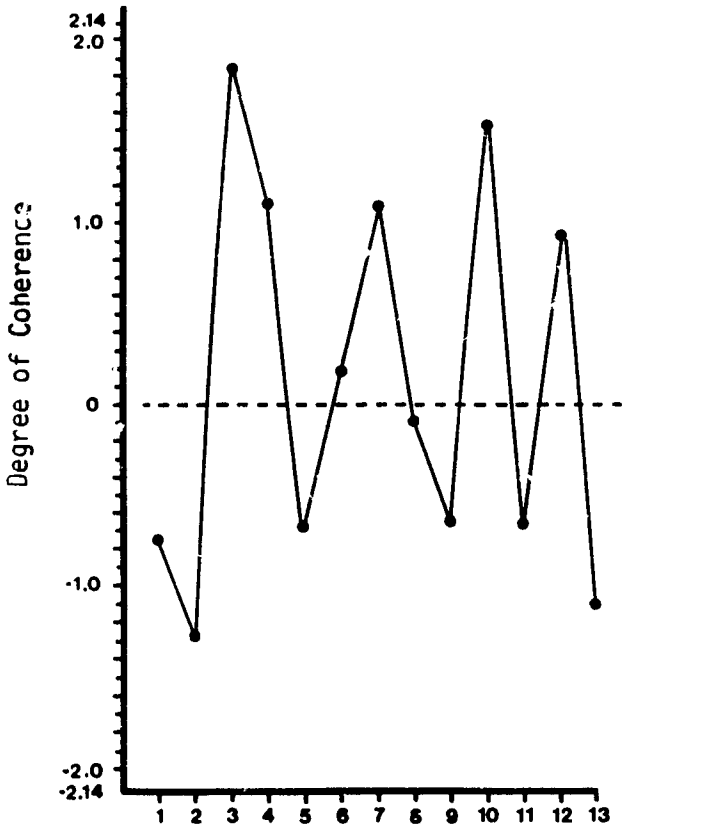
Mean = -.06 SD = .77 % =

Conversation 3, Topic 3.



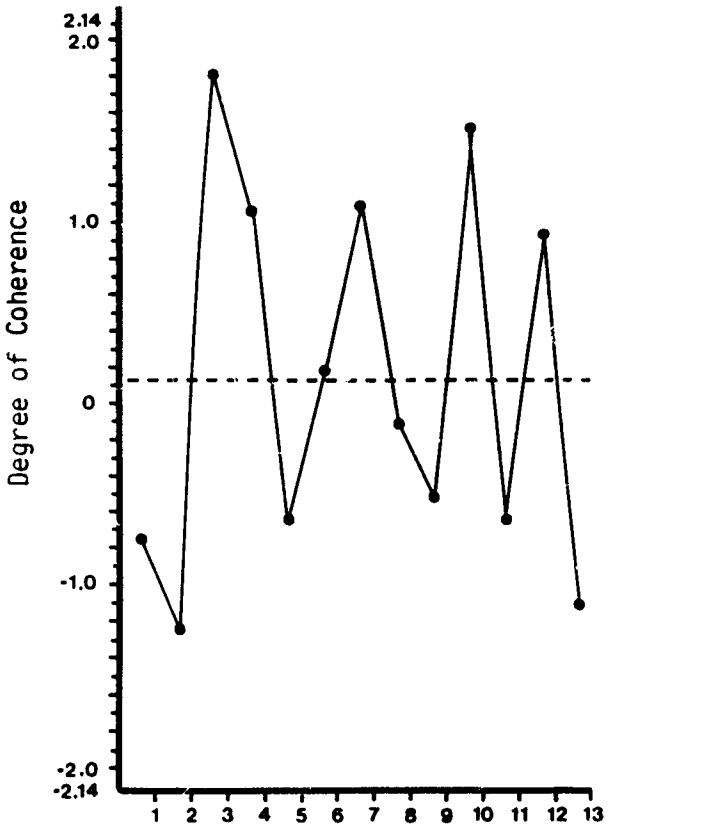
Mean = .19 SD = 1.02 % = 81

Conversation 3, Topic 4.



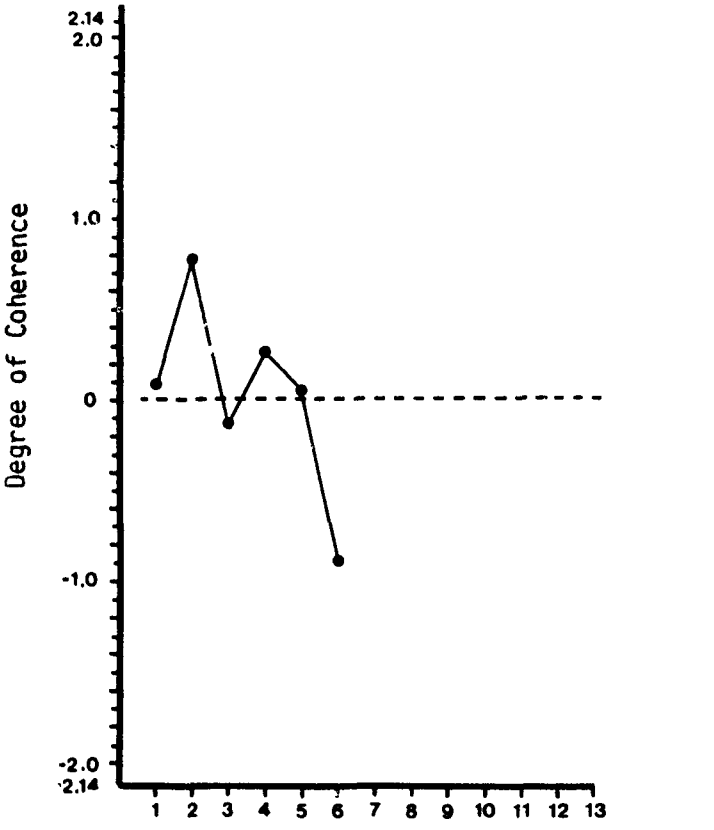
Mean = .14 SD = 1.05 % = 51

Conversation 3, Topic 5.

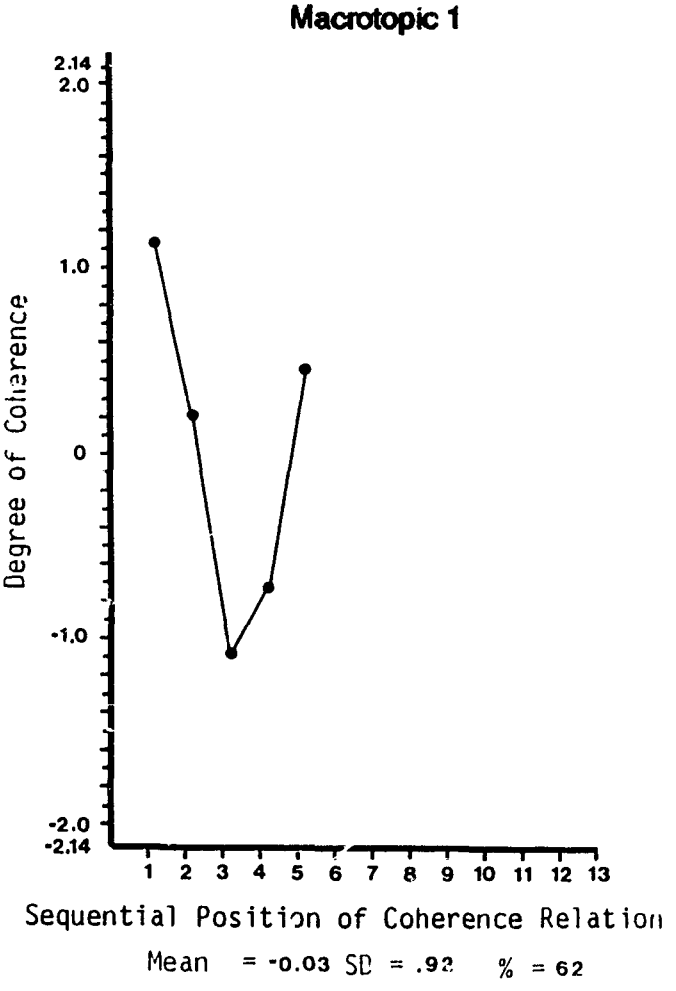


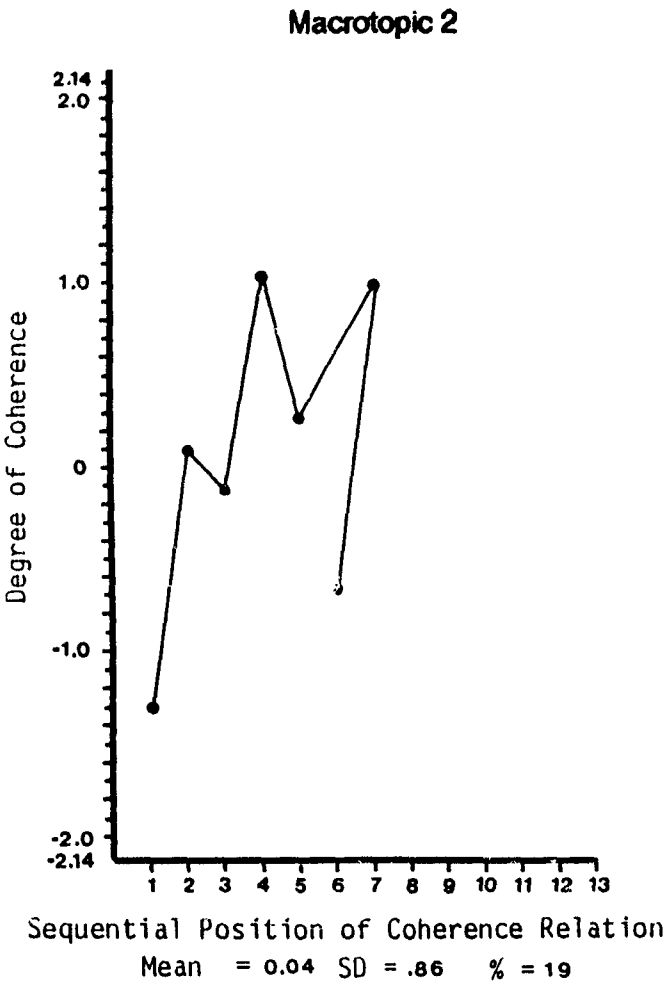
Mean = .14 SD = 1.05 % = 19

Conversation 3, Topic 6.



Mean =.06 SD =.55 % =39


Macrotopic 1
2.14
2.0
1.0
0
-1.0
-2.0
-2.14
Degree of Coherence
1 2 3 4 5 6 7 8 9 10 11 12 13
Sequential Position of Coherence Relation
Mean = -0.03 SD = .92 % = 62


Macrotopic 2
2.14
2.0
1.0
0
-1.0
-2.0
-2.14
Degree of Coherence
1 2 3 4 5 6 7 8 9 10 11 12 13
Sequential Position of Coherence Relation
Mean = 0.04 SD = .86 % = 19

APPENDEX F: A PROGRAM FOR DETERMINING THE SINOSIODAL PERIODICITY OF SMALL N SERIES

The following program which calculates the number of permutations of a given data set that have a smaller period than the one that occured is written in Turbo Pascal. As seen below the maximun N is set for 20.

```
program Series;

uses WinCrt;

const
  MAXN = 20;

var
  n : 1..MAXN;
  x : array[1..MAXN] of integer;
  y : array[1..MAXN] of real;
  mean : real;
  TS : real;
  lt : real;
  eq : real;
  gt : real;
  temp : real;
  mij : array[1..MAXN, 1..MAXN] of real;
  ijm : array[1..MAXN, 1..MAXN] of real;
  p : array[2..MAXN] of integer;
  first : boolean;
  i : integer;
  out : text;
  count : integer;


procedure GetPoints;

var
  i : integer;
  t : real;

begin

  repeat
    write('How many points : ');
    readln(n);
  until ((n > 0) and (n <= 20));

  for i := 1 to n do begin
```

```
    write(i, ': ');
    readln(y[i]);
  end;

  (* output points and mean *)
  writeln('n = ', n);
  writeln;
  writeln(out, 'n = ', n);
  writeln(out);
  t := 0;
  for i := 1 to n do begin
    writeln('y[', i, '] = ', y[i]);
    writeln(out,'y[', i, '] = ', y[i]);
    t := t + y[i];
  end;
  mean := t / n;
  writeln;
  writeln('mean = ', mean);
  writeln(out);
  writeln(out, 'mean = ', mean);

  (* adjust points to mean *)
  for i := 1 to n do
    y[i] := y[i] - mean;
end;


procedure CalcAngles;

var
  i, j : integer;
  dy : real;
  theta : real;

begin

  for i := 1 to n do
    for j := 1 to n do begin

      (* calculate angles *)
      dy := Abs(y[i] - y[j]);
      if (dy = 0) then begin
        if (y[i] = 0) then begin
       mij[i,j] := 0;
          ijm[i,j] := 0;
        end
        else begin
          mij[i,j] := Pi / 2;
          ijm[i,j] := Pi / 2;
        end;
```

```
      end
      else begin
        theta := ArcTan(1/dy);
        if y[i] * y[j] <= 0 then begin
          ijm[i,j] := theta;
          mij[i,j] := theta;
        end
        else
          if Abs(y[j]) > Abs(y[i]) then begin
            mij[i,j] := Pi - theta;
            ijm[i,j] := theta;
          end
          else begin
            mij[i,j] := theta;
            ijm[i,j] := Pi - theta;
          end;
      end;

    end;

end;


function AngleSum : real;

var
  i : integer;
  Sum : real;

begin

  (* calculate the sum of the angles *)
  Sum := 0;
  for i := 1 to n do
    if i = 1 then
      Sum := mij[x[1],x[2]]
    else
      if i = n then
        Sum := Sum + ijm[x[n-1],x[n]]
      else begin
        if y[x[i]] = 0 then begin
          if y[x[i-1]] * y[x[i+1]] > 0 then
            Sum := Sum + 2*Pi - ijm[x[i-1],x[i]] -
mij[x[i],x[i+1]]
          else begin
            Sum := Sum + Pi - ijm[x[i-1],x[i]] +
mij[x[i],x[i+1]];
          end;
        end
        else begin
```

```
          Sum := Sum + ijm[x[i-1],x[i]] + mij[x[i],x[i+1]];
        end;
      end;

      AngleSum := Sum;
end;


(* This algorithm appears in Commuications of the ACM, 1962,
Alg. 86 *)

procedure Permute;

label
  10;

var
  i : integer;
  k : integer;
  km : integer;
  t : integer;

begin

  (* initialize *)
  if (first) then begin
    for i := 2 to n do
      p[i] := i;
    first := false;
  end;

  for k := 2 to n do begin
    t := x[1];
    km := k - 1;
    for i := 1 to km do
      x[i] := x[i+1];
    x[k] := t;
    p[k] := p[k] - 1;
    if p[k] <> 0 then
      goto 10;
    p[k] := k;
  end;

  first := true;

10:
end;


begin
```

```
(* set up the output file *)
assign(out,'data.txt');
rewrite(out);

(* get the points and set up angles *)
GetPoints;
CalcAngles;

(* set up x values *)
for i := 1 to n do
  x[i] := i;

(* calculate TS *)
TS := AngleSum;
writeln('TS = ', TS);
writeln(out,'TS = ', TS);

(* run through permutations *)
first := true;
count := 0;
repeat
  Permute;
  temp := AngleSum;

  if temp < TS then
    lt := lt + 1
  else
    if temp = TS then
      eq := eq + 1
    else
      gt := gt + 1;

  count := count + 1;
  if count = 1000 then begin
   write('.');
      count := 0;
  end;

until (first);

writeln;
writeln;
writeln('Number less than TS    : ', lt);
writeln('Number equal to TS     : ', eq);
writeln('Number greater than TS : ', gt);
writeln(out);
writeln(out,'Number less than TS    : ', lt);
writeln(out,'Number equal to TS     : ', eq);
writeln(out,'Number greater than TS : ', gt);
```

```
  close(out);
end.
```