

THE RELATIONSHIP BETWEEN COHESION AND COHERENCE IN ENGLISH:
AN INVESTIGATION BASED ON SOME UNIVERSITY OF ZAMBIA STUDENTS' WRITTEN DISCOURSE.

BY

JOHN SIMWINGA

A DISSERTATION SUBMITTED TO THE UNIVERSITY OF ZAMBIA
IN PARTIAL FULFILMENT OF THE REQUIREMENTS OF THE
DEGREE OF MASTER OF ARTS IN LINGUISTIC SCIENCE

DEPARTMENT OF LITERATURE AND LANGUAGES
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
THE UNIVERSITY OF ZAMBIA

LUSAKA

1992.

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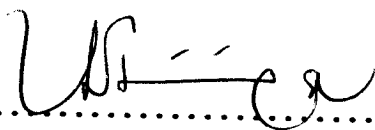
DEDICATION

To my father and my mother.

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I John Simwinga, declare that this dissertation:

- (a) Represents my own work;
- (b) Has not previously been submitted for a degree at this or any other University; and
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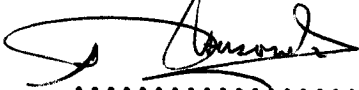
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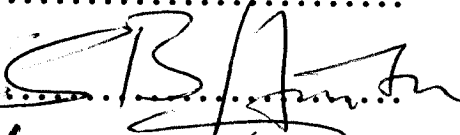
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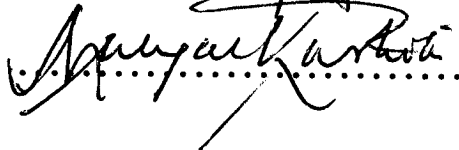
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ABSTRACT

This work examined cohesion and coherence in the written English produced by some undergraduate students at the University of Zambia, Lusaka. The exercise was done to test the theoretical position that there is a relationship between cohesion and coherence in English and to establish the direction, degree and causality of such a relationship.

The corpus was obtained by administering a controlled discussion question to each of the one hundred and twenty subjects to be answered in essay form in forty minutes. Thirty subjects were drawn from each of the four academic levels. For each of the scripts, cohesion was scored by counting the cohesive ties of reference, substitution, conjunction, ellipsis and lexical cohesion with respect to the frequencies with which they occurred. Coherence was scored using the cohesive harmony index developed by Hasan (1986). The figures obtained for each of the two measures were used in computing the Pearson Product Moment Correlation.

At each of the four academic levels, the Pearson Product Moment Correlation gave evidence of the existence of a weak, insignificant and non-casual relationship. The findings indicate that discourse incoherence results from factors other than failure or inability to use cohesive ties.

The corpus is used solely to provide evidence for the existence or non-existence of the asserted relationship and the results are in no way indicative of whether University of Zambia undergraduate students write coherently or not.

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I wish to express my gratitude to the following friends who helped me get along both socially and academically: Enerst Kasuta, Mildred Nkolola, D.C. Nkoshu, Shadreck Nsongela, Fenson Mwape, Joseph Luswili, my niece Charity Namfukwe and my wife Juliet. I also wish to thank all the students who provided data for this study for their co-operation.

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Finally, while the constructive pieces of advice from the supervisors helped me clarify and improve on this work, I claim exclusive responsibility for both the views expressed in the dissertation and whatever deficiencies remain.

ACRONYMS

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CHAPTER 1: INTRODUCTION AND SCOPE OF THE STUDY

1.1. INTRODUCTION

English in Zambia is one of the eight official languages. The others are the indigenous languages Lozi, Bemba, Nyanja, Tonga, Luvale, Kaonde and Lunda chosen by the government for use in specified situations such as education and broadcasting. The seven local languages are also used in religious gatherings, for social interaction in the home, among students and between students and teachers. These languages are taught in schools by province alongside content subjects.

The use of English started with the coming into the country of British Colonial Administrators and is now the most dominant of the eight in education, commerce, industry and government. In education, English is the medium of instruction from grade one to the highest level of formal education. By the end of grade twelve, school leavers are expected to be able to write and speak English quite fluently (Trewby, 1983:10).

On completion of grade twelve, some of these pupils proceed to College and University. It is generally expected that University students, all of whom are admitted with at least credit in English in the Ordinary Level Examinations, have a good command of the language. This view, however, is challenged by Wigzell (1983). Exploring the role and status of English as a language and its effectiveness in meeting the demands of a medium in Zambia, Wigzell (1983:5) concludes that many students at University level "Find themselves struggling to express concepts that are only dimly understood in a language which is inadequate for their needs, resulting in garbled and incoherent discourse". This study examines this 'incoherent' discourse as corpus to test the hypothesis that there is a relationship between cohesion and coherence in English and to establish its direction, degree and causality. Cohesion, as used in this study, is a semantic relation that exists

between two linguistic units in a discourse such that the interpretation of one is dependent on the interpretation of the other. Coherence, as used in this study, is whatever enables a discourse to succeed as a piece of communication.

1.2. STATEMENT OF THE PROBLEM

The existence of a relationship between cohesion and coherence in English has been acknowledged by such linguists as Hasan (1968); Halliday and Hasan (1976); Lyons (1977) and Van Dijk (1977). Of these, Halliday and Hasan (1976) have further asserted that the relationship is causal. Since then, some empirical studies, based on first language user data, have been carried out to test the hypothesis. The results of these studies have been conflicting. Some have affirmed the existence of a strong relationship, others a weak one and yet others none. Apart from the results being inconsistent with one another, in no instance has evidence been presented to support or refute the causal nature of the relationship as asserted by Halliday and Hasan and none has employed data from a second language user setting. The present study is one of the first based on second language user data.

1.3. RATIONALE

It is hoped that the investigation will provide evidence to either support or refute the hypothesis as stated in the introduction. The study will also help fill the gap regarding the direction, degree and causality of the relationship. It is also hoped that the findings will be of direct practical application to the teaching of English in Zambia. On the basis of the findings, suggestions and recommendations will be made regarding the teaching of English in Zambian schools. These will constitute the first step towards finding a remedy to the incoherent pieces of discourse produced by Zambian University students as observed by Wigzell (1983:5).

1.4. OBJECTIVES OF THE STUDY

The main objective of the study is to find out whether there is any correlation between cohesive density scores and cohesive harmony index scores in the written English of University of Zambia undergraduate

students. This exercise will provide evidence to either support or refute the theory that there is a relationship between cohesion and coherence in English. The exercise will also provide answers regarding the direction, degree and causality of the relationship.

The terms direction and degree are used in this study to mean whether the relationship is positive or negative and whether it is high or low respectively.

1.5 RESEARCH QUESTIONS

Four specific questions concerning this relationship were asked:-

- (a) Is there any relationship between cohesion and coherence in the written discourse of University of Zambia undergraduate students?
- (b) What is the direction of this relationship?
- (c) What is the degree of this relationship?
- (d) Is this relationship causal?

CHAPTER 2: LITERATURE REVIEW, THEORETICAL FRAMEWORK AND METHODOLOGY.

2.1. INTRODUCTION

This chapter reviews relevant studies on the use of English in Zambia as well as those on the relationship between Cohesion and Coherence in English. It also presents the theoretical framework and the hypotheses of the study and describes the sampling, data collection and data analysis methods.

2.2. LITERATURE REVIEW

2.2.1. STUDIES ON THE USE OF ENGLISH IN ZAMBIA

Most of the studies on the use of English in Zambia have focused on the search for the existence of a non-native variety of English. These include Africa (1980, 1983); Chisanga (1987); Lawrence and Sarvan (1983); Moody (1983, 1984), and Simukoko (1977, 1981). Others such as Chishimba (1979); Kapena (1985); Moody (1982); Mukuni (1984); Musakabantu (1985) and Tambulukani (1985) have centred on Language in Education. Studies concerned with a descriptive analysis of the English produced by Zambians in connected, naturally occurring spoken or written discourse have not received as much attention. Although the studies undertaken by Kapena, Musakabantu and Tambulukani were exercises in discourse analysis, the corpus for their studies was obtained from institutionalised registers of English-business reports, Law reports and civil Service letters respectively. Their objectives were to find out if there were any recognisable linguistic structures in these registers so that such structures, once identified, could be taught to those training to write business and law reports and civil service letters. All the studies so far have dwelt on either the learner's in-put or the learner's in-take. The terms in-put and in-take are used here to refer to what is or should be taught to the learner and what is or should be learnt by the learner respectively.

One recorded study which departs from this trend and looks at naturally occurring discourse in English produced by Zambian users of English is that of Kashina (1988). The work investigated the distribution patterns of the noun phrase in the English clause using a corpus of thirty scripts produced by a random sample of first year University of Zambia undergraduate students. The study revealed that noun phrase distribution patterns in the written discourse produced by Zambians using English as a second language were the same as those in the discourse produced by people using English as a first language.

The present study, like that of Kashina (1988), departs from the trends that have previously characterised the studies of English. It analyses complete and authentic pieces of discourse produced by a stratified sample of University of Zambia undergraduate students. The study is an exercise in discourse analysis aimed at discovering regularities in the use of cohesive ties and establishing how these relate to or relate with coherence measures. This is in line with Brown and Yule's (1983:23) view of the discourse analyst as one who "attempts to discover regularities in his data and to describe them..." These regularities, they add, are based on the frequency with which a particular linguistic unit occurs under certain conditions in his discourse data (1983:23).

2.2.2. EMPIRICAL STUDIES ON THE RELATIONSHIP BETWEEN COHESION AND COHERENCE.

Following the postulation of the existence of a relationship between cohesion and coherence in English by several linguists including Halliday and Hasan (1976); Hasan (1968); Lyons (1977) and Van Dijk (1977) some experimental investigations have been carried out to test the theory. Roen and Pische (1984) document two groups of the earliest studies. One group (Jarvella 1973; Pearson, 1974-75; Clark, 1977; Carpenter and Just, 1977; Moberly, 1978; Drum, 1979; Stone, 1979; Williams, Taylor and Ganger, 1980) concludes by asserting

a strong relationship between cohesion and coherence. Another group (Kintsh, Strewby, Kitzminsky, Macken and Kenan, 1975; Fishman, 1977; Hangerup-Neilsen, 1977; Irwin, 1978 and Vipond, 1980) concludes that only a weak relationship exists between cohesion and coherence.

Latest experimental studies have also produced mixed results. Witte and Faigley (1981) carried out a study from which it was concluded that though cohesion and coherence interact to a certain extent, a cohesive text may be only "minimally coherent". They pointed out that a text must conform to a reader's expectations for particular types of texts and the reader's knowledge of the world in order to be coherent. The same results were obtained by Tierney and Mosenthal (1983). These findings support the claims made by Meyer (1975, 1979); Meyer, Brandt and Bluth (1978) and Meyer, Freedle and Walker (1977) that microlevel cohesive elements are less important in discourse than rhetorical predicates.

McCulley (1984) conducted a similar study and found that 53% of the variance in coherence in college students' writing was accounted for by cohesion. It was concluded that some relationship exists between cohesion and coherence in English. Similar findings were made by Spiegel and Fitzgerald (1986, 1990) thereby rendering support to the theoretical position that cohesion and coherence are related (Bamberg 1984; Cooper 1983; Van Dijk 1977; Halliday, 1976 Hasan, 1986 and Lyons, 1977).

It is evident from the above experiments and findings that the debate on the relationship between cohesion and coherence in English is far from over. This calls for more empirical studies to ascertain the existence or non-existence of such a relationship. The study also seeks to establish the direction and degree of the relationship and whether it is causal or not. It is hoped that the gap created by non-reference to direction, degree and causality of the relationship in

previous studies will be filled. It is also hoped that the study will yield clues as to the source of incoherence in written English and suggestions made on how this can be remedied.

2.3.1. THEORETICAL FRAMEWORK

As an exercise in discourse analysis, the present study is based on the discourse-as-product approach (Cook, 1989) employed by Kapena (1985); Kashina (1988); Musakabantu (1985) and Tambulukani (1985). This approach views discourse as a product of one's use of language in speech or writing and considers the text so produced as the central unit of analysis. This is supported by Goodman and Bird (1984:120) who argue that the text, encoded by the sender and decoded by the receiver, is "the minimal unit of language fully capable of comprehensively representing meaning". Referring to the written text, they have pointed out that meaning "cannot pass from the writer to the reader. It can only be constructed by the reader from texts so constructed by writers that the texts have the potential to be comprehended" (1984:120). This makes it possible for one to deal with instances of discourse, as noted by Widdowson (1979:148), "from a third person point of view, detached from both the sender and the receiver". This is the approach used in the present study.

2.3.2. HYPOTHESES

To find out whether there was a relationship between cohesion and coherence in the written English of University of Zambia Undergraduate students and the direction, degree and causal nature of such a relationship, the following null and alternative hypotheses were formulated for testing.

H₀: There is no significant relationship between cohesive density scores and cohesive harmony index scores in the written English of University of Zambia undergraduate students.

H1: There is a positive and significant relationship between cohesive density scores and cohesive harmony index scores in the written English of University of Zambia undergraduate students.

H2: There is a negative and significant relationship between cohesive density scores and cohesive harmony index scores in the written English of University of Zambia undergraduate students.

The null hypothesis (H0:) was tested against twenty seven subjects at each of the four academic levels.

2.3.3. LINGUISTIC DESCRIPTION OF FEATURES UNDER INVESTIGATION.

2.3.3.0. INTRODUCTION

This section presents a brief linguistic description of the main features dealt with in the study. All the definitions, unless otherwise stated, are from Halliday and Hasan (1976) because the two provide the most comprehensive discussion of cohesion and coherence to date. All the examples cited are drawn from the samples analysed in the study.

2.3.3.1. DISCOURSE

Discourse is understood as naturally occurring language or language in use (Stubbs, 1983; Cook, 1989). It is characterised by its 'ability' to communicate and by being recognised by the receiver as meaningful and unified, that is, as coherent. Discourse may be written or spoken. It may consist of a single word or utterance or a series of words or utterances. The central principle is that it be meaningful to both the sender and the receiver.

2.3.3.2 COHERENCE

This term refers to the relationships which link the meanings of utterances in spoken or written language.

discourse or of sentences in written discourse to make a unified whole. The links, according to Cook (1989:9) may be based on the receiver's shared knowledge with the sender or on both the shared knowledge and the words and structures used. On the basis of this, he identifies two ways of determining whether a stretch of discourse is unified and meaningful or not. One is recourse to one's knowledge of the world which comprises the sender, the social conventions and situational factors such as the events and activities taking place as one reads or listens. The other is the employment of language rules operating within and between sentences. This is the view held by Halliday and Hasan (1976) and the source of the debate on the relationship between cohesion and coherence.

2.3.3.3. COHESION

This term refers to the formal grammatical and lexical relations that exist between two or more linguistic units in a piece of discourse. These units may be words, phrases or clauses. Cohesion is said to occur when the interpretation of one linguistic unit in a piece of discourse is dependent on that of another unit within the discourse. This means that the meaning of one linguistic unit cannot be effectively decoded without reference to the meaning of another linguistic unit. As presented by Halliday and Hasan (1976) cohesion is a meaning relation between an element in the discourse and some other element that is crucial to the interpretation of it. They argue that a discourse will have certain linguistic features which contribute to its total unity. These are identified as cohesive relations existing within the discourse and categorised into reference, substitution, ellipsis, conjunction and lexical cohesion.

2.3.3.3.1. REFERENCE

Reference is an instance of cohesion in which the semantic

interpretation of a linguistic unit is dependent on that of another unit to which it refers. This reference may be personal as in:

1. Mr. Chiluba led the M.M.D. He was a strong trade union leader.

in which the meaning of the pronoun he cannot be effectively understood without recourse to the noun Mr. Chiluba to which it refers. The reference may be demonstrative as in:

2. Mr. Chiluba and Dr. Kaunda stood for the presidency. These were the only contestants for the post.

Where the meaning of these can only be effectively understood by referring to Mr. Chiluba and Dr. Kaunda, in the preceding sentence.

Finally, reference may be comparative as in:

3. Zambians had been subjected to the One Party system government for too long. This time, they wanted something different.

in which the meaning of something different can only be recovered by comparing it with One Party system of government in the other sentence.

2.3.3.3.2. SUBSTITUTION

Substitution is the cohesive effect achieved by replacing one linguistic unit with another. It may be nominal as in:

4. This novel is boring. Can I have that One.

in which one replaces the noun novel. Substitution may be verbal as in:

5. The citizens did not vote the way they used to do in the second republic.

where do substitutes for the verb vote.

Finally, substitution may be clausal as in:

6. Dr. Kaunda thought that U.N.I.P. would win the election.
Mr. Chiluba did not think so.

in which so substitutes for the clause that U.N.I.P. would win the elections.

2.3.3.3.3. ELLIPSIS

Ellipsis is the omission of a linguistic unit from a piece of discourse. The omitted item is understood by the reader or hearer from the context. Like substitution, ellipsis may be nominal, verbal or clausal. Nominal ellipsis is illustrated in:

7. st
Zambians contined shifting from one political party to another.

in which another functions as head of the elliptical nominal political party which is omitted immediately after it.

Ellipsis may be verbal as in:

8. UNIP supporters voted for Dr. Kaunda, MMD supporters for Mr. Chiluba while the rest stayed at home.

where the verb voted is omitted between supporters and for.

Finally, ellipsis may be clausal as illustrated in:

9. Dr. Kaunda complained that mothers did not vote. He said he did not understand why.

Where why functions as head of the elliptical clause mothers did not vote in the first sentence.

2.3.3.4. CONJUNCTION

Conjunction as a cohesive tie specifies how the immediately

forthcoming segment of the discourse is systematically connected to the preceding segment. Williams (1983) refers to conjunctions used in this way as 'discourse markers' to distinguish them from conjunctions as defined and used in traditional grammar. There are four types of conjunctions which operate as cohesive ties: additive, adversative, causal and temporal. The use of the additive conjunction tie is illustrated in :

10. Mr. Chiluba won the elections. And he beat the incumbent by a large margin.

in which And is used as an additive conjunction. It links the first sentence to the second by introducing additional information to that contained in the preceding sentence. Other additive conjunctions of this type include furthermore, again, moreover, in addition to and many others. Additives such as or introduce alternatives. Others, such as likewise, similarly, in the same way indicate similarity while on the other hand, by contrast, as opposed to this signal dissimilarity.

An instance of the adversative conjunction used as a cohesive tie is presented in:

11. Dr. Kaunda had all the advantage over Mr. Chiluba. Yet, he lost the elections.

in which yet links the two sentences by introducing information that is contrary to expectation in this context. This marks an adversative conjunctive cohesive relation. Other words that operate in this way are but, only, however, though, nevertheless and still (Moody, 1988:21). The adversative relation may be an avowal marked by in fact or actually, or a dismissive marked by in any (either) case (event), any (either) way and whichever happens.

This use of a causal conjunction as a cohesive tie is exemplified in:

12. Zambians wanted change. So they voted for Chiluba.
in which so links the first sentence to the second in a causal relation indicating that the need for change 'caused' Zambians to vote for Mr. Chiluba. Such a causal relation is of the reason type with the meaning 'because of this'. Others are of result marked by as a result, therefore and purpose marked by so as in:

13. Zambians wanted to vote for change. So they trooped to the polling stations.
in which so has the meaning 'for the purpose of voting for change'.

The last type of cohesive conjunction is the temporal one illustrated in:

14. Voting took place between 06.00 hours in the morning and 18.00 hours in the evening. Afterwards, the ballot boxes were sealed and taken to counting centres.
in which afterwards signals a time relation linking the two events of voting in the first sentence and the counting of votes in the second. Halliday and Hasan (1976) classify temporal conjunctions into correlative marked by finally, to sum up, and resumptives marked by any way, to resume and others.

2.3.3.3.5. LEXICAL COHESION

This is the cohesive effect achieved by the selection of vocabulary. This is illustrated in:

15. The elections were held in October, 1991.
The polls were free and fair.
in which elections and polls are synonyms. This is an instance of the type of lexical cohesion known as re-iteration. In re-iteration the two lexical items have a common referent and the re-iterated term is usually accompanied by a reference item, usually the (Moody, 1988:27). Apart from synonymy, re-iteration may take the form of repetition, general word,

near-synonym or super-ordinate.

Another type of lexical cohesion is that of collocation. This is the association of lexical items that "regularly co-occur in similar contexts" (Moody, 1988:27). An instance of this occurrence is presented in:

16. Zambians were fed up with the one-party system of government.

They wanted to have a multi-party system.

in which one-party and multi-party stand in the lexical-semantic relation of 'systems of government'. The two occur in a complementary relation in which the presence of one implies the exclusion of the other. Apart from complementaries, antonyms such as wet and obey are other types of collocation..

As noted earlier, one of the central principles of discourse is that it be meaningful and unified or coherent. Halliday and Hasan insist that cohesion, as discussed above, is the source of this coherence associated with discourse. This insistence suggests that there is a causal relationship between cohesion and coherence. Halliday and Hasan argue that the concept of cohesion accounts for the essential semantic relations whereby any passage of speech or writing is enabled to function as discourse. The assertion is more forcefully presented in the statement "cohesive ties between sentences stand out more clearly because they are the ONLY SOURCE OF TEXTURE" (1976:9). These statements sum up their thesis that there is a causal relationship between cohesion and coherence. This view is also shared by Van Dijk (1977:93) who states that "intuitively, coherence is a semantic property of discourse based on the interpretation of each individual sentence relative to the interpretation of other sentences". The contention is that the more cohesive a piece of discourse is, the more coherent it will be.

Since the claim was made, continuing debate and interest have focussed on an empirical verification of the relationship. These studies have centred on the existence or non-existence of the relationship without examining its direction, degree

and causality. Noting that most of the pronouncements on relationship are based on subjective evaluation, Fallick and Brown (1983:154) advise that what is needed is "a way to quantify the relationship in two ways: its degree and its direction". The present study was undertaken with this statement in mind. It is an attempt at an empirical investigation into the existence, direction, degree and causality of the asserted relationship between cohesion and coherence in English. Unlike previous studies, the present enquiry is based on data generated by second language users of English.

2.4. SAMPLING

The population in this study is the full-time 1992 academic year undergraduate student body enrolled in the School of Education and the School of Humanities and Social Sciences, at the University of Zambia, Lusaka. The two schools were chosen because they have more students at each of the four academic levels than any other school in the University. Wigzell's (1983) observation that University of Zambia students produce incoherent pieces of discourse was based on discourse pieces produced by students from the two schools. In order to establish comparability, it was necessary to use data produced by students from the same schools. The demand on the use of English imposed on students from the two schools is greater than that imposed on students from other schools in the University. They have to analyse and express concepts in English in connected discourse. This is not the case in other Schools where either symbols are sufficient or only factual and descriptive information is presented.

From the population, a sample of one hundred and twenty male and female students, thirty from each of the four academic levels was used.

A proportional stratified sampling method was used because it was found most appropriate to the research design. The design met the two conditions that must exist for such a method

to be used. The first is that there exists a method of identifying which stratum each element belongs to and the second that there be intentions by the researcher to make inferences for each stratum from the study (Fallick and Brown, 1983:273). The first condition was met in that the students were divided according to their academic levels in the University from first year level to fourth year level and each of them belonged to one and only one of these levels. The second condition was also met because Coefficients of Correlation were computed and compared for each of the four levels.

2.5. DATA COLLECTION

2.5.1. RESEARCH INSTRUMENT

The research instrument used was a controlled discussion question to be answered in essay form. To ensure homogeneity in content and register, the topic was 'The October 1991 Presidential and General Elections in Zambia'. It was selected because it pertained to an issue of general interest to the subjects, most of whom participated in the exercise as either voters or observers and all of whom had sufficient information on the topic to be able to write a guided essay of about four hundred words. The guidelines in the form of short questions constituted another measure taken to ensure uniformity in both content and register.

2.5.2. PILOT TESTING

The research instrument was pilot tested on a sample of forty students, ten from each of the four academic levels, to assess the clarity of instructions, the time taken for the task to be completed and the number words in each of the essays. The results indicated that the instructions were clear. The exercise was done in forty minutes and each of the essays had between three hundred and fifty and four hundred words. The subjects did not have any prior knowledge that they would be writing an essay on elections.

2.5.3. ADMINISTRATION OF INSTRUMENT

The corpus for the study was obtained by administering the controlled discussion question to each of the one hundred and twenty subjects. The question was presented to them on different days as they reported for their morning lectures without prior knowledge that they would be writing an essay on elections. They were instructed to write the essays in thirty minutes and were given another ten minutes in which to revise their work. Thereafter, both the scripts and question papers were collected. This exercise was done over a period of two weeks. There was no bias to gender, intellectual ability or social background of the subjects on the basis that all of them had been exposed to the same formal education system and all were using English as a second language.

2.6. DATA ANALYSIS

2.6.1. DESCRIPTIVE STATISTICS FOR TESTING THE HYPOTHESES

The Pearson Product Moment Correlation was used to test the null hypothesis of no relationship ($H_0: r = 0$) between cohesive density scores and cohesive harmony index scores at $P < 0.01$ level of significance, non-directional. The Pearson Product Moment Correlation was chosen because it is the type of statistics that measures the degree of correspondence or relationship between two variables which vary together such that "when one is larger, the other tends to be systematically larger or smaller" (Roscoe, 1969:71). Fallick and Brown (1983:170) add that measures of relationship give the researcher "an index number that indicates the degree of similarity between data in one distribution and those in a second distribution". Since the hypothesis in question is a test of relationship (its existence, direction, degree and nature) the Pearson Product Moment Correlation was found to be the most appropriate measure.

The hypothesis was tested as a non-directional one because of the possibility of the relationship being either positive or negative in direction. As Fallick and Brown (1983:319) advise, a non-directional hypothesis "is most practical when the researcher is somewhat unsure of the direction of the study's outcome", and that a directional hypothesis "may only be used if previous research or theory suggests a specific direction of results". Since neither previous research nor theory suggested a specific direction of results in the cohesion and coherence relationship, the non-directional test was used. All the assumptions underlying its use were met. These are: that the pair of scale values for each individual be independent of all others; that each of the two values be measured on an interval scale; that each of the two variables be normally distributed and that the relationship between the two sets of scores be linear (Fallick and Brown, 1983:166).

2.6.2. COHESIVE DENSITY

The degree of cohesion in each text was scored using the cohesive density scale. Each of the scripts was subjected to an analysis of the cohesive links by physically counting the number of times each of the links occurred in the script. The cohesive ties analysed were those of reference, substitution, ellipsis, conjunction and lexical cohesion. From these scores, an essay in which more cohesive ties were used was considered as having a higher cohesive density than one in which fewer ties were used.

The analysis was carried out after Peyton et al. (1990) and Stotsky (1986). Words and phrases were counted as single lexical items. Words varying only in inflectional endings as in vote/voting/voted or in comparative ending as in fair/fairer were analysed as instances of repetition. Personal pronouns repeated throughout the text as reference were categorised as reference at each occurrence. Ties both

within and between sentences were counted. Multiple ties were noted when a word or a group of words entered into more than one cohesive relationship with a previous word or group of words. In such a case, two ties were counted. This is illustrated in:

17. Both the presidential elections and the general elections were won by the M.M.D. These elections were both free and fair.

in which these elections is both a near-synonym of the presidential and the general elections and a repetition of elections.

2.6.3. COHESIVE HARMONY INDEX

The degree of coherence was scored using the cohesive harmony index developed by Hasan (1984) and used by Langer (1984) and Spiegel and Fitzgrald (1990). This measure is derived entirely by analysing the linguistic features of the written text. It is calculated in four stages.

The first stage involves locating chains of cohesive elements by placing, in a vertical chain, a referent and all lexical ties that refer to it. Thereafter, interactions between chains are identified. These, according to Hasan, occur when items in two cohesive chains stand in the same functional relation to each other in two or more separate clauses. They may be of one of the following types: epithet-thing; medium-process; process-phenomenon; actor-process; process-goal and process-location (Spiegel and Fitzgerald, 1990:53). The next stage involves distinguishing three kinds of lexical tokens: relevant, peripheral and central (Langer, 1984:32). Relevant tokens are those items included in a cohesive chain. Peripheral tokens are those items not included in a cohesive chain while central ones are those participating in chain interactions. Finally, the cohesive harmony index is calculated as the ratio of central tokens to the total number of relevant tokens.

In the following extract from one of the samples there are four cohesive chains:

18. The registered voters walked to the polling stations as early as 0.6.00 hours. They voted for the parties of their choice. After that, they returned to their homes.

In the text, there are five references to voters: registered voters, they their, they and their. There are two references to verbs of travel in walked and returned and one verb of voting, voted. There are two references to places, polling stations and homes. Each of these groups of referents represents a cohesive chain. The chains in the first three groups interact in the doer/doing or agent/process functional relationship as: registered voters walked - agent/process; they voted - agent/process, they returned - agent/process.

The last group of polling stations and homes also forms a cohesive chain which interacts with the others by specifying a location relation. From this analysis, the text has one peripheral token, the temporal conjunction tie After that and two relevant tokens their occurring in the second and in the third sentence. The text has five central tokens: registered voters, polling station, they, they and homes. The cohesive harmony index, which is the ratio of central tokens to relevant tokens, for this piece is 5:2, resulting in 2.5. The higher the cohesive harmony index, the more coherent a piece of discourse is considered to be. As observed by Langer (1984), a more coherent text would be expected to have more interactions among the cohesive chains than a less coherent one.

CHAPTER 3: FINDINGS AND INTERPRETATION

3.1. INTRODUCTION

This chapter presents a summary of the results from the analyses in chapter two and discusses them in relation to the question, hypotheses and objectives set out in the study. The chapter also discusses the implications of the findings and concludes with suggestions for further research.

3.2.1. FINDINGS

3.2.1.1. Pearson Product Moment Correlation.

Pearson Product Moment Correlation used to test the null hypothesis of no relationship at $P < 0.01$ yielded variable results at each of the four academic levels. All the calculations, based on the formula,

$$r_{xy} = \frac{N \sum XY - \sum X \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

copied from Fallick and Brown (1983:165) were made using a manual Texas Scientific Calculator Model T1 30 STAT.

The calculations proceeded as follows:

First each of the values were squared. Then the raw values for each column were added to give $\sum X$ and $\sum Y$. The squared values were added to give $\sum X^2$ and $\sum Y^2$. Secondly, each individual X value was multiplied by the corresponding Y value (XY). The products of this multiplication were added and multiplied by N, the number of observations to get $N \sum XY$. The third step involved multiplying $\sum X$ and $\sum Y$ and subtracting the result from $N \sum XY$. Thereafter, the sum of the squared values for each column was multiplied by the number of observations to get $N \sum X^2$ and $N \sum Y^2$. The next step involved squaring the summed values for each column to get $(\sum X)^2$ and $(\sum Y)^2$. Following

this, a subtraction exercise involving two sets of values was carried out and the results multiplied. The two sets involved were $N \sum X^2 - (\sum X)^2$ and $N \sum Y^2 - (\sum Y)^2$. The square root of the product was then computed. Finally, this square root was divided into $N \sum XY - \sum X \sum Y$ to get the Coefficient of Correlation. This exercise was done three times for each of the four academic levels. For easy calculation, all the cohesive harmony index scores for each of the levels were multiplied by ten and rounded off because the majority of them were decimal fractions. The results of the calculations were then rounded off to four decimal places. These results are tabulated below.

Table 1: PEARSON PRODUCT MOMENT BY ACADEMIC LEVELS.

ACADEMIC LEVEL	NUMBER OF SUBJECTS	COEFFICIENT OF CORRELATION	ALPHA LEVEL
1	27	+ 0.0349	.01
2	27	- 0.0753	.01
3	27	+ 0.0396	.01
4	27	+ 0.4689	.01

3.2.2. INTERPRETATION OF FINDINGS

The first research question in this study was addressed by carrying out a Pearson Product Moment Correlation analysis for each of the four academic levels. As observed in Table 1, each of the Co-efficients of correlation is not equal to zero. Because of this, the null hypothesis of no relationship was rejected and that of the existence of a relationship between

cohesion and coherence accepted. This decision was guided by Roscoe (1969:147) who states that " when the significance of a correlation coefficient is tested, the null hypothesis states that the correlation between the two variables in the population under study is zero". From the results in Table 1, it is evident that there is a relationship between cohesion and coherence in written English.

The Pearson Product Moment Correlation results presented in Table 1 show that the relationship between cohesion and coherence can be either positive or negative in direction. A negative relationship shows that an increase in one variable results in a decrease in the other. At the first, third and fourth levels, the relationship is positive in direction. This indicates that an increase in one variable results into an increase in another or that a decrease in one variable results into a decrease in another.

In degree, a relationship may be high or low depending on how close it is to 1.00 or 0.00 respectively and will be significant or not depending on the size of the difference between the observed statistic and the corresponding hypothetical parameter (Mills, 1938:206). It is considered significant if the difference is small. From Table 1, it is evident that at all the four academic levels the relationship is not significant. This suggests that although there is a relationship between cohesion and coherence in written English discourse the relationship is not significant.

Another question posed in the study was whether the relationship was causal or not. From the study, the evidence indicates that although a relationship exists between cohesion and coherence, the relationship is statistically too weak to be causal. Even if it were strong, its strength would not have guaranteed the definitive conclusion that the relationship is causal. Meyers (1974:198) advises that "a correlation, no matter what valence or value cannot be interpreted as demonstrating a causal linkage between X and Y". A correlation is only one requirement for the postulation of a causal relationship and does not mandate

definitive statements as to the causal nature of the relationship. This means that although correlation is a necessary feature of a causal relationship, it is not sufficient proof that a causal relationship exists. Phillips (1973:46) cautions that "whether the relationship is interpreted as a causal one should depend not just on the correlation of two variables but also on some rational link between them".

The second scientific requirement for a causal relationship is that it must be demonstrated through experimental research that one variable is both necessary and sufficient in a given context for the occurrence of another. This principle of cause necessity and sufficiency means that when the cause is removed, the effect will not occur and that when the cause is presented, the effect will occur. This is not the case with the cohesion/coherence relationship because evidence from other empirical studies indicates that cohesion is neither necessary nor sufficient for text coherence.

Studies by Witte and Faigley (1981) and Tierney and Mosenthal (1983) provide evidence of no relationship between cohesion and coherence. These findings render support to claims made by Meyer (1975, 1979), Meyer, Brandt and Bluth (1978) and Meyer, Freedle and Walker (1977) that microlevel cohesive elements are less important than rhetorical predicates. Labov (1970) and Widdowson (1979) have also denied the existence of a causal relationship between cohesion and coherence pointing out that a string of utterances may constitute a text or discourse without containing any overt markers of cohesion. Regarding written discourse, Urquhart (1983:89) reports a study by Bransford et al. in which native users of English were presented with a text in which sentences were linked by formal cohesive ties and in which the situational essentials were also well presented. The readers rated the text as very difficult and had very poor recall of text content. This indicates that this particular text, though cohesive, was not unified and meaningful, that, it was not coherent. All these studies and findings show that cohesion is neither necessary nor sufficient for a piece of

discourse to be coherent.

The present study has provided evidence that though there is a relationship between cohesion and coherence, the relationship is not causal. McCall (1980:5) defines a non-causal relationship as "one in which the independent variable does not actually produce, cause or influence the dependent variable although the values of the dependent and the independent variables are in some way related". The non-causal nature of the relationship between cohesion and coherence, evidenced in the present study, suggests that there are factors, other than cohesion, which contribute to discourse coherence. Brown and Yule (1983:223) observe that "though one of the pervasive illusions which persists in the analysis of language is that we understand the meaning of a linguistic message solely on the basis of the words and structures of the sentences used to convey that message,... it is a mistake to think that we operate only with this literal input to our understanding". Supporting this observation, Cook (1989:13) states that "if we are to find the answer to the problem of what gives stretches of language unity and meaning, we must look beyond the formal rules operating within sentences and consider the people who use language and the world in which it happens as well". These statements indicate that discourse coherence involves much more than the formal cohesive ties one uses.

3.3.1. CONCLUSIONS

Like the studies based on first language user data, the present study, based on second language user data, has confirmed the existence of a relationship between cohesion and coherence in written English thereby rendering support to the findings by McCulley (1984) and Spiegel and Fitzgerald (1986, 1990). The three issues of direction, degree and causality were also addressed in the study. The investigation has shown that the relationship may be either positive or negative in direction. The study has also shown that the relationship is not causal.

3.3.2. IMPLICATIONS OF THE FINDINGS

The study has shown that though there is a relationship between cohesion and coherence in written English discourse, the relationship is neither significant nor causal. This implies that any incoherence in the written pieces of discourse produced by Zambian University students is due to factors other than the students' failure or inability to use appropriate cohesive ties. Wigzell contends that what students lack is "capacity to express concepts dimly understood, in a language which is inadequate for their needs" (Wigzell, 1983:5). This contention indicates that the learners are handicapped both conceptually and linguistically. The challenge for the teacher of English in Zambia, therefore, is how to develop this capacity to a level where the learner will be able to communicate both conceptual and factual information effectively in writing in a university setting.

The students' inability to produce coherent discourse in English after having learnt it as a subject for twelve years implies the existence of a gap between English as a subject and English as a medium of communication. Wigzell (1983:5) endorses this when he says, "as a subject, English is failing to develop the degree of operational competence in the language that its use requires". This observation is not peculiar to the Zambian setting. Widdowson (1979:89) states that users of English as a first language encounter similar problems when he says "... students entering higher education with the experience of six or more years of instruction at secondary school, have considerable difficulty coping with language in its normal communicative use". The pedagogic implication of the findings is that emphasis be shifted from the development of linguistic competence to the development of communicative competence. The study makes some suggestions on how this shift can be achieved.

One way in which a teacher of English in Zambia can shift from developing learners' linguistic competence to developing learners' communicative competence is by teaching concepts and the linguistic

forms through which such concepts are realised.

Another way is by exploring the alternative sources of coherence suggested by Meyer and others. Meyer et al. hold the view that discourse coherence is a function of macro-level structures also described as rhetorical predicates (Meyer, 1975, 1979; Meyer, Brandt and Bluth, 1978; Meyer, Freedle and Walker, 1977). These rhetorical predicates, according to Roen and Piche (1984:10) are statements that "specify structural relations amongst ideas that constitute the content of a text". Meyer et al. list four types of such predicates: Adversative, Covariance, Response and Attribution. Experimental studies should be carried out on the effect of these structures on discourse coherence using data obtained from Zambian Users of English. Once found to have a significant effect on discourse coherence they can be incorporated into the English language syllabus.

The third alternative source of coherence is that of functional relations suggested and quantified by Hasan (1986). These should also be subjected to empirical investigations and be incorporated into the English language syllabus once experimental evidence indicates that they have a significant effect on discourse coherence.

3.4. LIMITATIONS OF THE STUDY

The results of this study have to be interpreted in the light of three limitations. The first is that they are based on a limited sample of writing of a very small number of students from two schools out of about three thousand students from nine schools in the University. Some of the subjects may have monitored the elections more closely than others thereby producing more fluent pieces of discourse. It may also be the case that subjects found it easier to write narrative based on experience and yet find it difficult to write coherent discipline specific academic pieces of work. Because of these limitations, the statistical results of the investigation should be seen as

peculiarly characteristic of the texts that constitute the corpus and should not be generalised to all Zambian students. The corpus is used solely to provide evidence for the existence or non-existence of the asserted relationship. The results do not explain whether Zambian University students write coherently or not. This is beyond the scope of the present study.

3.5. SUGGESTIONS FOR FURTHER RESEARCH

Both the remedies suggested above and their mode of implementation constitute areas for further research by scholars interested in English as a second language in general and in English in Zambia in particular. To date, discourse coherence has not been pinned down to any single source. It may be the case that incorporating all the likely sources of coherence into the English Language syllabus in Zambian schools will go some way towards minimising incoherence in the discourse produced by learners after school.

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ANNEX 1: RESEARCH INSTRUMENT

Write an essay of between 350 and 400 words on 'The October 1991 Presidential and General Elections in Zambia'.

Include the following points:

- (a) What you understand by elections
- (b) Why the October, 1991 elections were held
- (c) The government's preparations for the elections
- (d) The public's preparations for the elections
- (e) The politician's preparations for the elections
- (f) Voting
- (g) Vote counting
- (h) Results of the elections
- (i) The public's reaction to the results
- (j) Whether or not (in your opinion) the elections were fair
- (k) The impact of the elections on the Zambian society.

ANNEX ii: DISTRIBUTION PATTERNS FOR COHESIVE TIES: FREQUENCIES
AND PERCENTAGES WITHIN LEVELS.

TYPE OF TIE	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
	F	%	F	%	F	%	F	%
REFERENCE	358	59.7	284	51.7	426	62	377	47.9
SUBSTITUTION	6	1	16	2.9	12	1.8	17	2.1
CONJUNCTION	51	8.5	64	11.7	58	8.4	51	6.5
ELLIPSIS	14	2.3	28	5.1	12	1.8	10	1.3
LEXICAL	171	28.5	157	28.6	179	26	332	42.1
TOTAL:	600	100	549	100	687	100	787	100

ANNEX iii: DISTRIBUTION PATTERNS FOR COHESIVE TIES: FREQUENCIES AND PERCENTAGES BETWEEN LEVELS.

TYPE OF TIE	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4		TOTALS	
	F	%	F	%	F	%	F	%	F	%
REFERENCE	358	24.8	284	19.6	246	29.5	377	26.1	1445	55.1
SUBSTITUTION	6	11.8	16	31.3	12	23.6	17	33.3	51	2
CONJUNCTION	51	22.7	64	28.6	58	26	51	22.7	224	8.5
ELLIPSIS	14	21.9	28	43.8	12	18.7	10	15.6	64	2.4
LEXICAL	171	20.4	157	18.7	179	21.3	332	39.6	839	32
TOTALS:	600		549		687		787		2623	100

**ANNEX iv: DISTRIBUTION PATTERNS FOR COHERENCE MEASURES:
FREQUENCIES AND PERCENTAGES WITHIN LEVELS.**

TYPE OF TOKEN	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
	F	%	F	%	F	%	F	%
CENTRAL	240	40	127	23.1	197	28.7	217	27.6
RELEVANT	324	54	281	51.2	379	55.2	470	59.7
PERIPHERAL	36	6	141	25.7	111	16.1	100	12.7
TOTALS	600	100	549	100	687	100	787	100

ANNEX v: DISTRIBUTION PATTERNS FOR COHERENCE MEASURES: FREQUENCIES AND PERCENTAGES BETWEEN LEVELS.

TYPE OF TOKEN	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4		TOTALS	
	F	%	F	%	F	%	F	%	F	%
CENTRAL	240	6.9	127	3.7	197	5.7	217	6.3	781	29.8
RELEVANT	324	9.4	281	8.1	379	11.0	470	13.6	1454	55.4
PERIPHERAL	36	9.3	141	36.3	111	28.6	100	25.8	388	14.8
TOTALS:	600		549		687		787		2326	100



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