

**INDEXICALS, DISCOURSE MARKERS AND CLAUSE
RELATIONS AS SIGNALLING FEATURES OF MEDICAL
SCIENCE JOURNAL ARTICLES**

BY

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**A PhD THESIS SUBMITTED TO THE DEPARTMENT OF
INFORMATION TECHNOLOGY, SCHOOL OF MANAGEMENT
AND INFORMATION TECHNOLOGY, FEDERAL UNIVERSITY
OF TECHNOLOGY, YOLA, IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE AWARD OF DOCTORATE
DEGREE (PhD) IN ENGLISH FOR SPECIFIC PURPOSES.**

CERTIFICATION

I Luka Barnabas Jauro certify that the research work embodied in this thesis is an original work solely carried out by me.

APPROVAL PAGE

This project report entitled, 'Idexicals, Discourse Markers and Clause Relations as Signalling Features of Medical Science Journal Articles' meets the regulations governing the award of PhD of the Federal University of Technology, Yola and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

I dedicate this work to Almighty God, my beloved father late Mr Barnabas Jauro, my mother Mrs Maria Barnabas Jauro, My wife Mrs Shiyayo Luka Jauro and children Gerald and Richard.

ACKNOWLEDGEMENTS

My deepest gratitude to my supervisor and academic mentor, Professor K. N. Nwogu: for his critical comments, encouragement and desire to guide me throughout this study. I am also grateful to my Dean and co supervisor, Professor Gbenga Fakuade for his constructive criticism. I remain thankful to my Head of Department, Dr E. C. Sharndama whose consistent encouragement spurred me from the onset of this research.

I appreciate the contribution of my elder brother, academic associate and friend Honourable John Gamsa for his daily insight on current issues in linguistics. My elder brother and sisters: Mr Samuel Barnabas Jauro, Mrs Mary Wuyep, Mrs Francisca Koji, Mrs Felicia J. Kwaji and Mrs Lydia T. Wazamda respectively, for their financial, spiritual and moral support throughout this programme.

My appreciation also goes to my good friends: Emmanuel Peter Sunu, Jamila B. A. Yahaya, Richard Kamai, Richard Wada, Mansurah Buba Ardo, John Peter Wappa, Rabi Maunde, G. G. Teneke and Badgal for their support. I want to specially thank my wife and children for their full support and encouragement throughout this research.

ABSTRACT

This work investigates the use of indexicals, discourse markers and clause relations in Biological Science Journal Articles. The study was aimed at examining the characteristic indexicals, discourse markers and clause relations used in Biological Science Journal Articles in order to identify the extent to which indexicals, discourse markers and clause relations serve as text creating linguistic features in scientific journal articles. Statistical, descriptive and evaluative approaches were adopted in the analysis of data. The corpus for the study consists of 15 texts from 5 reputable Biological Science Journals, namely; The Middle East Fertility Society Journal, African Journal of Reproductive Health, Journal of Health Population Nutrition, Electronic Journal of Biotechnology and Malaysian Journal of Medical Science. Three articles were chosen by random sampling from each of the journals which were published between 2006 and 2008. Indexicals were analyzed based on Kaplan's (1989a) classification of Indexicals, while discourse markers were analyzed based on insights from Schiffrin's (1987), Nwogu (1990, 2010) and Halliday and Hassan's (1976) approaches to the classification of discourse markers. Clause Relations were analyzed based on Winter (1977, 1974) model of Clause Relations. The findings show that indexicals, discourse markers and clause relations are significant features of Biological Science Journal Articles. Specifically, the findings show that the indexical 'this' is used in writing as a demonstration that draws attention with the intention to identify rather than to make a gesture as is the case in speech, while the conjunct discourse marker 'but' does not only serve to link propositions, but also to introduce a contrast between two propositions. It was also observed that Logical sequence relations are used in the texts to show the cause of an action. The study recommends that new entrants into the academic discourse community, particularly young science lecturers and students should be encouraged to learn the proper use of indexicals, discourse markers and clause relations as these signalling items will help them in writing good articles for scientific journals.

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INTRODUCTION

1.1 Background of the Study

The general theory of signs (semiotics or semiology) was developed by Charles Saunders Pierce and Ferdinand de Saussure at the end of 19th and at the beginning of 20th century respectively (Peirce, 1931). According to Lyons (1983) Peirce first pointed out the importance of indexicality as one way that signs function and carry meaning ironically, indexically and symbolically. Indexicals are expressive signs that point to the truth of a proposition made by a speaker in an utterance or in utterances. The term indexical was first used by Peirce to refer to demonstrative pronouns and other words which call the attention of the learner to aspects of the immediate situation. Abercrombie (1967) cited by Lyons (1977) uses the term “indices” to refer to “signs which reveal personal characteristics of the writer or speaker”. Some philosophers, equally used the term “indexical” of sentences, to portray the truth value of expressions made as in the sentence “I am sad”. Such indexical sentence is contextually – dependent in the sense that the truth-value of the proposition expressed in the statement made by uttering it may change from one occasion of its utterance to another.

It has been observed by Kaplan (1989a) that the indexicals that philosophers have studied most are the **pronouns**: ‘I’, ‘he’, ‘she’, ‘this’ and ‘that’, the **adverbs**: ‘here’, ‘now’, ‘actually’, ‘presently’, ‘today’, ‘yesterday’ and ‘tomorrow’ and the **adjectives**: ‘actual’ and ‘present’. Filmore (1972, 1975) and Lewis (1983) point out that utterances such as: ‘come’, ‘go’, ‘left’ and ‘right’ seem to invoke different points of reference, or different perspectives in different contexts. Indexical makes a speaker to engage in gesticulatory

expressions of what is intended. Therefore, indexicals are determined in part by the extra-linguistic factors of time and location of the speaker's intention. They can also vary from context to context; hence they are commonly referred to as context-based expressions.

Therefore, indexicals are expressive words that point to the truth of a proposition. Such expressive words are found in all languages. The general phenomenon of the occurrence of such words in any language is known as deixis. The word deixis is borrowed from Greek meaning pointing or indicating. It is realized by means of demonstratives, first and second person pronouns, tense, specific time and place adverbials such as 'now' and 'here' and any other grammatical features that are connected to the circumstances of an utterance. Levinson (1983) points out that deixis or deictic words and expressions can also be referred to as indexical markers. Discourse markers are linguistic expressions used to signal the relation of an utterance to its immediate context, with the primary function of bringing to the listener's attention a particular kind of linkage of the upcoming utterances with the immediate discourse context (Redeker, 1990). They are words or phrases that function primarily as a structuring unit of spoken language. They frequently appear at the beginning or end of a sentence. To a listener, a discourse marker signals the speaker's intention to mark a boundary in discourse, such as a change in the speaker's expression to indicate the end of a sentence or expression and the beginning of a new topic or the expression of a response. Redeker (1990) identifies some discourse markers in English to include words such as: 'well', 'now', 'actually' and 'ok'.

A conversation is “much less lively and less personal without signalling receipt of information, agreement and involvement” often by the use of discourse markers (Strenstrom, 1994). Discourse markers are used in the prompts of automated telephone service dialogues in order to create and maintain this sense of a more lively and personal relationship with the user.

Wikipedia (2008) points out that in Linguistics, a discourse marker is a word or phrase that marks a boundary in a discourse, typically as a part of a dialogue. Discourse markers do not belong to the syntactic or semantic structure of an utterance. They are usually polyfunctional elements and can be understood in two ways. Firstly, as elements which serve to the union of utterances (in this sense they are equivalent to the term connectivity), Secondly, as elements which serve to a variety of conversational purposes. Traditionally, some of the elements considered as discourse markers were treated as ‘fillers’ or ‘expletives’, that is, elements which function as that of not having any function at all. Nowadays they are assigned functions in different levels of analysis, topic changes, reformulations, discourse planning, stressing and hedging or back channeling. According to Wikipedia (2008) those functions can be classified into three broad groups:

- a. Relationships among (parts of) utterances
- b. Relationships between the speaker and the message
- c. Relationship between speaker and hearer.

Diachronic data show that discourse markers often come from different word classes, such as adverbs (well) or prepositional phrases (in fact). The process that leads from a tree construction to a discourse marker can be traced back through grammaticalization studies (Wikipedia, 2008).

In the analysis of discourse, discourse markers are revealed as features which help in the interpretation of text. Schiffrin (1987) defines markers as sequentially dependent elements which bracket units of talk. She defines markers in relation to units of talk, rather than defined units such as sentences, prepositions, speech acts, or tone units. In line with her characterization, she identifies the following as discourse markers: 'oh', 'well', 'and', 'but', 'or', 'so', 'because', 'now', 'then', 'I mean', and 'y'know' most of which occur at the beginning of utterances. Since, markers often precede sentences; they are independent of sentential structure. Removal of a marker from its sentence initial position in other words, leaves the sentence structure intact. Nevertheless, markers such as "y' know, I mean, oh, like" can occur quite freely within a sentence at locations which are very difficult to define syntactically (James, 1972, 1974). Therefore basing the definition of discourse markers on the sentence per se would imply a dependence on, and relationship with syntactic structure which is just not evident. According to Goodwin (1981) sentences are interactionally constructed. His argument is based on the analysis in which conversationalists use verbal and non-verbal signals to negotiate syntactic boundaries. Schiffrin (1987) looks at discourse markers of connectives as 'and', 'but', and 'or' which are mostly found in written texts.

A clause relation is the cognitive process whereby the meaning of a sentence or group of sentences is interpreted in the light of its adjoining sentence (Winter, 1971) cited in (Hoey, 1983). According to Beekman and Callow (1974), Winter (1974), mainstream texts are characterized by the fact that components situated next to each other do normally form continuous

prose. The coherence is understood in terms of semantic relations that hold between sentences or group of sentences of the text. The semantic relations between clauses provide a model for the relations that can exist within a text. A study of the grammar of the clause in the sentence includes such connective devices as conjunctions and their lexical paraphrases (lexical metalanguage), other adverbials, substitutes of various kinds and repetition, which include the replacement of the clause, tense, modality, aspect, etc., all of which signal the place of the clause in its sentence with respect to clauses in adjoining sentences.

Hoey (1983) points out that the term clause relation is not so called because it relates only to clauses but also to all signalling systems in the grammar of the clause. Thus, he contends that there is no contradiction in terms in referring to the relation between two 'paragraphs' as a larger clause relation. Thus, the notions of clause and sentence are treated as conflated and the sentence interpreted as including a clause.

According to Hoey (1979) Sinclair and Coulthard (1975), Labov (1972), for a text to work as an example of discourse and communicate effectively, there must be frequent indications of attitudes held towards the communicative value of the discourse itself. In other words, universe of the discourse must be maintained so as to give a coherent and clear idea and provide a good relationship between the clauses or sentences used.

From the foregoing, it can be seen that indexicals, discourse markers and clause relations are features of discourse that function to hang texts together. Their use however varies from language to language and from one text type to the other. It is against this background that this study seeks to

investigate the phenomenon of indexicals, discourse markers and clause relations in Medical Science Journal Articles to determine the extent of their relationships and their contribution to textuality in discourse.

1.2 Statement of the Problem

Indexicals, discourse markers and clause relations are very important linguistic features for the communication of ideas in a text. Indexical expressions are *pragmatically* determined, that is, they depend for their reference on the persons who use them. The chief linguistic means for expressing indexical relationships are deictic elements; such expressions are seen as ‘pointers’, telling the reader where to look for the particular item that is referred to, (Mey, 2006). One of the pervasive features of speech is the occurrence of discourse markers. Thus, as McCarthy (1993) points out, discourse markers play a major role in our judgment of the degree of spokenness present in a written text and thus it may not be surprising that they occur with marked frequency in remembered records.

‘Mainstream’ texts are characterized by the fact that adjacent components do normally form continuous prose. The coherence of this prose has been accounted for in terms of semantic relations that hold between the sentences or group of sentences of the text (Beekman and Callow, 1974; Winter, 1974). These semantic relations are termed ‘clause’ relations by Winter (1974), because the semantic relation that exists between clauses provides a model for the relations that can exist within a text. Despite this fact, many writers have problem with the use of indexicals, discourse markers and clause relations in text creation. These linguistic models are all forms of

achieving textuality, they differ in the linguistic resources they use and in the way they combine in text to achieve textuality.

Therefore, this study seeks to examine the use of indexicals, discourse markers and clause relations in Medical Science Journal Articles, first to describe their characteristic features in the genre and second, to examine the extent of their use and the functions they perform in expressing opinions and views in scientific research journal articles.

1.3 Aim and Objectives of the Study

The aim of this study is to examine indexicals, discourse markers and clause relations of Medical Science Journal Articles in order to:

- i. Characterize the indexicals, discourse markers and clause relations used in scientific journal articles.
- ii. Identify the extent to which the indexicals, discourse markers and clause relations used in the journals contribute to creating unified texts in scientific journal articles.

1.4 Research Questions

In line with the objectives of this study, an attempt was made to provide answers to the following questions:

- i. What type of indexicals, discourse markers and clause relations medical science journal article writers characteristically employ to create text?
- ii. To what extent do indexicals, discourse markers and clause relations contribute to creating unified texts in medical science journal articles?

1.5 Significance of the Study

This study will be of great help to all those in the academia particularly those involved in writing Medical Science Journal Articles, who will appreciate the proper use of indexicals, discourse markers and clause relations as a means of achieving clarity in the use of language. It will help those who write science reports to achieve cohesion and coherence. It would also, be of value to English for Specific Purposes (ESP) specialists in general as they will find the results invaluable for developing materials in the teaching of English for the academic purposes.

1.6 Scope of the Study

This study is based on Medical Science Journal Articles. However, it is limited to five Medical Science Journals. They are: Middle East Fertility Society Journal, African Journal of Reproductive Health, Journal of Health population nutrition, Electronic Journal of Biotechnology and Malaysian Journal of Medical Science.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter is focused on related literature on the concept of signalling, all aspects of indexical and non-indexicals including Kaplan's theory of indexicals, deixis, discourse markers and clause relations. The aim is to examine works that have been done in these three major areas of linguistic investigation and to determine the extent to which this study fits into those studies.

2.2 Signalling

Signalling is a concept in telecommunication that refers to communication across a distance by means of various types of equipment (The World book Encyclopedia, (2006). Visual signaling with flags, lamps, or smoke was the earliest form of telecommunication. Today, the term most often refers to a wide variety of electrical and electronic communication systems that transmit information throughout the world. This information may include sound, images, or text, or any combination of these elements. It may be in either *analog* or *digital* format. Analog information uses signals that are exact reproductions of the sound or picture being sent. It is transmitted in the form of a wave. Digital information is a numeric code that represents sounds, images or text.

Most telecommunication systems transmit information through a wire or through the air. The earliest systems, beginning with the telegraph in the mid 1800s, sent messages over the wire. It is a set of devices and techniques

employed for the transmission of voice, facsimile, data, teleprinter, or television signals.

All telecommunication systems operate according to the same basic principles. They differ from each other chiefly in the specific types of information handled and the media over what they are transmitted. Examples of such systems are radios, televisions, telegraphs, telephones and computer-based data exchange or retrieval systems. In most cases, telecommunication systems transmit information via wire, optical fiber, terrestrial radio or space satellite (The Chambers Dictionary (1998).

The term signalling in telecommunication has been adopted in linguistics by linguists like Kaplan (1989a), Schiffrin(1987) and Winter(1971,1974) to refer to indexicals, discourse markers and clause relations respectively as signalling devices in any discourse. They use these items to link ideas in written and spoken discourse of any kind. These items give cohesion and coherence to academic writing. Some of these signalling concepts like references and connectives serve as fillers used for information transmission. Signalling is therefore, an intimation of warning, conveyed over a distance or transmitted effect conveying information (The Chambers Dictionary (1998).

Signalling items are very vital in both written and spoken academic activities, because to understand much about the generation and recognition of speech sounds, one first needs an intuitive feeling for a range of more general signal processing concepts. Semiotics therefore deals with signaling systems in the animal world and human language is but one kind of signaling concept (Shackle, 1981). The signalling concepts provide good linkages in

better academic writing, because they help in building sequences that agree with one another.

According to Wikipedia (2010), signalling refers to a body of theoretical work examining communication between individuals. The individuals use signalling items like indexicals, discourse markers and clause relations to communicate effectively in either written or spoken discourse. Hawkes (1977) interposes the principle of arbitrariness to adjust the relationship between sign and object or signifier and signified. When an utterance is made by a particular speaker, signs are used to make the utterance effective and understandable. These signs are the signaling tools which academic writers use to make their work clear.

2.2.1 Signalling Process

Language use could not proceed without signals, the acts by which one person means something for another. Signals define what is and what not language use is and determine how communication is actually achieved.

The traditional assumption is that signals are “linguistic” objects—utterances of speech sounds, words, sentences – that work via their conventional meanings. Signals are therefore built on signs that speakers deliberately create for their addressees – words, gestures, noises and more (Clark, 1998). In speaking and writing, speakers or writers begin with communicative intentions and they encode these in linguistic symbols – in words and constructions. In conversation, most utterances are composites of the three methods – describing –as, indicating and demonstrating – not just one or two. The three methods therefore depend on fundamentally different

processes and these have to be integrated for realistic picture and their integration.

The three processes often used in describing indices and icons are associated with their objects in different ways – by rule, by physical connection and by perceptual resemblance. In describing – speakers and addressees coordinate an activate the same rule for each symbol. Suppose John uses the word hold in talking to Helen. To select the word, he must consult his mental lexicon a vast memory store of information about the conventional meanings of all the symbols he knows – and activate the representation of the word, shape /hold/ corresponding to the type of things he wants to denote. Helen in turn, must consult her own mental lexicon and, working in reverse, activate a representation of the type of things that are conventionally denoted by the word shape /hold/.

2.3 The Semiotic Nature of Language

In the development of the child as a social being, Language has the central role (Halliday, 1978). This is to say that it is the main medium through which the patterns of living are transmitted that the child learns and understands everything that happens within him in the society. It can therefore be said that language comes to life only when functioning in some environment. Language is not experienced in isolation because it would not be recognized. Learning language consists in part in learning to free it from the constraints of the immediate environment.

Language is therefore a semiotic composition. Saussure (1959) was concerned exclusively with some sorts of systemic relationships: those

between a signifier and a signified; those between a sign and all of the elements which surround it within a concrete signifying instance. He emphasized that meaning arises from the differences between signifiers; these differences are of two kinds: syntagmatic (concerning positioning) and paradigmatic (concerning substitution). Saussure called the latter associative relations. According to Thibault (2000) language is a semiotic process by which thoughts may be conveyed using different degrees and types of signs, images, sounds, signifiers, etc. Chandler (2008) looks at semiotics as unsettling, more as a technique or process of language interpretation that depends on culture while Halliday (1978) looks at language as an emanating system of semiotic which a speaker can use in a particular social context and that it constitutes culture. It is therefore increased by social change of meaning and the ability to interpret signs in a given environment. Allot (1994) aligns with the Saussurean concept of relationship between semiotics, language and society where he views that to study a language, one has to develop the theory of signs, and describe the principles that hold for signs and sign systems, and then to devise a description of linguistic sign systems from the theory and principles.

2.3.1 Elements of a Socio Semiotic Theory of Language

Halliday (1978) points out that the text, situation, text variety or register, code, linguistic system and social structure are essential in sociosemiotic theory of language. This is because the uses of these elements determine the signs used at a particular context of situation. These elements could be briefly explained thus:

2.3.1.1 Text

This is what people engage in, that is what is said or written in an operational context which is different from words listed in a dictionary. Halliday (1978) looks at text as “what is meant”, selected from the total set of options that constitute what can be meant. In other words, he defined text as actualized meaning potential.

2.3.1.2 Situation

This is the environment in which the text comes to life and abstract representation of the environment in terms of certain general categories having relevance to the text. The context of situation may be from what is going on round about during the act of speaking or of writing. It is a semiotic structure that derives meaning from the semiotic system that constitutes the culture.

2.3.1.3 The Register

The term register was first used in the sense of text variety, interpreted and institutional linguistic frame work by Reid (1956), Hill (1958) and Halliday et al (1964). It is therefore the semantic variety of which a text may be regarded as an instance. It is conceived of in lexicogrammatical terms. Halliday et al (1964) point out two types of language variety: dialect, defined as variety according to the user, that is what the person speaks, determined by who he is; while the register is what a person is speaking, determined by what he is doing at the time.

It can therefore be seen that register is the configuration of semantic resources that the member of a culture typically associates with a situation type. It is the meaning potential that is accessible in a given social context.

2.3.1.4. Code

Code is the principle of semiotic organization governing the choice of meanings by a speaker and their interpretation by a hearer. It therefore controls the semantic styles of the culture. Codes are types of social semiotic, or symbolic orders of meaning generated by the social system (Hassan, 1973) cited in (Halliday, 1978). The code is actualized in language through the register, since it determines the semantic orientation of speakers in particular social contexts. When the semantic systems of the language are activated by the situational determinants of text – the field, tenor and mode, the process is therefore regulated.

2.3.1.5. The Linguistic System

In this aspect, what is of concern in socio-linguistic context is the semantic system. Halliday assumes a model of language with a semantic, a lexicogrammatical and a phonological stratum; this is therefore the basic pattern underlying the interpretations of language. This according to Lamb (1971) can be adopted as the general concept of organization of each stratum and the realization between each strata that is embodied in Lamb's stratification theory.

2.3.1.6. Social Structure

Social structure has three broad patterns which stand out in text. Firstly, it defined and gives significance to the various types of social context in which meanings are exchanged. It is important to know that the social structure has its products as the different social groups and communication networks that determine what is called the 'tenor' – which are the status and role relationships in the situation, it also constitutes the 'field'. 'The mode', the rhetorical channel with its associated strategies, has its origin in the social structure; it is therefore the social structure that generates the semiotic tensions and the rhetorical styles and genres that express them (Barthes, 1972).

Secondly, it regulates the meanings and meaning styles that are also associated with given social contexts, including those contexts that are critical in the processes of cultural transmission. In this way the social structure determines, through the intermediary of language, the forms taken by the socialization of the child (Bernstern, 1971).

Thirdly, the social structure is present in the forms of semiotic interaction and becomes apparent through incongruities and disturbances in the semantic system.

2.3.2 Semiotics and Controlling System

Semiotics has been classified by Beaugrande from two tendencies, a 'realism' that connotes the signified with an ordinary object and a 'formalism' that separates classical reality yet looks at the signifier itself as an ordinary object. Reality could therefore be understood as an interference pattern projected by sign of alternative understanding and communication. Anderson

et al (1984) point out that semiotics hardly deals with changing systems as a whole; those non-linear, irreversible realities where energy clearly uses experience, ontogeny and phylogeny. Rather, it is seen that the restrictive use of semiotics especially from the classical views of 'science' which have been confirmed to reductive, non-dynamic and deterministic modes.

The state of affairs reflects antecedent dispositions that point out the relationship between sign processing (Semiosis) and reality. This is therefore composed of ordinary objects with stable identities. Hawkes (1977) views triadic relations of performance involving actual entities world, based on the kind of ground. These are: the icon, something which functions as a sign by means of features of itself which resembles its object; the index, something which functions as a sign by virtue of some sort of factual or caused connection with its object; and the symbol, something which functions as a sign because of some 'role' habitual association between itself and its object.

Hawkes (1977) interposes the principle of "arbitrariness" to adjust the relationship between sign and object or signifier and signified. Where a pointing finger [- - -] could be the index of tree; where a pointing or diagram of a tree constitutes an icon of the tree, utterance of the word 'tree' is a symbol of the tree because there is no inherent necessary 'tree-like' quality in that signifier; its relationship to an actual tree remains fundamentally arbitrary.

The above assertion is believed to show that there is no appeal open to a 'reality' beyond the structure of language, as befits the 'new' perception within 'structuralism, spurred by "the realization" that the world does not consist of independently existing objects, whose concrete features can be perceived

clearly and individually and whose nature can be classified accordingly (Hawkes, 1977).

Greimas (1970) concludes that signification is the transposition from one level of language, and meaning is the possibility of such transcoding. Linguistics therefore achieves its most enduring result by focusing on the levels of language whose objective quality seemed easiest to demonstrate (Beaugraude, 1991).

2.4 Indexicals

Indexicals are expressive signs which call the attention of the learner to aspects of the immediate situation; which focuses on attention known as index. Indexes are realized in utterances by means of demonstrative pronouns because they function to draw the attention of the learner and make him use his power of observation to establish a real connection between his mind and the objects. Indexical or indexicality is simply that property which makes something which is a sign into an index. This could therefore be conceived as a property which when added to the sign function, creates an index (Peirce, 1931). In one of his well-known definitions of the sign, or rather the sign-vehicle, Peirce (1955) describes it as something which stands for that object not in all respects, but in reference to a sort of idea which he sometimes called the *ground* of the representation. The *ground* is that aspect of the *referent* which is referred to by the expression, for instance, the direction of wind, which is the only property of the referent object “the wind” of which the weather Cock informs us. On the other hand, Savan (1976) considers the

ground to consist of the features picked out from the thing serving as *expression*.

It is important to note that many indexicals are also egocentric, which means that in order to successfully interpret them, the learner must have knowledge of the prospective speaker, time and place of utterance. According to Wikipedia (2010) an indexical behaviour or utterance symbolically *indicates* some state of affairs. For example, “I” refers to whoever is speaking: “now” refers to the time at which that word is uttered and “here” refers to the place of utterance. For Peirce (1931), “indexicality” is one of the three sign modalities and is a phenomenon far broader than language. Anything used can be construed as a sign that points to something... including a weather vane (an index of wind direction), or smoke (an index of fire)... is operating indexically. In human realm, social indexicality includes any sign (clothing, speech variety, table manners) that points to, and helps create social identity.

The key function of indexicals is to help the audience- that is the hearers or readers of the utterance with whom the speaker intends to be communicating to find supplementary channels of information about the object to which the indexical refers (Perry, 2001). Perry (2001) further claims that this exploration of the use of indexicals is based on the reflexive-referential theory of the meaning and content of indexicals and other referring expressions. This account is in the tradition of token-reflexive theories. Tokens of indexicals in the same view refer to things that stand in a certain relationship to the utterances of the tokens. The type of expression determines the relationship, while facts about the particular utterance determine which object has the relationship to the token. A token of “I” stands

for the speaker, a token of “now” for the time of the utterance, a token of “here” for the place and so forth. The picture presented here is that indexicals usually *inherit* reference from the beliefs, intentions and other mental states that motivate their use; what we refer to is what we are talking about and predicting something of. If we can think about objects, there are a variety of ways we can refer to them: names and pronouns of various kinds, some helpful, some not. If an indexical is used to help identify a referent, one must be sure that the referent fits the condition and the constraint imposed by the indexical.

Sonesson (1989a) contends that indexicalities which are not as yet signs, being based on items which are not situated on different levels of directness or thematisation, or not clearly differentiated, may be described as *context sensitive*. He further states that any experience of two elements being related by proximity, conceived as a primordial perceptual fact, may be considered an *actual perceptual context* involving *contiguity* which an actual perceptual context involving *factorality* is any experience of something as being a part of a whole, or as being a whole having parts. According to Sonesson (1989a), all indexical relations involve either *contiguity* or *factorality*. When only one of the items is directly given, and the other precedes it in time, or follows it, we may speak of an *abductive context* (protention and retention, respectively). The term “abduction” is employed here in Peirce’s sense, to signify a general rule or regularity which is taken for granted and which links one singular fact with another. Sonesson (1989a) further states that on seeing the wood-cutter with the axe raised over his head, that on the following moment, he is going to hit the piece of wood

(contiguity protention), on the moment just preceding, he lifted the axe to its present position (contiguity retention). He further points out that abductive context involving factorality would be, using some Peircean examples, the gait of the sailor, the symptom as part of the disease, part and whole in a picture, etc. We may use the term proto-index for an indexicality which is only momentarily a sign, as would be the “tableau variant” of the wood-cutter, and indeed many of the examples given above, to the extent that the flow of indexicalities is momentarily halted.

Indexicals are also generally defined as expressions whose interpretation requires the identification of some elements of the utterance context, as stipulated by their lexical meanings (Numberg 1993). As Kaplan (1989a) puts it: “What is common to *indexicals* is that the referent is dependent on the context of use and that the meaning of the word provides a rule which determines the referent in terms of certain aspects of the context”. Kaplan (1989a) further claims that indexicals are devices of *direct reference*. By this he means that the *content* of an indexical with respect to a context is simply the object to which it refers in context; its content is *not* a property (or descriptive condition) that determines the referent. For instance, the content of ‘I’ in context is just the agent of context.

Kaplan (1989a) also views that indexicals are rigid designators. The notion of rigid designator comes from Kripke (1980), who defines a rigid designator as an expression that has the same extension (or referent), with respect to all possible worlds. According to Kaplan, indexicals are rigid designators because once a referent for an indexical is determined by a context, that same object is the one that is relevant for determining the *truth*

value of the sentence containing that indexical at all worlds. For example, if ‘Fred’ is the agent of context, where an expression “I am hungry” is made, then Fred’s state of hunger (and no one else’s) is what is relevant for determining the truth of “I am hungry” with respect to context and any world whatsoever.

2.4.1 Indexical and Non-Indexical Use of Pronouns

Kaplan (1989a) classified indexicals into *Pronouns*; ‘I’, ‘he’, ‘she’, ‘this’ and ‘that’, *Adverbs*; ‘here’, ‘now’, ‘actually’, ‘presently’, ‘today’, ‘yesterday’ and ‘tomorrow’, and *Adjectives*; ‘actual’, and ‘present’. Some of the items identified by Kaplan as indexicals perform some non-indexical functions. ‘He’, ‘his’, ‘she’, ‘her’, and ‘that’ are sometimes used like *bound variables* in formal languages. Indexicals do not function to secure reference but to help open a second channel of information about the object referred to (Perry, 2001). However, indexicals can lose their referential inheritance if the speaker is not careful. If a speaker uses an indexical to help identify his/her reference, he/she must be sure that the referent fits the condition, the constraint imposed by the indexical. Thus, Perry (2001) contends that not all pronouns are indexicals, and not all indexicals are pronouns. He points out that ‘he’ and ‘she’ can be used indexically, as demonstratives, or unhelpfully, they can also be used in ways that do not clearly fall under the definition of indexicals.

According to Kaplan (1989a), the occurrence of ‘he’ can function like a variable that is bound by the quantifier phrase “everyman” as in sentence (1) below. Similarly the pronoun ‘her’ in (2) below (under the appropriate reading) is bound by ‘every girl’.

1. *Every man believes that he is smart.*
2. *Every girl loves her father.*

The pronouns used above can also be used *anaphorically*. That is, some of their utterances seem to depend for their reference on prior linguistic context. For example, 'he' is used *anaphorically* in sentence (3) below.

3. *David won the award. He was very happy.*

Finally, the use of pronouns in sentences (4) and (5) below are indexicals.

4. *He likes chicken* [pointing at John], *but he does not*
[pointing at Alfred].

5. *His car* [pointing at Musa] *is dirty, but his car* [pointing at Adam] *is clean.*

In this study, the non-indexical uses of pronouns shall be ignored and effort will be concentrated on their indexical uses.

2.4.2 Pure indexical and True Demonstrative

Kaplan (1989a) distinguishes between two types of indexicals: pure indexicals and true demonstratives. He identifies the pure indexicals as: 'I', 'today', 'tomorrow', 'actually', 'present' and (perhaps) 'here' and 'now', while the true demonstratives include: 'he', 'she', 'his', 'her' and 'that'. The two types of indexicals differ in how their references are determined. The references of an utterance of a true demonstrative are determined (in part) by the speaker's accompanying pointing gestures, or by the speaker's intention to refer to a particular object. The reference of a pure indexical is *not* determined by the speaker's actions or intentions in this way. For instance, an utterance of 'I' refers to the speaker, whether or not she points at herself, and an utterance of "tomorrow" refers to the day after the day of utterance regardless of the speaker's intention to refer to some particular day. We can therefore, see that

the reference of pure indexical is automatic, whereas that of true demonstrative requires something extra from the speaker.

According to Kaplan (1989a) 'here' and 'now' are *pure indexicals*, but this might not be the case in all circumstances. For instance, the utterance of 'now' refers to a time interval that includes the moment of utterance, but the extent of the time interval surrounding the moment of utterance, differs radically from utterance to utterance. In typical utterances such as "I am ready to leave for Abuja now." and "People now ride in cars rather than horse drawn carriages", the extent of the interval seems to depend on the speakers intentions. Similar remarks go for 'here' and the spatial extent of the location surrounding the location of utterances.

A complete list of plural expressions such as: 'we', 'those', 'they', and 'theirs' are also indexicals. Some philosophers and linguists such as Reichenbach (1947), and Salmon (1989) opine that words and morphemes that indicate tense are indexicals because they refer to different time intervals from context to context. Lewis (1983) argues that, modal expressions such as 'necessarily' and 'possibly' are indexicals because they vary in the type of modality they express from context to context.

Other philosophers have claimed that propositional attitude verbs, like 'believe' and 'know' are indexicals. Richard (1990), claims that the sentence "Louis believes that Clark Kent can fly" has the same truth value in some contexts, but different truth value in other contexts but that Louis undergoes no relevant changes. Lewis (1999) claims that the sentence "George knows that he has a hand" can be false in a context in which the speaker feels that George is involved in an act, good or bad even though no relevant change

occurs in George. He explains this by showing that ‘know’ is an indexical that expresses different relations in different contexts, depending upon the relevant alternatives being considered in the speaker’s context or standards of justifications in force in the speaker’s context.

2.5 Reference Fixing for True Demonstratives

As earlier mentioned, (true) demonstratives differ from pure indexicals, in that the reference of an utterance of true demonstratives is not fixed “automatically” by the act of utterance alone, but by *pointing gestures* and speaker’s *intentions*. As Perry (2001) points out, demonstratives are a species of indexicals contending that in the paradigm case, the referent of ‘this’ or ‘that’ will be an object that the speaker is attending to and to which he is directing the attention of his audience. He concludes that this is not a matter of conventions, but a relation between the utterance and the object mediated by the intentions of the speaker.

Kaplan (1989a) emphasizes the role of pointing gestures in fixing the reference of a demonstrative utterance. According to him, the reference of a demonstrative utterance is by a *demonstration*. He describes a demonstration as “a (visual) presentation of a local object discriminated by a “pointing” (Kaplan, 1989a). Kaplan (1989b), however, changes his mind on the position and points out that demonstration is “typically directed by the speaker’s intention to point out a perceived individual on whom he has focused”. He therefore, calls such intentions *directing intentions*.

Some scholars hold other views. Devit (1981) opines that the referent of an utterance of ‘that’ is the item that stands in a certain casual relation to

the utterance. McGinn (1981) proposes that the referent of an utterance of 'that F' is the first F to intersect the line projected from the speaker's pointing finger. Reimer (1991a, 1991b) argues contrary to Kaplan's later view that demonstrative utterances can refer to objects that are not the targets of the speaker's directing intentions. Bach (1992a, 1992b), defends a version of Kaplan's later view from Reimer's criticism. To Bach (1992 a), the reference of a demonstrative utterance is fixed by certain of the speaker's communicative utterances.

2.6 Kaplan's Theory of Indexical

Kaplan's theory tried to describe the meaning of indexicals in a systematic way. He seems to be the most influential in the field. The examples below serve to illustrate Kaplan's theory:

1. **Fred :** *I am female.*
2. **Wilma:** *I am female.*

It is evident that Fred's and Wilma's utterances share a meaning, for they utter the very same unambiguous sentence. Here, their utterances have the same *linguistic meaning*. Nevertheless, their utterances also seem to differ in meaning, in some sense, for Fred and Wilma say different things: Fred says that *he* is female, whereas Wilma says *she* is female. Moreover, Fred says something that is true. Traditionally, this difference in truth value would be taken to show that Fred and Wilma assert different propositions. In view of these considerations, it can be said that Fred's and Wilma's utterance differ in context where the content of an utterance of a full indicative sentence is a proposition.

2.6.1 Fundamental of Kaplan's Theory

It is pertinent to point out that Kaplan's theory and linguistic expressions have *content in or with respect to contexts*. This content is what he refers to as "C" in his theory. The content has at least an agent, time, location and possible world associated with it. However, the content of "I" with respect to a context of 'now' is the time of \underline{C} . The content of a sentence with respect to a context is a *structured proposition*, that is, a proposition that can have individuals, properties and relations as *constituents*. The content of a sentence \underline{S} (he refers to S as a sentence) with respect to \underline{C} is made up of the contents of words in \underline{S} with respect to \underline{C} . With the sentence 'I am female' serving as an illustration, suppose that the agent of context \underline{C} is Fred. Then the content of 'I' in \underline{C} is Fred himself, while the content of 'is female' in \underline{C} is the property being-female. The content of the whole sentence, in \underline{C} is a proposition whose constituents are just these two items. This proposition can therefore, be represented with the following ordered pair, (Fred, being-female).

The content of 'I' with respect to a context C^* in which Wilma is the agent is Wilma herself, and the content of 'I am female' in C^* is the proposition (Wilma, being-female). Thus, the word, 'I' and the sentence 'I am female' have different contents in different contexts.

To Kaplan, the content of a sentence, with respect to a context, has a truth value *at the world of the context*. The content of 'I am female', with respect to the above context \underline{C} (in which Fred is the agent) is the proposition (Fred, being-female). This proposition is false at the world of \underline{C} (call the world 'W'). According to Kaplan, this proposition is false at the world of \underline{C} . But the content of 'I am female' with respect to context C^* (in which Wilma is the

agent) is true with respect to the world of context C^* which is (also) W . So this second proposition is true in context C^* . Kaplan's theory is also based on the truth value of *sentences*, as opposed to contents (or propositions) which depend on two parameters, context and world. For example, the sentence 'I am female' is false with respect to \underline{C} and \underline{W} but is true with respect to C^* and W , (notice that the world is the same both times but the context is different).

The content of a sentence with respect to a context can be also evaluated from truth at a world other than the world of the context. For example, the content of 'I am a philosopher' with respect to \underline{C} is the proposition that Fred is a philosopher. At \underline{W} (presumably), this proposition is false, but it can be true at some other world, say \underline{W}^* , in which Fred is a philosopher. In this way, the sentence 'I am a philosopher' is false in \underline{C} and \underline{W} , but true at \underline{C} and \underline{W}^* . (Notice that the context is the same both times, while the world is different). Therefore, the sentence 'it is *possible* that I am a philosopher' is true with respect to \underline{C} and \underline{W} ; and the content of the sentence, with respect to \underline{C} , is true in \underline{C} .

2.6.2 Criticism of Kaplan's Theory

Kaplan's theory is by no means universally accepted. The most common *objections* to Kaplan's theory concern *belief* and *cognitive* significance. According to Frege (1992), to understand the apparent problems, consider Fred's utterance below;

Fred: *You are hungry.* [Addressing Barney]

Let's suppose that Fred *assertively* utters the sentence, then it seems that he *asserts* the *proposition* that his utterance expresses. If this proposition

is the same as Kaplan's content, then he asserts the Kaplanian content. Furthermore, if Fred utters the sentence sincerely, then he believes the proposition that his utterance expresses. Now according to the Kaplan's theory (1989a), the content of Fred's utterance is a *singular proposition*, that is, a proposition that contains an individual as a constituent, in this case Barney. However, many philosophers believe that singular propositions are not necessarily the things that people believe, and so Kaplan's theory cannot account for the cognitive significance of indexicals.

A good example of a criticism of Kaplan's theory is that of Frege (1992); imagine that Fred is looking at Barney, but that Barney is turned so that Fred directly sees only his left side. Suppose that, at the same time, Fred is viewing Barney's right side indirectly, through a mirror. Suppose the right side of Barney's face is masked; suppose finally that Barney is wearing a very unusual costume in which the left side appears to be a business suit while the right side appears to be a pair of swimming trunks. Then Fred might reasonably and sincerely utter the statement below, while addressing Barney and pointing at the mirror image.

A) *You [addressing Barney] are wearing a business suit but he [pointing at the mirror] is not wearing a business suit.*

To Kaplan, the context of Fred's utterance is a proposition that contains Barney as a constituent twice over. It is a proposition that Barney is wearing a business suit, but Barney is not wearing a business suit. Thus, on Kaplan's theory, Fred believes a contradictory proposition, one whose immediate constituents are a proposition and its negation. But Fred (let us suppose) is a perfectly rational person. So he will never believe an outright contradiction.

2.6.3 Kaplanian Responses to the Criticism

It is clear that the alternative to Kaplan's theory was initially motivated by a clear problem that Kaplan's theory has with cognitive significance and belief. Adherents to Kaplan's theory have responded to this problem making use of the example of "Fred" in the sentence below;

Fred: *You* [addressing Barney] *are wearing a business suit, but he* [pointing at the mirror] *is not.*

The difficulty was that, on Kaplan's theory, Fred seems to assert and believe a contradictory singular proposition, one that contains the proposition that Barney is wearing a business suit, and the negation of that very same proposition. In their response, Kaplan (1989a) and Perry (1993) hold that a singular proposition can be entertained and believed *in different ways* which corresponds to characters, thus Kaplan says that an agent can believe a proposition *under* the character 'He is not wearing a business suit'. However, Kaplan does not explain what it means "to believe content *under* a character"

2.7 Deixis

As earlier mentioned in chapter one, indexicals are expressive words that point to the truth of a proposition. They are also often referred to as deictic words such as: 'he', 'she', 'that', etc. Thus, the general phenomenon of the occurrence of such words in any language is known as deixis.

Wikipedia (2006) points out that, in pragmatics, deixis which originates from *Greek* (meaning display, demonstration or reference) is a process whereby *words* or *expressions* rely absolutely on *context* from which the reference is made. In other words, the view point that must be understood in

order to interpret the utterance (if Audu is speaking and he says 'I', he refers to himself, but if he is listening to Betty and she says 'I', then theOrigo is with Betty and the reference is to her).

Mey (1993) claims that one could call deictic pronouns instruments of 'direct deixis': they indicate reference straightforwardly, and do this in force of their linguistic properties as indexing elements. If the word *this* means in relation to *that*, then the listener or hearer will not look at the wrong way when given directions. Some of the most obvious linguistic elements which require contextual information for their interpretation are the deictic forms such as: 'here', 'now', 'I', 'you', 'this' and 'that'. To interpret these deictic words in a piece of discourse, it is necessary to know who the speaker and hearer are, and the time and place of the utterance or production of the discourse (Brown and Yule, 1983). It is pertinent to refer to a context, not only in order to establish the proper reference for deictic terms such as 'next' or 'last', but also in the case of other deictic expressions whose referents cannot be identified outside of their proper (spoken or written) context. When the pronoun 'this', is used as in;

I need this box

a reference is made to a certain desired size of box; in the spoken context, hand of the speaker will be moved to indicate exactly how big the box should be (Schiffrin, 1987).

It is common for languages to show at least two-way referential distinction in their deictic system *proximal*; which is near or close to the speaker *distal*; far from the speaker and closer to the addressee. English exemplifies this with such pairs as 'this' and 'that'/'here' and 'there', etc.

According to Levinson (1983), deixis may be usually approached by considering how truth-conditional semantics deals with certain natural language expressions. In this case, when a sentence is made, such as “I am Bola’s father” it has to view the condition under which it would be true. It would be considered true only if the speaker is identical to the person who is the father of Bola. It is also necessary to know the fact of history, that is, the identity of the speaker. In this regard, Lyons (1977a) points out that the fact of deixis should act as constant reminder to theoretical linguists of the simple but immensely important fact that natural languages are primarily designed so to speak for use in face-to-face interpretation.

2.7.1 Types of Deixis

The different types of deixis according to Levinson (1983) and Wikipedia (2006) are time, social, place, discourse, empathetic and person deixis. They will therefore be explained in brief below.

2.7.1.1 Time Deixis

This is reference made to particular times relative to some other time most currently the time of utterance. For instance use of words *now* or *soon* and *tenses*. Some good examples of such sentences are;

1. *The carpenter will do the work now.*
2. *The man slapped Musa yesterday.*

Time deixis looks at distinction made between coding and receiving time. For instance “hand over your ball to me” presupposes that both coding and receiving time are simultaneous. However, time deixis can be categorized into *pure time deixis* and *tense*

2.7.1.2 Social Deixis

It is the use of different deictics to express social distinctions. An example is difference between formal and polite pro-forms. Relational social deixis is where the form of word used indicates the relative social status of the addresser and the addressee. For example, one pro-form might be used to address those of higher social rank, another to address those of lesser social rank, yet another to address those of same social ranks. By contrast, absolute social deixis indicates a social standing irrespective of the social standing of the speaker. The village chiefs might always be addressed by a special pro-form regardless of whether it is someone below them, above them or at the same level of social hierarchy who is doing the addressing.

2.7.1.3 Place Deixis

This deals with a spatial location relative to the spatial location of the speaker. It can be *proximal* or *distal* and *medial* or *bounded* (indicating a spatial region with a vividly defined boundary, for instance, over there). Examples of such sentences are:

1. *I kept the money in the box.*
2. *Musa killed the snake over there.*

Place deixis words are mainly adverbs like 'here', 'there', etc, demonstratives such as 'that', 'this', etc.

2.7.1.4 Discourse Deixis

This is a deixis where reference is being made to the current discourse or part thereof for example,

1. *That was a really mean thing to say.*
2. *This sentence is false.*

The last is an example of token reflexive discourse deixis, in which a word in the utterance refers to the utterance itself. Example is

3. *I must eat John's food as well as Mary's.*

Examples of discursive expressions are; "however", "as well as", "consequently", etc.

2.7.1.5 Person Deixis

Person deixis is concerned with the roles participants play in an interaction situation. The grammatical categories used enable us to make distinctions between participants. However, the distinction is by means of first, second and third person pronouns. First person pronouns include: 'I', 'me', 'us', etc and they presuppose an inclusion of the addressee. The second person includes: 'you' and it presupposes both speaker and addressee exclusion. The third person include: 'he', 'she', 'it', etc. We also have the plural form of these persons deixis for example; 'we' 'you' and 'they' for first, second and third person respectively.

The vocative forms are also used in terms of kingship, titles or proper names, for example: 'cousin', 'uncle', 'daddy', 'mummy', etc, these are words or phrases that refer to the addressee. For example, 'Truly speaking mummy, I can't do that job'. Also when a speaker wants to make an introduction of himself in an interaction that does not permit face-to-face, the speaker is often forced to use a distinct mode of expression, for instance instead of 'I am John speaking'; he will rather use 'it is john speaking'.

2.7.1.6 Empathetic Deixis

This is a deixis where different forms of the deictic are used to indicate the speaker's emotional closeness or distance from the referent. It is the ability to share another person's feelings as if they were your own. For example, 'I feel terribly bad for Mrs. John, she has been suffering for a long time from breast cancer'.

2.8 Discourse Markers

Fairclough (1989a) points out that discourse refers to any spoken or written language used by a particular society or one of its institutions. Thus, discourse practices move along with markers that make the analysis of every discourse possible. Discourse analysis is a systematic analysis of naturally connected spoken or written language above the clause level (Onyetu, 1985). Widdowson (1978) noted that using a language involves more than the acquisition of structure and the ability to make appropriate choices in the realization of particular language function, rather it also depends on the ability to produce utterances that fit or make sense within a given stretch of discourse to interpret meaning. Such utterances must be seen to be coherent and logical, for as Lawan (2005) points out, the notion of coherence is closely related to the notion of logicity and relevance.

Discourse markers are words and phrases used in speaking and writing to 'signpost' discourse. Discourse markers do this by showing turns, joining ideas together, showing attitude, and generally controlling communication. Nwogu (2010) looks at adjuncts such as however, thus, etc as words that help to link ideas in text creation. The phrase "in summary" also stands to signal

the function of discourse in text creation (Nwogu, 1990). This summary statement helps to link ideas in both written and spoken texts. Halliday and Hassan (1976) are of the view that discourse conjuncts are devices which function to relate linguistic items which occur in succession but are not related by other structural means to each other in discourse. They try to signal to the reader about relations in text. In this way, they use conjuncts like but, and, etc to connect ideas in both written and spoken discourse. Some people regard discourse markers as a feature of spoken language only (Wiki, 2009). Words like 'actually', 'so', 'ok', 'right', and 'anyway' all function as discourse markers as they help the speaker to manage the conversation and mark when it changes. Discourse markers are important features of both formal and informal native speaker language. The skillful use of discourse markers often indicates a higher level of fluency and ability to produce and understand authentic *language*. According to Schiffrin (1987) neither the markers, nor the discourse within which they function, can be understood from one point alone, but from an integration of structural, semantic, pragmatic, and social factors. She concludes that markers provide contextual coordinates which aid in the production and interpretation of coherent conversation at both local and global levels of organization and that discourse markers raise a wide range of issues important to discourse analysis- including the relationship between meaning and use.

One of the pervasive features of speech is the occurrence of discourse markers. MaCarthy (1993) , points out that, 'spoken discourse markers...play a major role in our judgment of the degree of spokenness present' in a written

text and thus it may not be surprising that they occur with marked frequency in remembered records.

As earlier mentioned in chapter one, discourse markers are linguistic expressions used to signal the relation of an utterance to its immediate context with the primary function of bringing to the listener's attention a particular kind of linkage of the upcoming utterance with the immediate discourse context (Redeker, 1990). By this, they indicate the speaker's attitude or orientation toward the discourse; for instance, a speaker may introduce a discourse marker to indicate a contradictory stance toward what the other speaker has stated as in the examples below:

A: *I think he's done a terrible job in that position. If it were up to me I'd fire him.*

B: *See, I don't know if I'd go that far.*

According to Redeker (1990) the use of 'see' in sentence (B) indicates a takeover speech or conversation by the second person in the conversation which is a discourse marker. In the same vein, the following words and phrases are discourse markers: "actually", "anyway", "basically", "I mean", "let's see (now)", "like", "now", "see", "me", "you know", "you see" and "so". Nevertheless, many words and phrases used as discourse markers also have other literal meanings, examples are:

1. *Do 'you know' how many minutes we're supposed to talk?*
2. *The situation right 'now' is that we're moving in three weeks.*

The word "actually" only functions as discourse marker when it occurs at the beginning of a sentence (sentence 3) below. Other words that function in this way are 'anyway' and 'basically'. However in very rare situations, they do function as discourse markers, at the end of sentence as in sentence 4 below.

3. *Actually, I have been involved in recycling for long before it was fashionable.*

4. *TI had sent me to Taiwan actually.*

In the example below, “actually” is not functioning as a discourse marker.

5. *So they may actually have about three passes at this collection.*

Smith and Juckson (2000) claim that “actually” gives processing instructions to a listener about how the particular utterances should be understood for the hearer, use of ‘actually’ highlights that something is now being said that might not have been expected in this context but that is relevant nevertheless (Lenk, 1998). It can therefore be used to signal to the hearer that although what follows is relevant to the ongoing discourse, it will contain (in the opinion of the speaker) information that the hearer is not expecting.

Another important discourse marker is “well”, which serves various functions in discourse depending on the context and its position in the utterance. Strenstrom (1994) states that ‘well’ at the beginning of a turn serves as a response marker to what has gone before. For example;

6. *Well, I can also give you like Funds Transfer, Item Search, order Statement or Change TIN.*

Strenstrom further explains that the ‘well’ at the beginning of the prompt is used in response to the user’s request for another service (within a banking application), serving as an acceptance of what the user has requested for before moving on to respond to that request. In this way it forms a cohesive tie within the written dialogue.

Strenstrom (1994), claims that ‘Now’ is a discourse marker used at the beginning of a turn as a transition marker, introducing a new topic and

changing the direction of the discourse. In the case of automated dialogues, where the application may be very specific, 'now' can be used to move from one point of the dialogue to another. For example;

7. Now, would you like to select another service?

According to Strenstrom(1994) this prompt would be played after a user had completed a particular transaction. One part of the dialogue is complete (for example, a request for balance information has been made and the information given). The dialogue then moves unto something new, whether the user has any other banking transactions to complete. Many discourse markers and their examples abound which shall be discussed in the cause of this research or study.

Schiffrin (1987) points out that many of the problems raised by discourse markers suggest that form, meaning and action are interwoven and jointly negotiated components of discourse coherence and thus analyzing the contribution of a particular item to coherence should attend to each of these components. She refers to this approach as *Sequential accountability*, while the approach that requires that one's analysis is based on the full range of environment in which a particular item occurs is referred to as *distributional Accountability*. Discourse markers occur throughout discourse. Thus, Schiffrin (1987) points out that focusing only on a limited type of talk creates a risk, for one can mistakenly equate the general function of a marker with its particular use within specific discourse types.

Markers are important wherever they occur because context and meaning interact to produce the full communicative force of the expressions used as discourse markers, where discourse markers may have referential

meaning that acts in concert with their discourse location. When markers are not considered in discourse locations, contributions made by meaning from context will not be understood. Linde and Labov (1975) and Linde and Goguen (1978) indicate that the structure of specific discourse units is modelled after their informational structure and content. Thus, discourse markers also concern the fluid and open nature of conversational genres, though such genres might be defined as mutually exclusive types, for example, narratives versus argument which may overlap, as when a story is told to support a position. Polanyi and Scha (1983) argue that discourse has a syntactic structure in which clauses belong to discourse units ranging in size from local turn-taking exchanges, to more extended semantic units, such as narratives, and even to speech events and exchanges.

According to Schiffrin (1987), the meanings conveyed by markers not only restrict the discourse in which they can occur, but also influence the overall meaning of that discourse. The ways through which different expressions become markers are seen in figure 1 below;

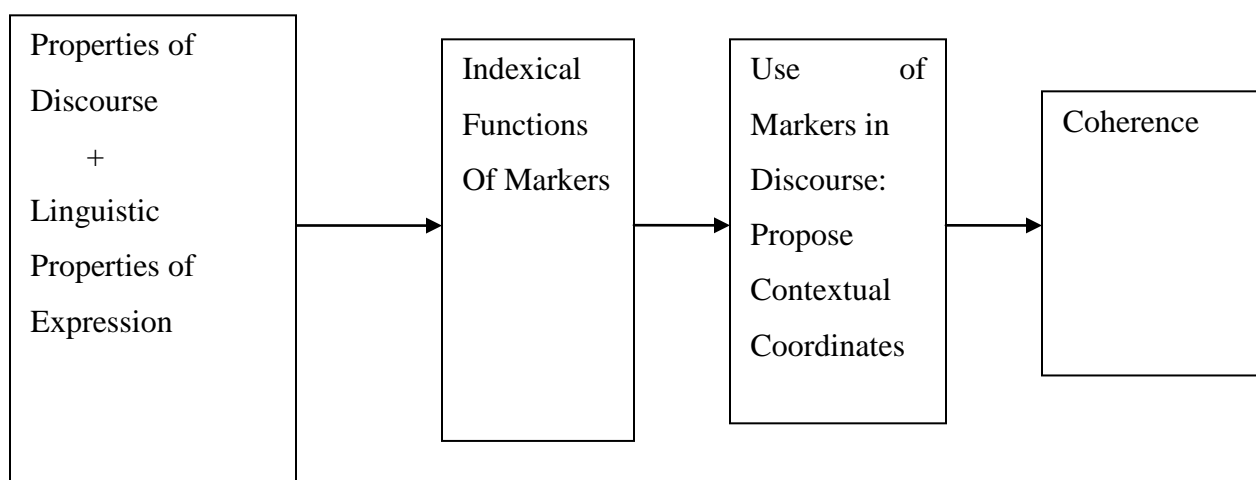


Figure 1. Properties of discourse markers (Schiffrin1987).

The above figure indicates that it is the properties of discourse together with the linguistic properties of the expression that provide markers with their indexical functions. According to Schiffrin (1987), markers index the location of an utterance within its emerging local contents. The indexical function of markers is the key to understanding why they are used, because they contribute to the integration of discourse- to discourse coherence.

2.8.1 Schiffrin's Classification of Discourse Markers

Discourse markers require separating the contribution made by the marker itself, from the contribution made by characteristics of the discourse slot in which the marker occurs (Schiffrin, 1987). She therefore classifies markers into six viz: marker of information management, marker of response, discourse connectives, markers of cause and result, temporal adverbs and information participation.

2.8.1.1 Markers of Information Management

Marker of information management is viewed as an exclamation or interjection. 'Oh' is therefore considered as such marker. When used alone, without a syntactic support, it is said to indicate strong emotional state such as surprise, fear, or pain (Oxford English Dictionary (1971), (Fries, 1952) cited in (Schiffrin, 1987). An example is illustrated below.

Jack: *Was that a serious picture?*

Fred: *Oh! Gosh yes!*

Schiffrin(1987) points out that regardless of its syntactic status; 'oh' occurs as speakers shift their orientation to information. Heritage (1984), views 'oh' as a particle used to propose that its producer has undergone some

kind of change in his or her locally current state of knowledge, information, orientation or awareness. Speakers shift orientation during a conversation not only as they respond effectively to what is said, but as they replace one information unit with another as they recognize old information which has become conversationally relevant, and as they receive new information to integrate into an already present knowledge base.

2.8.1.2 Markers of Response

One of the words that function as a marker of response is 'well'. 'Well' sometimes stands as a noun, an adverb, or a degree word. However, its use in utterance initial position is difficult to characterize in terms based on semantic meaning or grammatical status; rather, it has been characterized as interjection, filler, particle, and initiator (Svartvik, 1980). Sacks et al (1974) observe that 'well' often begins turns. 'Well' shows little about the construction of the upcoming turn- an important feature as turn-beginnings may over-lap prior turns and thus might not be fully analyzed by those to whom the turn is addressed. In some conversations, 'well', 'okay' and 'so' may be used as pre-closing devices, giving its recipient a chance to reinstate an earlier or unexpected topic, or to open another round of talk, prior to conversational closure (Schegloff and Sacks, 1973). On the other hand, Labov and Fanshel (1977) are of the view that 'well' can also shift talk toward already shared topics of mutual concern, not just during pre-closings, but throughout conversation.

Responses that are insufficient answers to questions are prefaced by well as indicated by Lakoff (1973b). Pomerantz (1984) views the use of 'well'

to preface disagreements, alternating in this environment with ‘yes but’ and silence. In addition to that Owen (1983) says ‘well’ can precede an answer in which a presupposition of a prior question is cancelled, as well as non-compliance with a request, or rejection of an offer. The use of ‘well’ as indicated by Wootton (1981) shows that ‘well’ precedes parents’ responses to their children’s requests more often when those responses reject, rather than grant the requests. Therefore, ‘well’ signals moves that are in some way not preferred (Pomerantz, 1984). More specifically, ‘well’ functions in the *participation framework* of discourse and is a *response* marker which anchors its user in an interaction when upcoming contribution is not fully consonant with prior oppositions. Therefore the need to both seek and provide response coincides under several circumstances and ‘well’ can preface a request under just such conditions.

Firstly, requests for clarification and elaboration as indicated by Garvey (1971) view the speaker’s receipt of information at the same time that they solicit further information as in example (5) below.

5. Debby: *How did you get the name of the doctor you’re using now? Where did you find him?*

Zelda: *Well y’mean our family doctor?*

It therefore illustrates a request for elaboration. Both requests for clarification and elaboration can be prefaced by ‘well’.

Secondly, there are requests that are organized relative to each other, such that each request is a response to a prior question and its answer. Schiffrin(1987) further points out that such requests fall into a series, with the next member of the series, an effort to elicit information in response to the

6. **Debby:** *How did you get the name of the doctor you're using now? Where did you find him?*

Zelda: *Well y'mean our family doctor?*

Debby: *Yeh. Well how did y'find him?*

After Debby provides clarification for Zelda, Debby reissues the question. Therefore, the dependency of the question on the clarification is marked with 'well'.

Discourse connectives play very important role in the grammatical system of English, their analysis as markers have to proceed somewhat differently. These markers also form a set of discourse connectives, and they have both ideational and pragmatic functions in talk, that is in exchange and action structures, and in participation frameworks. These discourse connectives are: 'and', 'but', and 'or'.

This particular discourse marker has two roles in talk. It coordinates idea units and it continues a speaker's action. Although *and* has these roles simultaneously, it will be easier to demonstrate them by describing them separately. Schiffrin (1987) observes that *and* is the most frequently used mode of connection at a local level of idea structure and states that 'And', occurs in environment shared by other modes of connection, as in example (1) below where and is used in contrastive environment.

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d. *and we tried to win.*

e. *And we lost.*

Jack is explaining that every country tries to win the wars it fights (a, c, d); the United States, however, lost the Vietnam War (b, e). The contrast between the efforts to win and the unintended loss is marked, first, with *but* (in b), and then with *and* in (e). *And* thus occurs in an environment shared by *but*.

According to Schiffrin(1987) *and* also shows some similarities to 'Zero'. First *and* acts like 'zero' as a variable constraint on some elements internal to clause. In her previous study, Schiffrin (1981) finds that *and* behaved much like 'zero' in terms of its relationship with tense switching in everyday oral narratives.

Second, *and* and 'zero' can create a syntagmatic contrast which differentiates the idea segments of a text. However Schiffrin points out that there is nothing inherent in either 'and' or 'zero' which makes one more suitable as a marker of a particular idea unit. Thus, had the distribution in (2) below been reversed, the sequence would still be segmented through the switch between *and* and 'zero'.

2. a. *I uh I go on trips with 'em,*

b. *and I bring 'em here'*

c. *and we have supper, or dinner here,*

d. *I don't see any problem*

e. *because I'm workin' with college graduates.*

The use of 'and' in the example above could be omitted. The omission of the 'and' reduces its position to zero. Schiffrin (1981) suggests that *and* is a discourse coordinator that signals the speakers' identification of an upcoming unit which is coordinated in structure to some prior unit. *And*

therefore marks different kinds of units at different levels of discourse structure. Whenever we see or find *and*, there is a unit that is connected to a structurally equivalent unit somewhere in the prior discourse- but the identification of those units depends on the use of textual information beyond and itself.

And, is also used in continuing an action, when considered a marker in idea structures, it seems to be free of meaning. But in interaction, it seems to have a pragmatic effect. In this sense, *and* is therefore a marker of speaker-continuation. Speakers often work to fit their talk into an interactional slot (Jefferson, 1979) and particular linguistic devices are often designed to ease that task (Ochs, 1979a). According to Schiffrin(1987) a look at example (3)below reveals its structure and shows how information can be interactionally packaged through the use of *and*. Here we have Zelda's answer to Philly's question about where she and Henry go out to eat.

- 3. *[where d'y' go in Philly if y'wanna go out to eat?]*
- a. *well, uh: we have a cousin club.*
- b. *And, we meet once a month*
- c. *And, what we do with our once a month is we go out for dinner, on a Saturday night.*
- d. *So, we have gone to the Tavern...*
- e. *and we've gone-every month we go to another place.*
- f. *Eh... and we go eh. We went to the Riverfront twice.*

In the above discourse topic, Schiffrin (1987) points out that Philly defined two parts of Zelda's answer, (a-c) explains the cousin club and (d-f) lists restaurants. The (a-c) is information which had not been requested, while (d-f) had been requested for. Switching between *and* and *so* in (3), then, does organize the discourse topic. But because the two discourse topic themselves have different functions within the answer, the connective switching also

differentiates the discourse in terms of its informational requirements as an answer, that is, as a unit of talk which is tailored to a particular conversational slot.

Schiffrin (1987) also indicates that *and* is a marker of speaker's continuation; it marks a speaker's definition of what is being said as a continuation of what had proceeded. Therefore it does not provide information about what is being continued; rather, it provides information from other cues in the context and structure of interaction. She states that all that *and* displays are continuation and/or coordination and that more precise identification depends on discourse content and structure. It has also been pointed out that *and* has both ideational and interactional roles simultaneously (Schiffrin, 1987). She also states that *and* is a structural coordinator of ideas which has pragmatic effect as a marker of speaker continuation, but that discovering which ideas are coordinated by *and* and which actions are continued, requires looking into the content and structure of ideas and interactions. Thus, it is the continuing discourse which indicates what idea units, and what interactional units, are being marked by *and*.

2. 8. 1. 3. 2 But as a Marker of Connective

Schiffrin (1987) points out that *but* is a discourse coordinator like *and*, but it has a very different pragmatic effect. Unlike *and*, "but" marks an upcoming unit as a contrasting action. Because its effect is based on contrastive meaning, the range of ideational uses of *but* is considerably narrower than that of *and*. *And* for example alternates with 'zero' to produce syntagmatic contrasts which organize both the referential and functional units

of an idea structure at both local and global levels. Not only does *but* not alternate with 'zero', but it does not coordinate functional units unless there is some contrastive relationship in either their ideational or interactional content.

But also plays the role of contrasting ideas as can be seen in example 4 below.

4. a. *You are not living in a world where you have equality completely.*
 b. *You put that in this world, I will go along with it.*
 c. *If it says that way,*
 d. *and where it does not make any difference...,*
 e. *yes. I'll go with that in a second*
 f. *I won't disagree with anything.*
 g. *But the- the Arabs call us infidels...*
 h. *the Christians call us pagan...*

Example (4) is an argument from Henry who as a Jew does not like the idea of marriage between people of different religions. He also feels that the Jewish people have been subjected to a great deal of discrimination and intolerance and provides both historical and personal testimony to support this. Henry therefore states that Jews are the most liberal, generous and compassionate people in the world. These three points are important not only because they are reoccurring themes in much of what Henry says, but because they are related in a particular way in the argument.

The position which Henry is supporting in (4) is that intermarriage is wrong. Prior to this, Irene had stated that although she does not like the idea of intermarriage, she feels that eventually there will be only one religion in the world. Thus, she is not as opposed to it as Henry. (4) Below is Henry's rebuttal to Irene. Henry's position is that intermarriage is wrong. In (a-f), Henry argues that if this were non-existence- if Jews were treated as equals- then he would

accept intermarriage. In (g) - *But the- the Arabs call us infidels...*- marks the contrast between the hypothetical situation (that would force him to disallow his position) and the actual situation (that allows him to maintain his position). So far, we have the following argument;

POSITION 1: *I'm against intermarriage*

SUPPORT 1: *Jews face intolerance*

IF NOT [SUPPORT] THEN NOT [POSITION]

(b-f) *If Jews faced tolerance, then I would not be against intermarriage.*

But SUPPORT 1: *Jews face intolerance (a, g and h)*

Henry then contrasts the intolerance faced by Jews with the tolerance provided by Jews. The contrast becomes a new position and therefore evidence is placed to support his position.

i. *But*, *in my father's house, we were not taught to hate.*

j. *Never did we ever say this damned Catholic, or that damned protestant, or that damned nigger or-or anything.*

From this conversation of contrasting the intolerance faced by Jews with the tolerance provided by Jews, Henry therefore, provides personal evidence for that tolerance in (i). However, Henry's initial argument against intermarriage thus contains an embedded argument in which a new position (Jews provide tolerance) is supported. Because this position is an idea which contrasts with the support from the main argument (Jews face intolerance), it is prefaced by *but*.

But SUPPORT 1: *Jews face intolerance (a, g-j)*

But POSITION 2: *Jews provide tolerance (i)*

SUPPORT 2: *We were kind to all (j)*

In the above, we see that *but* marks both position and support in Henry's argument. It therefore does so only when the content of those units contrast with prior ideas. *But* in (g) contrasts an actual situation with a

hypothetical situation; *but* in (i) contrasts the tolerance provided by that group. In conclusion, although *but* marks idea units which are functional relationship is less important than their contrastive content in explaining the use of *but*.

2.8. 1. 3. 3 Or as a Marker of Connective

Schiffrin (1987) suggests that *or* serves as options to a hearer or provides hearers a two-way choice between accepting only one member of a disjunct, or both members of a disjunct. It is therefore, used as option marker in discourse. According to Schiffrin, it differs from *and* and *but* not only in meaning, but because it is more hearer-directed, for whereas *and* marks a speaker's continuation, and *but* a speaker's return to a point, *or* marks a speaker's provision of options to hearer. Schiffrin also points out that *or* is used in arguments primarily to mark different pieces of support as multiple evidence for a position. She illustrates with example (5) below in which Jack is arguing that American movies never present a realistic view of life and presents two generalizations about the lack of realism.

5. Jack: *a. I'm-I'm speaking how kind everybody is on the movie.*
 b. or uh... how a poor working girl is out looking for a job,
 with a hundred and ninety dollar suit on her back!

Explaining she says that there are two ways to interpret *or*. In (5) Jack is directing his hearers to choose one example- either example, but only one. This would mean that *or* is exclusive; only one member of the disjunct can hold. Second, we could say that Jack is directing his hearers to choose (a), (b), or both. This is to say that *or* is inclusive; either one member or both members of the disjunct, can hold.

2. 8. 1. 4 Markers of Cause and Result

Schiffrin (1987) consider *so* and *because* as complements both structurally and semantically. She calls them discourse markers of cause and result. Adding that *so* and *because* have grammatical properties which contribute to their discourse use.

Schiffrin (1987) states that, *so* and *because* are grammatical signals of main and subordinate clauses respectively, and this grammatical difference is reflected in their discourse use. She contends that *because* is a marker of subordinate idea units, and *so* a complementary marker of main idea unit and concludes that from a functional perspective, subordinate material has a secondary role and is therefore not as relevant in and of itself.

2. 8. 1. 5 Markers of Temporal Adverbs

According to Schiffrin (1987) discourse markers of temporal adverbs are *now* and *then*, which are time deictics that convey a relationship between the time at which a proposition is assumed to be true, as well as the time at which it is presented in an utterance. Therefore *now* and *then* are deictic because their meaning depends on time of speaking.

Schiffrin (1987) uses the term *reference time* to refer to the deictic relationship between a proposition and it's speaking time. (1a) and (1b) present the same propositional content;

1. a. *Sue teaches Linguistics now*
 b. *Sue taught Linguistics then*

She explains that the above sentences have different reference times. However, in (1a) it is true during a period overlapping with the speaking time; while in (1b), it is true during a period prior to the speaking time. The

difference is therefore indicated by the shift from present to preterit tense, and by the adverbs *now* and *then*. It is therefore this shift in reference time which indicates that *now* and *then* are time deictics. The deictic properties of *now* and *then* have an impact on their use as discourse markers. One such marker is their differentiation on a proximal/distal axis. Elements on the proximal end are ego-centered; they are located closer to the speaker and to the speaker's space and time.

Schiffrin also states that there are also two time relationships which are important for understanding the discourse functions of *now* and *then*, they are; *event time* and *discourse time*. Event time is not deictic; it indicates the temporal relationship between propositions and shows a relationship between propositions themselves as well as that of linguistic events interval to a discourse, she illustrates with example (2) below:

2. *Sue wrote a book. She was teaching linguistics then.*

Explaining she states that, the reference time of both propositions in (2) is past (prior to speaking time), pointing out that event time is the relationship between the two propositions as indicated by the progressive, and by *then*. The two therefore overlap in time. Discourse time on the other hand refers to the temporal relationships between utterances in a discourse; that is the order in which a speaker presents utterances in a discourse.

These three temporal concepts reference time, event time and discourse time influence the discourse function of *now* and *then*, the same for the proximal/distal opposition between *now* and *then* and the evaluative quality of the proximal *now*.

Schiffrin also characterizes *now* as a feature that marks speaker's progression through discourse time by displaying attention to an upcoming idea unit, orientation and participants unit. She also states that *then* can function as speaker\hearer succession, particularly in showing succession between prior and upcoming talk. She distinguishes it from *now* based on the direction of the discourse which it marks.

2. 8. 2.1 Indexical Functions of Markers

Speaker, hearer, time, and place are four dimensions of context which are often encoded through deictic elements: personal pronouns, temporal expressions (tense) and locative expressions (including verbs of motion). Deictic elements therefore define the *deictic center* of an utterance, that is, the locus from which speaker hearer, time and place coordinates are fixed, and are thus assigned a context- specific interpretation (Schiffrin, 1987).

The indexical functions of markers are indicated through the participant coordinates to which markers index utterances, that is, speaker and hearer; a marker shows that an utterance is focused on either the speaker (proximal) or the hearer (distal), or possibility of both. According to Schiffrin (1987) *Oh*, for instance, focuses on the speaker's recognition, receipt, and so on, of information. *Well* focuses on both speaker and hearer since its user is defining him/herself as a respondent to a prior interlocutor.

And indexes an utterance to a speaker coordinate, because it continues to a speaker's action. It also indexes an utterance to both a prior and an upcoming coordinate-since it looks forward in a text to a next idea or action,

but to one which continues the prior idea or action structure. *But* establishes the same speaker focus, but indexes an utterance only to a prior coordinate.

So targets speaker, hearer, and prior and upcoming text. *Because* therefore, focuses only on the speaker, although it shares with *so* a focus on prior and upcoming text because it is a semantic converse.

Now indexes an utterance made to speaker and upcoming texts, since it marks the speaker's attention to a new subpart of a discourse or shift to a new orientation. On the other hand, *then* targets both speaker and hearer, and both prior and upcoming text.

In the case of *I mean*, it targets a speaker, since it marks the speaker's orientation to an utterance, and prior text, since it in some way continues the meaning already presented in the text. *Y'know* on the other hand, targets both a speaker and a hearer since it opens an interactive focus on speaker-provided information.

2. 8. 2. 2 Contextual Coordinate and Discourse Coherence

Markers therefore function on different discourse planes which provide us with clues to discourse context, that is to say that markers locate utterances on particular planes of talk. Schifffrin (1987) suggests that because there is an underlying deictic dimension to their functions, that markers provide participation and textual coordinates within these contexts pointing out that the deictic functions locate utterances on two proximal/distal axis within their particular discourse contexts. She concludes that this dual sense marker provides *contextual coordinates* for utterances. Such that they index

an utterance to the local contexts in which utterances are produced coherently and in which they are to be interpreted.

Schiffrin (1987) points out that other analysts have defined a number of items as markers which can also be seen as contextual coordinates; for instance postural changes during interaction (Erickson, 1979, Scheflen, 1973), particles especially in American Indian languages which mark verse structure (Hymes, 1981, Sherzer, 1982), and *Okay* in service encounters (Meritt, 1984) all provide coordinates to the contexts in which particular verbal and non-verbal moves are produced and designed to be interpreted. She argues that it would require a diachronic perspective which could build from analysis of semantic and pragmatic change from discourse to syntax (Sankoff and Brown, 1976) to trace the processes by which individual expressions with semantic meaning actually gain pragmatic effects in discourse.

Finally, Schiffrin(1987) concludes that discourse markers as contextual coordinates add to coherence and that since coherence is the result of *integration* among different components of talk, any device that at the same time locates an utterance within several different emerging contexts of discourse automatically has an integrative function.

2.9 Clause Relation

As earlier mentioned in chapter one, clause relation is the cognitive process whereby the meaning of a sentence or group of sentences is interpreted in the light of its adjoining sentences (Winter, 1971). Hoey (1983), further claims that all systems for signalling relations are rooted in the grammar of the clause; clause and sentence are therefore treated as including

a clause. Fakuade (2000), points out that a clause is a group of words which includes a finite verb, it is also grammatically complete and self contained and forms part of a sentence. This is corroborated by Green (1971) who opines that a clause is a group of words, which has a subject and predicate of its own, makes complete sense and forms part of a larger sentence. It expresses a complete idea or meaning (Amaechi, 1997). Huddleston and Pullum (2005) separate clause into canonical and non-canonical clause, meaning independent and dependent clause respectively. The canonical clause has the potential to stand alone as a sentence and it has a *head* element in the form of a *verb* phrase. Non-canonical clauses can then be described derivatively, in terms of how they differ from the canonical. Therefore the combination of two coherent canonical clauses forms a compound sentence while the combination of a canonical and a non-canonical clause could form a complex sentence. The use of compound and complex sentences gives allowance for multiple uses of clauses that must relate to each or one another to give a coherent idea or ideas. According to Thibault (1988), the clause complex relations contribute to the major structural boundaries of the text as social activity. Prior knowledge of a conversational kind of activity is needed to read the passage as coherent, that is, a reader needs a particular item of knowledge as a resource in order to interpret the actions embodied in the discourse as a coherent activity. Beekman and Callow (1974), Winter (1974), also view clause relations to hold coherent and semantic relations between sentences that can provide a model for the relations that can exist within a text.

To make sense of a text, the reader needs to understand the connections between its parts. One way writers help the reader to do this is to make

explicit signals of the type of relations between parts. One type of such signal is conjunctival devices derived from Halliday and Hassan (1976) description of text- internal cohesion in English. They categorized these devices into four groups to express: additive, adversative, causal and temporal relations between sentences. Conjunctions reflect the writer's position of one point in relation to another creating a text. For instance, the conjunction *however* and *despite the fact* can be used to reflect adversative relations. These conjunctions are often referred to as "connectives".

According to Field (1994), the use of conjunctions contributes to cohesion and they are often focused on by teachers. The clauses in written text need cohesion if they must be united to have a firm and unwavering meaning. Writers also make their writing more cohesive by using lexical ties such as the use of word repetition, synonyms, antonyms, etc (Liu, 2000). The use of conjunctions is therefore an important way writers in English signal the links between ideas. But before considering whether to use them and which ones to use, writers need first to consider how their ideas are related and whether they are sequenced to reflect the nature of the relationship between ideas that is important.

In exploration of the development of theoretical framework of clause relations, Winter's earlier definition is rich in implications. According to Hoey (1983) the first implication is the concern of relation with meaning. That is, to say any relation between clauses that is not comprehensible or interpreted is not a relation. Hoey (1983), states that the second is that a relation involves the addition of something. When language expressions are placed together, if their meaning together is more than the sum total of their separate parts, then

they are in a relation with each other. If in another way no meaning is added when they are placed, or no agreement can be reached about the meaning that might have been added, then they are not in relation with each other. Hoey further points out that the third implication of Winter's definition is that a sentence when it is alone is interpretable in discourse terms, but that is only when it is placed in its context. Thus, the interpretation of the clause is hampered unless this contextualization takes place first.

The fourth implication of Winter's definition according to Hoey (1983) is perhaps the most important-namely, that clause relations are therefore, acts of interpretation by the reader/listener of what he or she encounters in the light of what has been encountered. Therefore, the spelling out of all the relations holding between the parts of a passage may be of value to translators and stylisticians but it can be no more than a first step for a discourse analyst.

The above views by Hoey are strongly biased towards the reader/listener rather than towards the producer. If discourse is allowed without being accounted for, it could be viewed that each clause produced is offered in the light of its predecessors, and that it is possible to adopt Winter's definition to allow for this. According to Winter (1971) a clause relation is also the cognitive process whereby the choices we make from grammar, lexis and intonation in the creation of a sentence or group of sentences are made in the light of its adjoining sentences or group of sentences.

2.9.1 Categories of Clause Relation

Macro patterns and clause relations are terms that refer to the underlying structures that different texts and text types have in common. According to Bloor (1990) readers or listeners make sense of a text by following the conventions between its parts, that is, by looking for macro patterns and clause relations. There are certain patterns by which texts are typically sequenced and typical ways that one clause, sentence, or parts of a text is interpreted in relation to another. To illustrate this concept, Hoey (1986) chose sentences about interest rates as in the example below.

| |
|--|
| <p>Interest rates on mortgages have risen to over 10%. The number of house sales is on a downturn.</p> |
|--|

According to Hoey (1983) the second sentence would probably be interpreted as a consequence of the event in the first sentence. This relationship could be overtly signalled with a conjunction, such as, *in consequence*, *thus* or *therefore*. He points out that even without overt signalling; the reader can infer this relationship. Winter (1977, 1974) claims that there are two main patterns that are used to interpret one sentence, clause or utterance in relation to another. They are; Logical Sequence Relations and Matching Relations. He explains that Logical Sequence Relations are relations between successive events or ideas, whether actual or potential the most basic form being time sequence. He illustrates with example below.

If the royal portrait was not used (Subordinate clause), *//the arms of the country or reigning house were often taken as a suitable symbol.* (Main clause)

In the example above, the subordinate clause is the condition and the main clause the consequence. This means that the dependent clause is the condition while the consequence is the independent clause which can stand on its own to make a complete sense.

Matching Relations on the other hand are relations where statements are 'matched' against each other in terms of degrees of identity of description (Winter, 1974). Winter further argues that logical sequence and matching are both governed by a more fundamental relation, that of Situation-Evaluation, representing the two facets of world-perception 'knowing' and thinking', pointing out that all relations are reducible to those basic elements.

Winter (1977) also identifies certain nouns, verbs, adjectives and adverbs that function to signal the relationship of ideas. They include; effects, results and differences which have anticipation functions in that seeing one leads the reader to anticipate upcoming clause relations and therefore, the relationship of ideas. He illustrates this fact with the box below to show the use of word difference to help the reader anticipate that the upcoming text will involve a contrast of ideas.

| |
|---|
| <p>There is an important difference between a fixed and a floating home loan. A fixed loan is a set at a rate and this stays unchanged for a set number of years. A floating mortgage rate can go up or down according to economic trends.</p> |
|---|

Wikipedia (2009) also identifies two types of Clause Relations as Matching Relations and Logical sequence Relations. Matching Relations involves sentences which make contrasts, comparison and hypothetical real. It illustrates this type of Clause Relations with table1 below

Table1: Matching Relations

| Sub-types | Relationship of Ideas | Examples |
|--------------------------|------------------------------------|---|
| Compare | What is true of x is true of y | Mortgage rates fluctuated throughout the year in U.K. This was seen in New-Zealand and Australia also |
| Contrast | What is true of x is not true of y | People with large mortgage will feel the effect immediately. Those with small mortgages will experience little effect in the short term |
| Hypothetical Real | X is not true y is true | Many believe that house ownership is a secure form of investment. In fact, it is little more secure than other forms of investment. |

Logical Sequence Relations on the other hand involve sentences which describe Cause- Consequence and Instrument- Consequence relations as illustrated in Table2, below.

Table 2: Logical Sequence Relations

| Sub-types | Relationship of Ideas | Examples |
|-------------------------------|------------------------------|---|
| Cause-Consequence | Y is the consequence of x | Mortgage rates are expected to remain high through out the year and the number of new mortgages is expected to drop to pre-1999 figures |
| Instrument-Consequence | By doing x, y occurs | Take out a 'fast-track repayment scheme. This way you can greatly reduce the amount of interest you pay to the bank |

Analysis of Clause Relations, (Wikipedia, 2009).

2.10 Subordinators and Conjuncts as Clause Relation Signal

A Clause Relation may be signalled to the reader or listener by the use of one out of the two finite sets of grammatical connectives that exist in English for this purpose- subordinators and the conjuncts. Thus Hoey (1983) states that subordinators and the conjuncts are also known as sentence adjuncts and conjunctions respectively. For instance use of 'because' twice in a sentence signals that the clause in the sentence is in a double Cause-Consequence Relation. For example:

31. *He did not want to go away for Easter because he did not wish to leave London because he did not wish to leave rose.*

Similarly, he points out that the use of the conjunct 'so' at the beginning of the third sentence in (32), below indicates that the three sentences form a Cause-Consequence Relation.

32. *(1) It was over, it was known, it was decided, there was nothing at, ever, to be done about it. (2) He might as well, now, go to bed. (3) So he stood up, put down his empty glass, looked at himself with some curiosity in the mirror, to see if he looked different for having understood, and went up to bed.*

From the above text (32) , it can be seen that the paragraph breaks after sentence 2 emphasis that the cause-consequence relations is not solely between adjacent sentences 2 and 3, but that in fact sentences 1 and 2 are jointly the cause to sentence 3's consequence.

According to Hoey (1983), Winter started his work on signalling of Clause Relations (Winter, 1968) with conjuncts. He indicates both how they are used to signal certain central relations and what the alternative methods are of, signalling the same relations.

2.10.1 Lexical Signaling of Clause Relation

The study of subordinators and conjuncts is sometimes insufficient to explain the way a reader interprets a relation unambiguously as can be seen in example 33 below:

33. *Alderman Frank Price sees the city as a sort of anvil; my barber thinks of it as 'a neutral sort of place built by people who worked hard for generations'.*

According to Winter (1974) cited in Hoey(1983) knowledge of what precedes (33) solves the reader's problem as in 34 below.

34. *People think of Birmingham in different ways. Alderman frank Price sees the city as a sort of anvil; my barber thinks of it as 'a neutral sort of place built by people who worked hard for generations'.*

Winter further points out that the word 'different' makes explicit the contrast between the clause pair'; it tells the reader how to interpret the relation before it occurs. Yet 'different' is an adjective within a prepositional group functioning as adjunct as in no sense in one of the grammatical connectives described in the previous section such that, the reader may not only be told how to interpret a relation beforehand but he also has that information reinforced with one of the grammatical connectives. For example:

35. *People think of Birmingham in different ways. Alderman Frank Price sees the city as a sort of anvil; whereas my barber thinks of it as 'a neutral sort of place built by people who worked hard for generations'.*

The example above is concocted, first, the adjective 'different' tells us that people's thoughts about Birmingham are about to be contrasted, and then 'whereas' tells that the contrast is under way.

Winter shows the importance of the lexical signaling, indicating that it is possible to signal the same relationship in one of three ways, he calls

subordinators vocabulary 1; conjuncts he calls vocabulary 2; and lexical signals as vocabulary 3.

2. 10. 2 Paraphrase as a Means of Clarifying Clause Relations

Paraphrase is one of the means of clarifying Clause Relations, with no links or items to link the clauses whenever they occur as in example below.

40. *Peter went red. He knew he had been silly.*

From the above example, one can deduce that there is no conjunct to link these sentences to indicate what relation they form. No lexical signal informs us of their connection rather. Systematic repetition is in evidence. Therefore, the substitution of 'Peter' by 'he' (twice) has no direct significance. Yet most native speakers would identify the relationship as being one of cause-consequence where the first sentence is the consequence and the second the cause. Winter (1974) thus has two fold answer to this problem: first, to project the monologue into dialogue and discover what questions each part answers and secondly, to paraphrase the discourse in such a way that its relations are revealed.

2. 10. 3 Questions as Means of Clarifying Clause Relations

According to Hoey (1983) a number of questions may be used to clarify the organization of discourse, for two reasons thus: first, the need to differentiate between questions of different degrees of precision. For instance, questions such as 'how' apply to many situations; they can be used to elicit

answers of a certain type in almost any discourse. Such questions are referred to as broad questions. Their advantage is that they allow for convenient generalization

On the other hand Hoey (1983) states that there are questions such as 'How did Mr. Wilson win many middle class votes in the election?' This can only apply to the one situation unlikely to be used to elicit answers in any other discourse. Winter therefore calls such questions narrow questions. Such questions reflect sensitivity, the relationship of sentences to the contexts in which they appear. Their advantages and disadvantages are the reverse of those of broad questions.

The second reason of classifying question in the organization of discourse is that they need to distinguish between questions that elicit a larger passage of the discourse and questions that elicit a smaller passage of discourse. Thus, questions may elicit parts of a sentence, whole sentences and groups of sentences, long passages or even whole discourse.

2. 10. 4 The Problem-Solution Pattern in Clause Relations

The Problem- Solution pattern is used by Winter (1976) to account for a reader's interaction in written scientific discourse. This idea was conceived to answer possible questions that might arise as readers understand a text. He discussed the following four sentences:

*I opened fire,
I was on sentry duty,
I beat off the attack,
and I saw the enemy approaching.*

The above sentences are built around the following questions:
What is the situation?

What is the problem to be solved?

What is the solution?

How is the solution to be achieved?

These questions are summed up into “speech act” categories which relate to the structure and function of information in the text as follows:

situation

problem

solution

Evaluation

The principles of the Problem – Solution approach have been adopted and used by some linguists for the analysis of both scientific and non-scientific texts. A number of modifications to the original model have been proposed. Hoey (1986) has also attempted to relate the ‘Problem- Solution’ model to the concept of Clause – Relations (Winter, 1971,). As earlier mentioned, Winter (1971) defines Clause-Relations as follows:

A Clause- Relation is the cognitive process whereby we interpret the meaning of a sentence or group of sentences in the light of its adjoining sentence or group of sentences.

The above definition is therefore, adopted and modified by Hoey to account for the fact that each clause produced in discourse “is offered in the light of its predecessors”. Hoey (1983: 19) defines clause – relation, thus:

A clause relation is also the cognitive process whereby the choices we make from grammar, lexis and intonation in the creation of a sentence or group of sentences are made in the light of its adjoining sentence or group of sentences.

Thus, Hoey (1986) points out that patterns of discourse organization “not on a different level from clause relations, nor are they on a higher rank”, contending that “problem-solution patterns, and indeed all other patterns, are composed of clause relations”. The minimum discourse devised by Winter

(1976) comprising four sentences can be sequenced in twenty-four ways. The most appropriate sequence is that which is given neutral intonation and equal emphasis on all sentences, namely;

1. *I was on sentry duty. I saw the enemy approaching. I opened fire. I beat off the attack.*

The above sequence is therefore recognized as normal (unmarked) between clauses. The marked sequences become less marked or even unmarked if they are connected by appropriate subordinators. For example, the sequence 2 below;

2. *I saw the enemy approaching. I was on sentry duty. I opened fire. I beat off the attack.* May become
3. *I saw the enemy approaching while I was on sentry duty. I opened fire. I beat off the attack.*
4. *I was on sentry duty. I opened fire. (I saw the enemy approaching). I beat off the attack.*

Can when connected by subordination, become the less marked version.

5. *While I was on sentry duty, I opened fire because I saw the enemy approaching. I (thereby) beat off the attack.*

In winter's sequences, sequences that were completely unacceptable without subordination, such as

6. *I beat off the attack. I opened fire. I saw the enemy approaching. I was on sentry duty* become completely acceptable with subordination.
7. *I beat off the attack by opening fire when I saw the enemy approaching, while I was on sentry duty.*

This suggests that once subordination is introduced, sequence becomes relatively unimportant, apart from the initial selection of the subordinate clauses. Out of the twenty-four sequences of the sentences, many are now acceptable. It could therefore be deduced that sequence and subordination are in part complementary. Subordination can be seen as a means of making clear

an altered sequence. The conjuncts are used to make clear the sequence as seen below.

2 *I was on sentry duty. I saw the enemy approaching. Therefore I opened fire by this means I beat off the attack.*

In contrast to the subordinators, conjuncts require the sequence to be unmarked where they connect, and will therefore not attest their use as connectives in the other sequences, except where those sequences refer to part of the unmarked sequences. Question can also be used to connect either unmarked or marked sequences. This is shown when they are projected into dialogue form where the questions that sentence is implicitly answering can be made explicit for example;

9. *D I was on sentry duty*

Q what happened?

D I saw the enemy approaching

Q what was your reproach?

D I opened fire

Q How successful was this

Or what was the result of this?

D I beat off the attack

This type of interrogation is termed narrative interrogation in at least one sense; it is complete at each stage. Questions are a primary source of information about the meanings of sentence in sequence. When a discourse is converted into a dialogue it means that each sentence is converted into an answer to a question; that question spells out explicitly the previously implicit communicative purpose of the sentence and, assuming this communicative purpose makes use of the language context, the question will spell out the context at the same time.

The Instrument- Achievement relation is also very important in Clause-Relation. This is revealed in the sentences below;

1. *I open fire. I beat off the attack.*

The above sequence indicates Instrument- Achievement

Another important relation in clause relation is the Cause-Consequence relation. If we can use the same method in describing the meaning of their sequence as in Instrument – Achievement respectively; the sentences are connectable by ‘because’, ‘therefore’, and ‘why’, all of which stand in a paraphrase relationship with each other. This can be called the Cause-Consequence relation.

If a writer uses one of the connectors mentioned above to link a sentence of two or more clauses, then that sequence can be said to have Cause-Consequence meaning. That does not mean that such sentences must have a factual existence. Hoey (1983) exemplifies that if someone were to say;

2. *George killed my cat because he hates dogs.* He would be signalling with the connector ‘because’ that he regarded the two clauses as being in a Cause-Consequence relationship.

In sum, the problem solution model of Winter overhauled the revelation of messages from text or texts with proper sequences for proper understanding of ideas.

2. 11. The Relation between Clause-Relations and the Problem-Solution Pattern

It is still not clear the relationship holding between Clause- Relations such as Cause- Consequence on the one hand and Problem- Solution Pattern

on the other (Hoey, 1983). Therefore a signal may either be complete in itself or carry within it evidence of being part of larger set of relations; this does not prevent the using of signals of one set of relations as evidence of the existence of the other. According to Hoey (1983) the use of connections to a discourse with subordination and conjuncts is a test not of the existence of the Problem-Solution Pattern but of the existence of a particular relationships (i.e. Cause – Consequence, Instrument-Achievement) holding between adjacent parts of a discourse. He further points out that there has to be rules to relate the one set of relations to the other, in order to properly use evidence of the existence of Problem-Solution Pattern.

Hoey (1983) therefore proposes four sets of mapping condition to meet this need, two of which immediately follow:

1. That there will be an assumption of two parts of a discourse, *a* and *b*, in a Cause-Consequence Relation. If (i) *a* has been independently established as problem and (ii) *b* contains the role of agent, then *b* is response.
2. That three parts of discourse will be assumed, *a*, *b* and, *c* of which *a* and *b* are in an Instrument-Achievement or Instrument-Purpose Relation, and of which *a* has not been independently established as problem.

Given these circumstances, if (i) *b* contains the role of agent and (ii) *c* prevents reverses, avoids harm to, or seeks help in preventing, etc, some crucial aspect of *a*, then *a* is problem and *b* is response.

Hoey therefore, tries to look at how the two mapping conditions operate in practice. In the following trio of sentences (A) he assumes that ‘unfortunately’ (as a negative evaluation of an aspect of the situation) independently establishes the second sentence as problem:

A. (1) *my wife and I went to see citizen kane.* (2) *Unfortunately all the seats were booked.* (3) *So we went to the theatre instead.*

The use of sentence (2) as problem means that sentences (2) and (3) can be checked against mapping condition (1). Since sentences (2) and (3) are in a Cause- Consequence relation and identify sentence (3) as Response.

Mapping condition **B** operates in a similar way. Hoey further says that if three clauses are linked together thus:

B. *It was raining hard, so I shut the window to stop rain blowing in.*

In the above expression, first and second clauses are in a Cause-Consequence Relation and the second and third in Instrument-Purpose Relation.

At the beginning of this expression, the first clause has not been identified as problem, but it was discovered that the third clause ‘stops the rain blowing in’ versus ‘raining’. In this text, the first is identified as problem and the second as Response.

In this example, our mapping conditions are not perfect. For instance, they exclude examples like **C**

C. *It was raining so I put my umbrella up.*

Where the purpose of the action described in the second clause is so self-evident that it is not spelt out. Hoey therefore points out that two mapping conditions will further be added.

3. Two parts of discourse will be assumed, *a* and *b*, in a Cause-Consequence Relation and that *a* has not been independently established as a problem.

If (i) *b* contains the role of an agent and (ii) *b* also prevents, reverses, avoids, or avoids harm to some crucial aspects of *a*, or seeks help in preventing, etc some crucial aspects of *a*, then *a* is problem and *b* is response.

4. The same will be assumed for mapping condition 3.

If (i) *b* contains the role of agent and (ii) also can have attached to it a purpose clause, *c*, which spells out a lay man's understanding of what *b* means, and if (iii) the newly formed trio conforms to the conditions of mapping condition 2, then *a* is a problem and *b* a Response.

Hoey tries to show how this works in practice. He takes a pair of clauses such as

D. *My daughter had taken the plug out, so I put it back.*

These clauses are in Cause- Consequence Relation and the first clause has not been previously established as problem. On application of mapping condition 3, it will be discovered that the second clause contains an agent ('I') and reverses some aspect of the first ('I take the plug out; versus 'put (the plug) back. It can be concluded that the first clause is problem and the second, Response.

In a similar vein, if a pair quoted in **C** is taken, it will be found that they can be extended thus:

E. *It was raining, so I put my umbrella up to prevent the rain hitting me.*

Such an extension according to Hoey (1983) creates an Instrument -Purpose Relation between the second and third clauses which reflect any reader's or listener's understanding of what is assumed in **C**. To Hoey, **E** was saying something different. Since the attached purpose clause 'prevents' a crucial

aspect of the first clause, we may conclude that the first clause of **C** is problem and the second is response.

Winter's Problem-Solution Pattern and his clause relations have an interwoven relationship. The occurrences of subsequent clauses are normally followed by initial clause or clauses. These rules give text or sequences cohesion and coherence, thereby giving meaning to our sequences or expressions. Hoey therefore believes in relationship existing between both, because there is Cause-Consequence and Instrument-Achievement in both that cohere Situation-Response.

2. 12 Summary/Overall Assessment of the Literature

This chapter presents a general overview of the concepts of indexicals, discourse markers and clause relations. From a general perspective, indexicals are pragmatic expressions that point to the truth of a proposition made in an utterance. Discourse markers are words and phrases used in speaking and writing as sign post in discourse. While clause relations are connectives used in giving clauses and sentences coherence and cohesion.

2. 13. Theoretical Framework

A Recognition of pointing facts is very necessary and fundamental to this view of study, as indexical points to the truth of a proposition made in an utterance. It is therefore used in pointing ideas (Peirce 1931). This study is hinged on the framework of Kaplan's (1989a) classification of indexicals into pronoun, adverb and adjective. Perry (2001) points out, demonstrative pronouns are used in directing the attention of audience or readers, while

adverbials are very important set of indexicals that vary from context to context to indicate time or place of an action or sign (Lewis, 1983). And adjectives give the description of ideas.

Discourse Markers are used as 'sign post' in speaking and writing, because they help in joining ideas and controlling communication (Schiffrin, 1987). They serve as connectives in idea structure. This study takes an eclectic approach to discourse markers involving the adoption of Schiffrin's (1987) discourse markers of connectives as conjuncts, Nwogu's (1990, 2010) linking words as discourse markers into adjuncts, exemplification, phrases and summary statements and Halliday and Hassan's (1976) cohesive devices as conjunct discourse markers as they relate to the use of connectives as markers which signal the linking of propositions in discourse.

The other Discourse Markers that will not be adopted are mostly found in spoken discourses or talks. They are Markers of Information Management: *oh*, Marker of Response: *well*, Markers of Temporal Adverbs: *now* and *then*, Information and participation: *Y'know* and *I mean*. These markers can also be seen as contextual coordinates during interaction (Erickson, 1979, Scheflen, 1973).

Clause Relations are ways by which texts are typically sequenced or parts of a text is interpreted in relation to another (Bloor, 1990), this is corroborated by Beekman and Callow (1974) who point out that clause relations hold meaning between sentences that can provide a model for the relations that can exist within a text. The frame for the study is based on Winter's (1977, 1974) pattern of Clause- Relations into Logical Sequence Relations and Matching Relations. Logical Sequence Relations are relations

between successive events or ideas. While Matching Relations are relations where statements are 'matched' against each other in terms of degree of identity of description (Winter, 1974).

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter deals with the methodology of the study. In it the research design is stated, methods of corpus selection are presented, the analytical procedure for the study is defined while the categories used for the analysis are also highlighted. It also examines the sampling procedure on which the corpus is based and presents a list of texts which make up the corpus.

3.2 Research Design

The research is a study in indexicals, discourse makers and clause relations, particularly in the analysis of written texts; therefore, it is a corpus-based study. Nwogu (1990) points out that in almost all corpus-based studies, a lot depends on the extent to which the texts which make up the corpus enable an investigation of the kind of problems which the study purports to examine. Also the method of data analysis adopted is statistical, descriptive and evaluative. The statistical analysis involves frequency count of the linguistic features under investigation to establish their regularity of occurrence. However, the focus of the analysis is on a discourse-based description of language in use.

The corpus on which this study is based consists of naturally occurring language data from Medical Science Journal Articles. Each article was examined based on Kaplan's (1989a) classification of indexical markers, insights from Schiffrin's (1987), Nwogu's (1990,2010) and Halliday and

Hassan's (1976) connectives, linkers and cohesive devices as discourse markers respectively and Winter's (1974, 1977) pattern of clause relations.

3.2.1 The Corpus

The corpus on which this study is based consists of 15 articles in 5 reputable Medical Science Journals. These include; Middle East Fertility Society Journal, African Journal of Reproductive Health, Journal of Health population nutrition, Electronic Journal of Biotechnology and Malaysian Journal of medical science. The rationale for limiting the corpus to five Journals is;

- A. To enable the researcher carry out an in-depth analysis of each of the variables which may not be possible if the analysis is spread to many journals.
- B. They are reputable journals widely read across the world; therefore, they circulate in all the countries of the world since they are all in hard copies and are found on the internet in open access without payment.
- C. The journals are also, regarded as standard journals by majority of their readers.

3.2.2 Method of Corpus Selection

Texts in the corpus consist of 2006 to 2008 articles of the Middle East Fertility Society Journal, Journal of Health Population Nutrition, African Journal of Reproductive Health, Electronic Journal of Biotechnology and The Malaysian Journal of Medical Sciences. From these journals, three articles were chosen by random sampling from each of the journal articles published

within those years, irrespective of the months, making a total of fifteen articles. The articles that were chosen are:

| Journal | Vol, Date, Month and Year of Publication | Title of Articles |
|--|---|---|
| Middle East Fertility Society Journal | Vol. 13, No. 1,2008 | Serum- Prostatic Specific Antigen Level as a Promise Marker in Infertile Women with Polycystic Ovarian Diseases |
| Middle East Fertility Society Journal | Vol. 12, No. 1,2007 | Polycystic Ovarian Syndrome the Correlation between the LH/FSH Ratio and Disease Manifestations |
| Middle East Fertility Society Journal | Vol. 11, No. 1,2006 | Non- hormonal Therapies for the Treatment of Menopausal Symptoms |
| African Journal of Reproductive Health | Vol. 12, No.1 April,2008 | Male infertility secondary to varicocele: A study of the Management of 45 patients |
| African Journal of Reproductive Health | Vol. 11, No.1 April, 2007 | Sexual Behaviour, knowledge and Awareness of related reproductive Health Issues among single Youth in Ethiopia |
| African Journal of Reproductive Health | Vol. 10, No.2 August ,2006 | Being Victims or Beneficiaries Perspectives on Female Genital Cutting and Reinfibiulation in Sudan |
| Journal of health population Nutrition | Vol. 26, No1 March, 2008 (22-35) | Sex and Socio-economic Differentials in Child Health in Rural Bangladesh: findings from a Baseline Survey for Evaluating Integrated Management of Childhood Illness |
| Journal of health population Nutrition | Vol. 25, No1 March, 2007 (14-23) | Clinical Versus Sonographic Estimation of Foetal weight in Southwest Nigeria |
| Journal of health population Nutrition | Vol. 24, No1 March, 2006 (8-16) | Defining Episodes of Diarrhoea: Results from a Three- country |

| | | |
|---------------------------------------|------------------------------------|---|
| | | Study in Sub-Saharan Africa. |
| Malaysian Journal of medical Sciences | Vol. 15, No1 January, 2008 (13-22) | Profound Swin Stress-induced Analgesia with Ketamine. |
| Malaysian Journal of medical Sciences | Vol. 14, No1 January, 2007 (4-9) | Genetics of Cleft Lip and Palate: A Review |
| Malaysian Journal of medical Sciences | Vol. 13, No1 January, 2006 (13-20) | Cloning and Expression of Malaria and Tuberculosis Epitopes in Mycobacterium Bovis Bacille Calmette- Guerin |
| Electronic Journal of Biotechnology | Vol.11 No1 January 15, 2008 | Diversity of Bacterial Communities in Acid Mine Drainage from the Shen-bu Copper Mine Gansu Province, china |
| Electronic Journal of Biotechnology | Vol.10, No.1 January 15, 2007 | Practical Use of Immobilized Lysozyme for the Remediation Process of Escherichia Coli in Aqueous Solution |
| Electronic Journal of Biotechnology | Vol.10, No.1 January 15, 2006 | Recent Development in Biotech Industry outside of the USA and Western Europe: Report from Bio 2005 |

The essence of the sampling is to have coverage of all journals in the corpus. Akogun (2000) points out that Random sampling is a procedure for selecting a sample from the entire population in such a way that every member of the population has a chance of being in the selected sample. It also aims at reducing the difficulty involved in analyzing all the articles in the journals and for the purpose of ensuring representativeness.

3.3 Analytical Procedure

The analytical procedure presents the descriptive tools used in the study and accounts for their application to a body of data. According to Osuala (2005) the procedure is perhaps the crux of the research report; it is the background against which the reader evaluates the findings and the conclusions.

The aspects of language that were analyzed in this study are Indexicals, Discourse Markers and Clause Relations. The indexicals were analyzed based on Kaplan's (1989a) classification of Indexical Markers into Pronouns, Adverbs and Adjectives, while discourse markers were analyzed based on insights from Schiffrin's (1987), Nwogu (1990, 2010) and Halliday and Hassan's (1976) into Conjuncts, Adjuncts, Summary Statements Exemplifications and Phrases as discourse markers. And Clause Relations were analyzed based on Winter's (1977, 1974) patterns of Clause Relation into Logical Sequence and Matching Relation.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

In this chapter, the data collected for the study are analyzed and discussed. The analysis is presented under three sub-heading viz; Indexicals, Discourse Markers and Clause Relations. The frequency of occurrence of indexicals, percentage of the occurrence of pronouns, adverbs and adjectives as indexicals and distribution of each indexicals in text sections are presented, while the frequency of occurrence of discourse markers, percentage of the occurrence of conjuncts, adjuncts, summary statements, exemplification and phrases as discourse markers and distribution of each discourse markers in text sections are also presented and the frequency of occurrence of clause relations, percentage of the occurrence of Logical sequence and matching relations and distribution of each clause relations are presented respectively.

4.2 Analysis of Indexicals

Indexicals such as Pronouns, Adjectives and Adverbs were identified and analyzed in this section based on their importance to make reference and modification of scientific items for clarity.

4.2.1 Frequency of Occurrence of Indexicals

The question investigated in this study was whether indexicals are significant features of Medical Science Journal Articles. The aim was therefore to find out the extent to which indexicals were significant features of Medical Science Journal Articles analyzed based on Kaplan's (1989a) classification of

indexicals. Table1 below presents results on the frequency of indexicals and their percentage of occurrence in the texts analysed.

Table 1: Percentage of the Occurrence of Pronouns, Adverbs and Adjectives as indexicals

| Indexicals | Total No. of Occurrence | % of Occurrence |
|------------|-------------------------|-----------------|
| Pronouns | 165 | 75 |
| Adverbs | 23 | 10.45 |
| Adjectives | 32 | 14.55 |
| Total | 220 | 100 |

In table1 above, 220 indexicals were identified with Pronouns having the highest number of occurrence with a total of 165 (75%); followed by adjectives with 32 (14.55%) and adverbs with the least number of occurrence with a total of 23 (10.45%).

Table 2: Distribution of Pronouns, Adverbs and Adjectives as Indexicals in each text

| Indexicals | Texts | | | | | | | | | | | | | | | Total |
|--------------|-----------|-----------|-----------|----------|----------|----------|-----------|----------|----------|-----------|-----------|-----------|-----------|----------|-----------|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| Pronouns | 18 | 8 | 31 | 2 | 5 | 7 | 11 | 2 | 2 | 19 | 14 | 13 | 17 | 7 | 9 | 165 |
| Adverbs | 5 | 2 | 1 | 0 | 0 | 0 | 8 | 0 | 3 | 0 | 0 | 0 | 2 | 2 | 0 | 23 |
| Adjectives | 0 | 11 | 5 | 0 | 3 | 0 | 3 | 2 | 1 | 3 | 1 | 2 | 0 | 0 | 1 | 32 |
| Total | 23 | 21 | 37 | 2 | 8 | 7 | 22 | 4 | 6 | 22 | 15 | 15 | 19 | 9 | 10 | 220 |

Table2 above points out the distribution of pronouns, adverbs and adjectives as indexicals in the different texts, as the table shows, text 3 therefore has the highest number of occurrence of indexicals with a total

number of 37 while text 4 has the least number of occurrences of indexicals with a total number of 2. It is not clear why text 3 has the highest number of occurrence of indexicals, but it may be as a result of the emphasis laid on reporting of the investigation and the results in the text by the authors to underline the genuineness of their research.

The result therefore indicates that indexicals are features of Medical Science Journal Articles.

Table 3: Distribution of Indexicals in each section of the Text

| Text Sections | Pronouns | | Adverbs | | Adjectives | | Total No. of Occurrence | % of Occurrence |
|--------------------------|----------|-------|---------|-------|------------|-------|-------------------------|-----------------|
| | Total | % | Total | % | Total | % | | |
| Abstract | 20 | 9.09 | 0 | 0 | 2 | 0.91 | 22 | 10 |
| Introduction | 24 | 10.91 | 2 | 0.91 | 1 | 0.45 | 27 | 12.27 |
| Material and Method | 30 | 13.64 | 0 | 0 | 1 | 0.45 | 31 | 14.09 |
| Results | 47 | 21.36 | 13 | 5.91 | 17 | 8.64 | 77 | 35 |
| Discussion | 32 | 14.55 | 8 | 3.64 | 9 | 4.55 | 49 | 22.27 |
| Conclusion | 5 | 2.27 | 0 | 0 | 2 | 0.91 | 7 | 3.18 |
| Acknowledgement | 7 | 3.18 | 0 | 0 | 0 | 0 | 7 | 3.18 |
| Total No. and percentage | 165 | 75 | 23 | 10.45 | 32 | 14.55 | 220 | 100 |

Table 3, presents the occurrence of each of the indexicals in texts in the corpus. As the table shows, the predominant indexical in the texts studied is the pronoun with 165 (75%) instances of occurrence while the adverb is the least with 23 (10.45%) occurrence.

The table also shows the occurrence of each indexical in the text sections of texts which constitute the corpus. As can be seen from the table, the Results section has the highest number of occurrence of indexicals with a total of 77 (35%) instances of occurrence, followed by the Discussion section with 49 (22.27%) instances of occurrence and the Materials and Method section with 31 (14.09%) instances of occurrence. The Introduction section has 27 (12.27%) indexicals, the Abstract 22 (10%) while both Conclusion and Acknowledgement have the least instances of occurrence of indexicals with a total number of 7 (3.18%).

The table also shows the total distribution and percentage of occurrence of each indexical in the journals' sections. From the table, it can be seen that pronoun indexicals with 47 (21.36%) instances of occurrence occurred more frequently than adjectives and adverbs in the Results section which has the highest number of occurrence of indexicals than all other segments or sections, while no Adverb indexicals occurred in the Abstract, Discussion and Acknowledgement sections and no adjective indexicals occurred in the Acknowledgements section of the journal articles.

Following from the result, it can be concluded that the use of indexical is more in the Results section than in any other sections. It can also be said that the pronoun indexicals are used more frequently in texts in the corpus than any other forms of indexicals. This is because it is used in the identification of items in Medical Science Journal Articles.

4.2.2 Textual Analysis of Indexicals

Medical Science Journal Articles use words or expressions that have reference that shift from one direction of meaning to the other. This is to say that indexicals used in the journals communicate some underlying demonstrative intention of the writer to refer to a particular object in the scientific report.

Various indexicals were identified in the texts analyzed. These include **pronouns** such as: I, he, she, this, that, these, those and we; **adverbs** such as: here, now, yesterday, actually, presently, today and tomorrow and **adjectives** such as: actual and present.

The various indexicals identified are illustrated with the examples below:

A. Pronoun

Text I

This paper will use the term FGC in an attempt to find language that is value neutral, but which adequately describes the nature of the procedure (African Journal of Reproductive Health vol. 10 No. 2, august, 2006, page 25)

The use of the demonstrative pronoun 'this' in the example above indicates a reference and identifies an item in the discourse, which is the idea under investigation. It is therefore not used as an anaphora but as an exophoric reference which is not referring to any particular item in the text, but to the totality of the text. In other words, it is functioning primarily as a key-phrasing signal to point to or refer to the whole text. It is therefore a demonstrative that draws attention with the intention to identify rather than to make a gesture as is the case in speech. In writing, the demonstration is

silent but with a deep cognitive world view of scientific discourse index. Thus, the indexical “this” is used to point or signify what the term “FGC” is used to refer to in the study.

Text II

In an attempt to develop multivalent vaccine against malaria and TB, we constructed a synthesis gene containing two different malarial epitopes from different stages of the P. Falciparm life cycle namely the fragment 2 region 11 of EBA-175 CFR2 R(II) EBA which is the protein that have been suggested to be involved in the sequence of events leading to erythrocyte invasion (20,21), as well as the three repeat sequence of the circumsporozoite protein (NANP) which has been shown to elicit the production of antibodies that neutralize sporozoite activity in vitro and generates specific antsporozoite antibodies in animal models (22, 23). (Malaysian journal of medical sciences, vol. 13 No.1, January, 2006(13-20) page 14)

The pronoun “we” is used as an indexical marker in the article to signal or refer to the authors or researchers who conducted the study. Thus, the pronoun, serves to indicate to the reader that more than one researcher conducted the study. It therefore points out or signifies to the reader that the decision on the method adopted was a collective one and can be relied upon.

Text III

I think she can't control her sexual behavior, because she has a very strong sexual urge. She has a nasty smell and she is not accepted by the men like the circumcised women are. (Woman 42 years old) (African Journal of Reproductive Health Vol. 10 No. 2, August 2006).

The use of I in the above example is indexical. The indexical I is used when the writer or speaker refers to himself or herself as seen in the response of 42 year old woman whose use of the demonstrative pronoun does not necessarily involve any physical pointing but the intention of reference to

herself. Its function is to indicate the truthfulness of the proposition made by the individual in the research conducted.

Text IV

Two blood samples were taken, first at circle day 4 - 6 from those with regular circle or at any day from those with amenorrhea or those with completely irregular circles and a second sample obtained 3 - 4 days later according to the patient availability to measure their serum FSH & LH levels using Radioimmunoassay technique, then mean LH/FSH ratio obtained. (Middle East Fertility Study Journal, vol. 12, No. 1 page 37, 2007).

In the above example, the indexical those appears three times with the writer using them to point at different groups of people, thus highlighting the distinctive nature of each group of people with particular blood circle. It points the sequence and the time that exists between the various groups not necessarily by physical demonstration but by spatial representation of ideas.

B. Adverb.

Text V

Today, sonographic predictions were based on algorithms using various combinations of foetal parameters such as abdominal circumference (AC), femur length (FL), biparital diameter (BPD), and head circumference (HC), both singly and in combination as shown below (3, 10, 18, 25, 37 - 42) (journal of Health population nutrition ISSN1606 - 0997, 16 March, 2007, page 16).

The adverbial indexical today in the example above is used to show the time and how an action took place in the event of the research. Adverbial indexes or points to the time something is done or is to be done. The pointing needs not necessarily be seen; rather the intention of the expression should have an embedded action as represented by the clause “sonographic predictions were based on algorithms” in text v above. In the example above,

the indexical today gives a general view of the trend followed by the researchers on issues already discovered as facts, which can serve as world view claims of the researchers on a current issue.

Text VI

This actually, secondary request might confirm women's alleged expectations that men want tight (infibulated) brides and influence the decision making process for FGC for the daughters (African Journal of Reproductive Health Vol. 10 No. 2 August 2006, page 34.

The indexical actually is used in the text to indicate that something is true (women's alleged expectations that men want tight (fibulated) brides and influence the decision making process for FGC for the daughters). It helps to emphasize on claims investigated and established by the researcher. The use of actually in the example above therefore points at the truthfulness of the proposition or claim made by the researcher and on the proposition in the context of discourse in the text.

C. Adjective

Text VII

In the low birth-weight(<2500g) group, the main errors of sonographic estimates were significantly smaller and significantly more sonographic estimate(66.7%) were within 10% of actual birth weight than those of the clinical method(41.7%).(Journal of health population nutrition March 25, 2007, page 14)

The indexical actual in the text above is used to point out the distinctiveness or uniqueness in the action depicted by the verb, thus suggesting that in the low birth weight (<2,500g) group, more sonographic estimates were within 10% of true birth – weight than those of the clinical method. The use of actual therefore functions to emphasis the most important aspect of birth weight where more importance is given to low birth (<2,500g) group than those of the clinical method in terms of number

Text VIII

The onset of symptoms and subsequent presentation to the health facility were mainly in the middle age, with a peak among those aged 31 and 40 years. Although many patients present within the reproductive age group, varicocele may also affect children as seen in this study. (African Journal of Reproductive Health, Vol.12 No1 April, 2006)

The indexical present in the example above points out the existing patients and their age group who suffer from varicocele; it shows the health status of a certain people of a particular age group currently. It is therefore concerned with what is happening now.

Text IX

phytoestrogens has no structural similarity to estrogens. They contain a phoenix ring that allows estrogens receptor binding, and their effect is 100 to 10,000 times weaker than actual estrogen (Middle East fertility society journal, vol. 11, No.1, 2006, page 10)

In the above example, the adjective “actual” is an indexical which points out the distinctiveness or uniqueness of “estrogens” from “phytoestrogen”. Therefore, “actual” functions in the text as a pointing word that gives distinctiveness to the description of the item it qualifies, thereby distinguishing it from other element of the same kind. From the forgoing, it can be concluded that in scientific discourse, adjectives and in particular the word “actual” functions as a pointing word which serves to distinguish different aspects of one element.

4.3 Analysis of Discourse Markers

In this section of the research, discourse markers such as Conjuncts, Adjuncts, Summary Statements, Exemplification and phrases were identified and analyzed based on their textual relevance in the journal articles.

4.3.1 Frequency of Occurrence of Discourse Markers.

The question investigated in this study was whether discourse markers are significant features of Medical Science Journal Articles. The aim was therefore to find out the extent to which discourse markers were significant features of Medical Science Journal articles analyzed using an eclectic approach. Table I below presents results on the frequency of discourse markers and their percentage of occurrence in the texts analyzed

Table 1: Percentage of the Occurrence of Conjuncts, Adjuncts, Summary Statements, Exemplification and Phrases as Discourse Markers

| Discourse Markers | Total No. of Occurrence | % of Occurrence |
|--------------------------|--------------------------------|------------------------|
| Conjuncts | 375 | 56.22 |
| Adjuncts | 171 | 25.64 |
| Summary Statements | 20 | 3 |
| Exemplification | 21 | 3.15 |
| Phrases | 80 | 11.99 |
| Total | 667 | 100 |

The analysis in table I above shows that 667 discourse markers were identified in the corpus analyzed. Conjuncts had the highest number of occurrence with a total of 375 (56.22), followed by Adjuncts with 171 (25.64%), Phrases with 80 (11.99%), Exemplification with 21 (3.15%) and Summary Statements having the least number of occurrence with a total of 20 (3%) instances of occurrence.

Table 2: Distribution of conjuncts, Adjuncts, Summary Statement, Exemplification and Phrases as Discourse Markers in each Text

| Discourse Markers | Texts | | | | | | | | | | | | | | | |
|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total |
| Conjuncts | 12 | 38 | 57 | 26 | 10 | 10 | 20 | 7 | 17 | 67 | 14 | 5 | 75 | 5 | 12 | 375 |
| Adjuncts | 9 | 10 | 10 | 8 | 19 | 12 | 12 | 6 | 7 | 33 | 2 | 6 | 27 | 3 | 7 | 171 |
| Summary Statements | 0 | 0 | 9 | 1 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 3 | 1 | 0 | 20 |
| Exemplification | 2 | 1 | 2 | 0 | 2 | 1 | 3 | 1 | 4 | 0 | 1 | 0 | 4 | 0 | 0 | 21 |
| Phrases | 12 | 5 | 6 | 0 | 8 | 11 | 9 | 3 | 2 | 0 | 2 | 0 | 15 | 6 | 1 | 80 |
| Total | 35 | 54 | 85 | 35 | 41 | 35 | 45 | 17 | 32 | 100 | 19 | 11 | 124 | 15 | 20 | 667 |

Table 2 above shows the distribution of Conjuncts, Adjuncts, Summary Statements, Exemplification and Phrases as discourse Markers in the different texts. As the table indicates, text 13 has the highest number of discourse markers with a total number of 124, while text 12 has the least number of occurrences of discourse markers with a total number of 11. It is not clear why text 13 has the highest number of occurrence of discourse markers, but it may be as a result of the high use of signpost lexemes to help the reader navigate the text easier and faster with great understanding.

The result therefore indicates that discourse markers are features of Medical Science Journal Articles.

Table 3: Distribution of Discourse Markers in each section

| | Conjuncts | | Adjuncts | | Summary Statements | | Exemplification | | Phrases | | Total No of Occu | % of Occurrence |
|-----------------------------------|------------|--------------|------------|--------------|--------------------|----------|-----------------|-------------|-----------|--------------|------------------|-----------------|
| Text Sections | Total | % | Total | % | Total | % | Total | % | Total | % | Total | % |
| Abstract | 13 | 1.95 | 9 | 1.35 | 3 | 0.45 | 0 | 0 | 3 | 0.15 | 26 | 2.90 |
| Introduction | 69 | 10.34 | 31 | 4.65 | 0 | 0 | 5 | 0.75 | 7 | 0.45 | 108 | 16.19 |
| Materials & Method | 59 | 8.85 | 22 | 3.30 | 0 | 0 | 0 | 0 | 34 | 1.05 | 88 | 13.19 |
| Results | 165 | 24.75 | 52 | 7.80 | 1.05 | 1.05 | 7 | 1.05 | 35 | 5.10 | 265 | 39.73 |
| Discussion | 64 | 9.60 | 51 | 7.65 | 1.20 | 1.20 | 9 | 1.35 | 0 | 5.25 | 167 | 25.04 |
| Conclusion | 3 | 0.45 | 4 | 0.60 | 0.30 | 0.30 | 0 | 0 | 0 | 0 | 9 | 1.35 |
| Acknowledgement | 2 | 0.30 | 2 | 0.30 | 0 | 0 | 0 | 0 | 80 | 0 | 4 | 0.60 |
| Total No. & percentage | 375 | 56.22 | 171 | 25.64 | 20 | 3 | 21 | 3.15 | 80 | 11.99 | 667 | 100 |

In table 3 above, the occurrence of each discourse marker in the corpus is presented. As the table shows, the predominant discourse marker is the Conjunct with 375 (56.22%) instances of occurrence while the Summary Statement is the least with 20(3%) occurrences.

The table also shows the occurrence of each discourse marker in the text sections of texts which constitute the corpus. As can be seen from the table, the Results section has the highest number of occurrences of discourse markers with a total of 265 (39.73%) instances of occurrence followed by the Discussion section with 167 (25.04%) instances of occurrence, the Introduction section with 108 (16.19%) instances of occurrence, and the Materials and Method section with 88 (13.19%) instances of occurrence. The Abstract has 26 (3.90%) instances of occurrence, the Conclusion 9 (1.35)

instances of occurrence and Acknowledgement has the least with 4 (0.60%) instances of occurrence.

The total distribution and percentage of occurrence of each discourse marker in the Journal's sections is also presented in the table. It can be seen from the table that Conjuncts with 165 (24.74%) instances of occurrence occurred more frequently than all other discourse markers in the Results section which has the highest number of occurrences of discourse markers than all other sections. This is because conjuncts help in coordinating the logical explanations of the results investigated in the different texts of the journal articles. The analysis also shows that there were no Summary Statements as discourse markers in the Introduction, Materials and Method, and Acknowledgement sections, no Exemplification as discourse marker in the Introduction, Materials and Method, and Acknowledgement sections and no Phrases discourse markers in the Conclusion and Acknowledgement sections of the Journal Articles.

From the result, it can be deduced that the use of discourse markers is more in the Results section than any other sections. It can also be said that Conjuncts as discourse markers are used more frequently in texts in the corpus than any other forms of discourse markers.

4.3.2 Textual Analysis of Discourse Markers

Discourse Markers are used as sign posts to communicate information in scientific writing. The sign posts could be in the form of a single lexical item or group of lexemes as discourse markers in the texts analyzed. They include

Conjuncts, Adjuncts, Summary Statements, Exemplification and Phrases functioning as discourse markers.

These discourse markers identified are illustrated with the examples below:

A. Conjuncts

Text I

65.8% of male and 24.6% of female youth who ever had sexual intercourse had two or more sexual partners in the last 12 months, which is high but comparable with one recent school based urban study from this country that found out 47% of males and 35% of females in the age range of 14-26 had multiple sexual partners (II). (African Journal of Reproductive Health Vol. II No. 1 April, 2007, page 15)

In text I above, the conjunct “but” is a discourse marker which functions to introduce a contrast between two propositions. The first proposition, “65.8% of male and 24.6%female youth...which is high...” reports on the results of the study being reported. The second proposition, “comparable with one recent school based urban study...had multiple sexual partners” reports on the findings in another related study. The conjuncts “but” not only functions to link the two propositions together, but functions to introduce a comparison between the present and the related study; thus assisting the writer to justify the high results he obtained in his study.

Text II

This advanced technology has allowed now electronic estimation of PSA with high degree of accuracy although it is still not commercial yet (II) (Middle East Fertility Society Journal Vol. 13, No. I, 2008, Page 28).

The lexeme “although” is a subordinating conjunction which links two propositions of relatively unequal status, with the second proposition being

dependent on the first for its full interpretation. The inequality between the propositions is signalled by the discourse marker “although”. This functions to indicate that a contrast exists between the first and the second proposition. That contrast is expressed in the shift from a positive to a negative proposition, which is that the finding “...is still not commercial yet”. Thus the conjunct “although” in textII above marks a shift from a positive to a negative proposition. It also serves to introduce the limitation of the result being reported.

B. Adjuncts

Text III

On the other hand, Dunaif et al (4) claimed that, polycystic morphology is consistent with, but not essential for, diagnosis of the syndrome. These changes, however, can be present in women who are endocrinologically normal. Thus, the ovarian morphological change must be distinguished from the endocrine syndrome of hyperandrogenism and anovulation (5,6) (Middle East Fertility Society Journal, Vol. 12, No. 1, 2007, Page 36).

In textIII above, two adjuncts are identified. They are “however” (s1) and “thus” (s2). The first adjunct “however” serves to link s1 with the information contained in the preceding sentence which is summarized in the subject of the sentence, “These changes”. But more importantly the adjunct functions to elaborate on the need to distinguish between “ovarian morphological change” and “Endocrine Syndrome of hyperandrogenism and ovulation” as a result of the exception to the result obtained in the research. The purpose of the elaboration is to justify the exception observed. Thus in medical science articles it can be said that the adjunct “Thus” functions to justify results obtained during the research which introduces a contradicting

idea, which is that, “These changes...can be present in women who are endocrinologically normal”. The contradiction makes the proposition an exception to the result obtained. Thus, in medical science research articles, the adjunct “however” can be said to function to introduce an exception to an established result. The second adjunct “Thus” is a discourse marker.

Text IV

It is a Noradrenergic and specific Serotonergic antidepressant (NOSSA) that acts by antagonizing the adrenergic alpha 2 – autoreceptors and alpha 2- heteroreceptors as well as by blocking 5-HT2 and 5-HT3 receptors. It enhances, therefore, the release of norepinephrine and 5-HT1A-mediated serotonergic transmission (Middle East Fertility Society Journal, Vol. II, No. 1, 2006, Page 1).

In textIV above, the underlined word “therefore” is an adjunct which links ideas in sentenceI with those in sentenceII. But beyond that the adjunct is a discourse marker whose functions are to highlight the conclusion that can be drawn from the result reported in sentenceI, that is “It is a noradrenergic and specific serotonergic antidepressant...5-HT2 and 5-HT3 receptors.” Thus, in medical research articles, one of the functions of the adjunct “therefore” is to draw conclusion.

C. Summary Statements

Text V

The African studies have recorded better specific knowledge and awareness (17) women’s symptoms of STIs are less well known than man’s symptom.

In conclusion, the study shows that Ethiopian youth exhibit high risk sexual partners, low condom use rate, and less reliable and infrequent use of contraceptive methods (African Journal of Reproductive Health Vol.II No. I April, 2007, Page 20)

In text V above, the lexemes “In conclusion” is used as discourse marker to signal a concluding statement on the major findings of the study. The phrase “In conclusion” marks an end to the discourse and functions to inform the reader that the writer is making a concluding remark.

Text VI

These organisms have previously been found in heavymetal-contaminated soils (Sandaa et al. 1999). To Summarize, PH and soluble metal concentrating exert a considerable influence on the phylogenetic diversity of microbial communities ion AMO (Electronic Journal of Biotechnology, Vol. II No. I January 15, 2008, Page 9)

In text VI above the expression “To summarize” is a discourse marker which functions to indicate that the writer is shifting from one unit of discourse to another. It therefore functions to inform the reader that the writer is making a summary statement.

D. Exemplification

Text VII

The Chilean commitment to biotech is strong For example; one of the applications of biotechnology of interest to this country is in transgenic or genetically modified plants (Electronic Journal of Biotechnology, Vol. 9 No.2, April 15, 2006, Page 92).

In textVII above, the writer begins with a generalization that is “The Chilean commitment to biotech is strong.” It goes on to support the generalization with an example. It signals to the reader that he is making an exemplification by the use of the explicit lexeme “for example” in sentence2. Thus, the explicit lexeme “for example” is a discourse marker which functions to indicate to the reader that the writer is providing justification for the generalization in sentence 1.

Text VIII

During the last decade, estimated foetal weight has been incorporated into the standard routine antepartum evaluation of high-risk pregnancies and deliveries. For instance, management of diabetic pregnancy birth after a previous caesarian section, and intrapartum management of foetuses presenting by the breech will be greatly influenced by estimated foetal weight (1,2) (Journal of Health Population Nutrition, March 25, 2007, Page 14).

In textVIII above, two discourse markers can be identified. The first being the adverbial phrase, “During the last decade” which serves to put the generalization made in sentence1 within a time frame. Thus, the adverbial phrase is a discourse marker whose function is to indicate to the reader the context in which the generalization made in the sentence should be interpreted. The second discourse marker, “for instance” is a discourse marker whose function is to indicate to the reader that the writer is shifting the discourse from generalization for specific details in the form of examples.

E. Phrases

Text IX

The specific details and methodology of the survey can be found elsewhere (5).

For the purpose of this study, a sub-population of males and females in the age range of 15-24 years constituting youth were selected. (African Journal of Reproductive Health Vol. II No. 1 April, 2007, Page 15)

In text IX above, the adverbial phrase, “For the purpose of this study” is a discourse marker whose function is to draw a distinction between the study being presented and previous studies. Thus, it serves to indicate to the reader that the proposition made in the main clause, that is “...a sub-population of males...youths were selected” is limiting in its context and should not be

generalized. It also serves to indicate the uniqueness of the study being reported

Text X

The observation that, compared to actual birth weight, has also been previously reported (1, 10).

In previous studies, no standardized methods was used for clinical estimation, making it subjective, poorly defined and non-reproducible ((Journal of Health Population Nutrition, March, 2007, Page 20).

The prepositional Phrase “In previous studies” above is a signalling Phrase which serves as a discourse marker to recall the idea contained in the previous studies on what the writer is about to discuss or communicate to the reader which is “...no standardized methods was used for clinical estimation,...defined and non-reducible”. But more importantly, it functions to indicate a shift from discussing the present research to a discussion of what has been done in the past on the topic

4.4 Analysis of Clause Relations

In this section of the study, clause relations such as Matching and Logical Sequence were identified and analysed in the Journal Articles.

4.4.1 Frequency of Occurrence of Clause Relation Types

The question investigated in the study was whether clause relations are significant features of Medical Science Journal Articles. The aim was to find out the extent to which clause relations were significant features of the Medical Science Journal Articles analysed based on Winter’s (1974,1977)

classification of Clause Relations. To this end, the frequency of occurrence of the clause relation types was analysed and reported as shown below.

Table1. Percentage of the Occurrence of Logical Sequence and Matching Relations in the corpus

| Clause relations | Total No. of occurrence | % of occurrence |
|----------------------------|-------------------------|-----------------|
| Matching relation | 716 | 48.95 |
| Logical sequence relations | 748 | 51.1 |
| Total | 1464 | 100 |

Table1 above shows that 1464 clause relations were identified in the corpus analysed. Of this, 716(48.95) were matching relations, while 748(51.1%) were logical sequence relations. The predominant occurrence of logical sequence relations in the Medical science journal articles analysed seems to suggest that most of the clauses in texts in the corpus report on actions and their subsequent reactions.

Table 2: Distribution of Clause Relations in Each Text of the corpus

| Clause Relations | Texts | | | | | | | | | | | | | | | | |
|----------------------------|-----------|------------|------------|-----------|-----------|-----------|------------|-----------|------------|------------|-----------|-----------|------------|-----------|-----------|-------------|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total | % |
| Matching Relations | 54 | 65 | 89 | 12 | 44 | 24 | 62 | 26 | 33 | 88 | 23 | 36 | 93 | 41 | 26 | 716 | 48.9 |
| Logical Sequence Relations | 42 | 52 | 71 | 53 | 20 | 61 | 114 | 29 | 73 | 61 | 34 | 9 | 79 | 19 | 31 | 748 | 51.1 |
| Grand Total | 96 | 117 | 160 | 65 | 64 | 85 | 176 | 55 | 106 | 149 | 57 | 45 | 172 | 60 | 57 | 1464 | 100 |

Table 2 above shows that out of the 1464 clause relations identified in texts in the corpus, text 7 has the highest number of Clause Relations with 176 instances of occurrence followed by text 13 with a total number of 172 instances of occurrence of clause relations while text 12 with a total of 45 clause relations was the least. The table also shows that logical sequence had the highest frequency of occurrence with 114 instances in text 7 followed by matching relations with 93 instances of occurrence in text 13.

Table3. Detailed distribution and percentage of occurrence of each clause relation type

| Clause Relations | Matching relations | | Logical sequence relation | | Total no of occurrence | % of occurrence |
|-------------------------|--------------------|------|---------------------------|------|------------------------|-----------------|
| | Total No. | % | Total No | % | | |
| Abstract | 47 | 3.2 | 36 | 2.5 | 83 | 5.7 |
| Introduction | 124 | 8.5 | 140 | 9.6 | 264 | 18 |
| Materials and method | 98 | 6.7 | 144 | 9.8 | 242 | 16.5 |
| Results | 278 | 19 | 270 | 18.4 | 548 | 37.4 |
| Discussion | 152 | 10.4 | 135 | 9.2 | 287 | 19.6 |
| Conclusion | 7 | 0.5 | 20 | 1.4 | 27 | 1.8 |
| Acknowledgment | 10 | 0.7 | 3 | 0.2 | 13 | 0.9 |
| Total no. by percentage | 716 | 48.9 | 748 | 51.1 | 1464 | 100 |

Table3 above shows the detailed distribution and percentage of occurrence of each clause relation type in the sub-sections of the research articles which form the corpus for the study. The result shows that the logical sequence relations with 748 instances of occurrence or 51.1% is the

predominant clause relations type in the texts, while matching relations occurred 716 times with 48.9%. The table also indicates the various occurrences of each clause relations type in the journal article sub- sections. As the table shows the Results section has the highest frequency of clause relations with a total of 548 (37.4%), followed by Discussion section with 287 (19.6%) and the Introduction section with 264 (18%), Materials and Methods section with 242 (16.5%), Abstract with 83 occurrence (5.7%), Conclusion with 27 (1.8%) and lastly the Acknowledgment with 13 (0.9%) instances of occurrence. The total number and percentage occurrence of matching and logical sequence relations in the sub-sections is presented side by side to show the predominant clause relations and their location in the journals. From the table, it can be seen that both matching relations and logical sequence relations recorded very high levels of occurrence in the results section with 278 and 270 instances of occurrence respectively, while there was very low occurrence of both clauses relation type in the acknowledgement section with matching relations having 10 instances and logical sequence 3.

Following from the result, it can be deduced that while clause relations is a feature of all sections of medical science journal articles, its use is more in the results section than in other sections of the research articles in this study. It can also be concluded that logical sequence relations tends to be used more frequently to link propositions in medical science journal articles than matching relations which tended to occur relatively less frequently in texts in the corpus.

The analysis goes to show that both logical sequence and matching relations are important linguistic features used in establishing relationship

between propositions in medical science journal articles as the frequency of occurrence of both clause relation types is significant in medical science journal articles in this study.

4.4.2 Textual Analysis of Clause Relations

Clause relations is analysed in relation to the cognitive process involved in interpreting clauses in relation to their adjoining sentences, since all systems for signalling relations are rooted in the grammar of the clause. As with all texts, medical science journal articles use the resources of clause relations to communicate information to their readers. In the journal articles under investigation, two clause relation types were identified. They are logical sequence and matching relations.

A. Logical sequence relations

This type of relations involves sentences that describe **Condition-Consequences**, **Cause-Consequences** and **Instrument-Achievement Relations**. Examples of logical sequence relations are given below

Text I

The presence of the synthetic fragment TB/malvaco 1.0 was confirmed by the preparation of rBCG plasmid DNA, followed by back transformation into E. coli and restriction analysis or PCR amplification (data not shown). (Malaysian journal of medical sciences, Vol. 13, No.1, January 2006, page 18).

The clause relation type in text I above is formed from the combination of an independent clause “The presence of the synthetic fragment TB/Malvaco 1.0 was confirmed” by the preparation of rBCG plasmid DNA and a dependent clause “by the preparation of rBCG plasmid DNA, followed by back transformation into E. Coli and restriction analysis or PCR amplification”, into

a complex sentence. The first clause which is independent is made up of a subject and verb and it makes a complete sense while the second clause which is dependent, therefore does not make a complete sense. The use of “by” in the second clause signals its relation to the independent clause thereby consolidating the two clauses to make a complete sense. Therefore, ‘by’ is a lexeme used to signal the relationship that exists between the two clauses. That relationship is that of Instrument- Achievement logical sequence relations, with “the synthetic fragment TB/malvaco1.0 was confirmed” being the Achievement and “by the preparation of rBCG plasmid DNA, followed by...or amplification” being the Instrument which is logically linked together by the lexeme ‘by’ as a signalling device.

Text II

In addition, some men explained that they felt frustrated because of the cultural component that Sudanese women are socialised not to express their sexuality: (African journal of reproductive health vol. 10 No.2 August 2006, page 31)

The above text is a **Cause- Consequence** logical sequence relations. As the example shows, the first clause which is shown as the canonical or independent as a consequence of the second clause which is the non-canonical or dependent clause. The second is therefore the **Cause** as signalled by the adverbial subordinating conjunction “because” in the clause “because of the cultural component that Sudanese women are socialised not to express their sexuality” which resulted in the consequence or the frustration expressed by some men in the clause “...some men explained that ...frustrated.

It can therefore be said that the **Cause-Consequence** is used in medical science journal articles as in most texts to show the cause of an action. That is,

what brought about the exhibition of a particular action is a result of one that precedes and acts on it as in text (ii).

Text III

Therefore, when the clinical method suggests weight smaller than 5009 subsequent sonographic estimation is recommended to yield a better prediction and to further evaluate foetal well being. (Journal of health population nutrition, March 25, 2007, page 14)

The text above is an example of **Condition-Consequence** logical sequence relations. Two clauses can be identified, the subordinate clause and the main clause. The first clause, “Therefore, when the clinical... is smaller than 5009” is the subordinate clause. The second clause, “... subsequent sonographic estimation... evaluate foetal well being” is the main clause. Both clauses enter into a clause relational association by the subordinating adverbial, “therefore” which signals a summary of an earlier proposition which is concluded in the main clause. Therefore, the first clause is non-canonical; expressing the condition under which suggestion of clinical method takes place while the second clause expresses the expected outcome of that action. The lexeme “therefore” serves to signal that the relation which exists between the two clauses is that of condition-consequence logical relations.

Text IV

Based on the initial numbers of under-five children identified in the demographic survey, we estimated that we would obtain the required number of children if we took a systematic sample of very 16th child found in the demographic survey. (Journal of Health Population Nutrition, 2008 March 26, page 23)

The above text is an example of a **Situational Condition**. The researchers estimated that they would obtain the required number of children

under the condition that they took a systematic sample of every 16th child found in the demographic survey thus indicating a **Condition-Consequence** logical sequence relation. There are three clauses in the above example, the first, “Based on the initial number of under-five children identified in the demographic survey” is a dependent or subordinate clause expressing situation, while the second clause, “we estimated that we would obtain the required number of children” is the main clause which functions to introduce the condition arising from the situation. The third and last clause, “if we took a systematic sample of every 16th child found in the demographic survey” a subordinate adverbial clause of condition functioning to provide the premise on which the condition is to be realized. Thus, the relation between the clauses is that of situational consequence-condition. Thus relation is signalled first by the subordinate clause and the conjunct ‘if’ functioning to signal the hypothetical condition that needs to be met for the situation to take effect. Thus, the clause relation in the sentence above states a hypothetical condition for the required number of children to be obtained.

B. Matching Relations

These are the relations that involve clauses that make contrasts, comparisons and hypothetical real. The clauses are “matched” against each other in terms of degree of description, as shown in the example below.

Text V

At the end, patients (85%) were still experiencing hot flushes, although the percentage of patients still rating their hot flushes as quite a bit or extremely severe had declined from 100% to 38% (p=0.008). (Middle East Fertility Society Journal vol.11 no.1, 2006, page 4)

Two clauses may be identified in the example above. The first clause, “At the end, patients (85%) were still experiencing hot flushes” is the main clause while the second “...although the percentage of patients still rating their hot flushes as quite a bit or extremely severe had declined from 100% to 36% (P=0.008)”, is the subordinate clause, it is an adverbial clause of concession or contrast. Both clauses are linked by the adverbial conjunct “although” which serves to signal a contrast in the relationship between the first and second clause. Although a contrast exists in the meaning relations which exist between both clauses, they are nevertheless compatible because the contrast serves to modify the proposition made in the main clause. Text (v) above is therefore, an example of contrast matching relations based on compatibility of ideas or proposition.

Text VI

This country has the largest number of Nobel Prize winners per capita. Many of these laureates had their prizes in chemistry, which perhaps is why this country has been particularly strong in conventional drug research and development. (Electronics journal of biotechnology 15 April, 2006, page 98)

From the above example, we can deduce that the large number of Nobel prize winners in chemistry is associated with the country's strength in conventional drugs research and development. In the text, multiple clauses are matched together to make them compatible. The first sentence in the text is an independent clause. The second sentence contains two clauses the first, “Many of the laureates had...chemistry” is the main clause and the second. “...which perhaps is why this country...research and development” is the subordinate clause. The three clauses enter into matching clause relations of the instrument-Achievement type, with the large number of laureates in chemistry being, perhaps, instrumental to the strength of the country in drug research and development.

Text VII

Despite the controversy regarding its effectiveness as a vaccine against TB, BCG has been suggested to be an attractive vehicle for the delivery of foreign antigens to the immune system. (Malaysian Journal of Medical Science, Vol. 13 No1 January, 2006, page 13).

The above example is a matching relation which offers compatible information about BCG. The first part of the sentence, “Despite the controversy regarding...vaccine against TB” is the dependent clause while the second, “...BCG has been suggested to be an attractive vehicle...immune system” is the independent clause. The relations between both clauses is that of contrast or concession in which the dependent clause states the contrast and the independent clause the situation. The contrast is signalled by the adverb “despite” in the dependent clause which serves to link both clauses together.

Text VIII

At the end of the monitoring exercise, a field worker explained the diary to the women participating in the study. At the end of each week, a field worker visited the household for any problems” (Journal of Health Population Nutrition March, 2006, page 10).

The text above consists of two sentences. Sentence one begins with a prepositional phrase, “At the end of the monitoring exercise” which is linked to the independent clause, “...a field worker explained...in the study”. Sentence two also begins with another prepositional phrase, “At the end of each week” and concludes with the independent clause, “...a field worker visited...for any problems”. The clauses are linked by the relational signal of repetition, particularly of the prepositional phrases at the beginning of the two sentences. The repetition does not only serve to connect the clauses, but also to contribute significantly to their interpretation. As can be seen from the clauses, the repetition of the preposition in each sentence acts as a framework for the interpretation of the upcoming independent clause.

4.5 Discussion

The results of this study strongly indicate that indexicals as characterized by Kaplan (1989a) into pronouns, adverbs and adjectives feature prominently in medical science journal articles. However, pronouns were found to occur more frequently than either adverbs or adjectives, while adverbs were the least used in texts in the corpus. This is because of the central role of practicals and analytical procedures in the conduct of scientific events as obtained in the medical science journal articles analyzed in this study.

Medical Science Journal Articles report on practical and analytical issues in their investigations. Such issues often involve objects, equipment or apparatus used in the process of experimentation. Initial reference to such items is often made by reference to their names or labels. Subsequent reference to them is usually made by means of pronouns, mainly non-personal pronoun in line with impersonality associated with scientific discourse. This explains why there are more instances of the use of pronoun as indexicals than either adverbs or adjectives. It was also observed that most of the indexicals identified occurred in the results segment than any other segment. This can be attributed to the fact that the segment involves reporting on the observations made in the study involving the interaction or use of the apparatus and equipment by means of impersonal pronouns. Though adjectives and adverbs occur less than pronouns, they still play important

roles in the interaction or use of apparatus and equipment; however, they are mostly used in the modification of such items for clarity by the authors to the readers as they do not seem to be used always in some of the journal sections.

While discourse markers as analyzed based on the insights from Schiffrin's (1987) discourse markers of connectives as conjuncts, Nwogu (1990,2010) linking words as discourse markers into adjuncts, exemplification, phrases and summary statements and Halliday and Hassan's (1976) cohesive devices as Conjunct discourse markers are features prominently found in Medical Science Journal Articles. From the analysis, Conjuncts were found to occur more frequently than all other discourse markers with Summary Statement the least used in texts in the corpus. This is as a result of the fact that Medical Science Journal Articles are practical oriented as indicated in the study.

Reports on Medical Science Journal Articles involve practical and analytical items, issues, etc. which are mostly done by the use of conjunction. This therefore explains why there are more instances of the use of Conjuncts as discourse markers, than Adjuncts, Summary Statements, Exemplification and Phrases. It was also observed that most of the discourse markers identified occurred in the results section than any other section. This can be attributed to the fact that the section involves reporting on the observations made in the study involving the addition of items by the use of Conjuncts, while Adjuncts also occur in large number and they perform vital roles in the reporting of practicals by indicating the position of the investigation. Phrases perform important functions too as they indicate what the writer is about to discuss. However, Summary Statement and Exemplification occurred at the

last part of some sections and they may not always occur at every section, while the exemplification does not always occur at every section, unless where necessary. And Clause Relations analyzed based on Winter's (1977, 1974) patterns of Clause Relation into Logical Sequence and Matching Relations are features prominently found in Medical Science Journal Articles. Medical science journal articles report on practical, invariably experimental tests. Thus the practical activities being discussed and the items used are most often being related by the use of logical sequence relations. This explains why there are more instances of the use of logical sequence relations than matching relations. Most of the clause relations identified occurred at the "result" than any other segment or section of the journals. The reason why logical sequence relations occurred mostly in the results section could be as a result of the fact that it is the high point of the report where the writer attempts to justify his findings. From the above examples, it can be observed that both logical sequence and matching relations are governed by yet another fundamental relation known as **Situation- Relations** which Hoey,(1983) contends are basic elements which all relations are reduceable to.

The signalling items- Indexicals, Discourse Markers and Clause Relations occur predominantly in the Result section of the text. This may be as a result of the fact that it is the bedrock on which the fact of the investigation lies and so, more emphasis is laid on it and that the cause of what is found is adequately pointed out. It can therefore be concluded that though Indexicals, Discourse Markers and Clause Relations are features of different types of texts, their functions and frequency of occurrence are constrained by the text-type or genre.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The study is an attempt to examine the use of signalling devices in the presentation of information in Medical Science Journal Articles. Indexicals, Discourse Markers and Clause relations are used in the signalling of information in scientific texts. The texts in the corpus are randomly selected from Medical Science Journal Articles. This chapter summarizes the outcome or findings, draws conclusions, makes recommendations and suggestions for further studies based on the results obtained.

5.2 Summary of Findings

This study investigated indexicals, discourse Markers and Clause relations in Medical Science Journal Articles. It aimed at finding out the extent to which Kaplan's (1989a) classification of Indexicals, the approaches to discourse markers by Schiffrin (1987), Nwogu (1990,2010) and Halliday and Hassan (1976) and Winter (1974, 1977) model of Clause Relations are used to signal clear propositions in Medical Science Journal Articles.

The results of this study strongly indicate that Kaplan's classification of indexicals, the approaches to discourse markers based on insights from Schiffrin, Nwogu's linking words and Halliday and Hassan's cohesive devices and Winter's patterns of Clause Relations are significant features of Medical Science Journal articles. A frequency analysis of the occurrence of indexicals in the corpus shows that pronoun indexical occurred more frequently than all other indexicals with 165 instances of occurrence, while the least were

adverbs with 23 instances of occurrence. Similar analysis for discourse markers revealed that conjuncts occurred more frequently than all other discourse Markers with 375 instances of occurrence while summary statements occurred less frequently with 20 instances of occurrence. With regards to Clause Relations, frequency analysis showed that logical sequence relations occurred more frequently with 748 instances of occurrence, while matching relations occurred least frequently with 716 instances of occurrence.

A detailed analysis of the characteristic features used to realize indexicals in the corpus indicated that various indexicals were identified in the texts analyzed. They include pronouns such as: I, this, those, we etc; adverbs such as: today, actually, etc and adjectives such as: present, actual, etc. It was observed that the indexical “this” is used in writing as a demonstration that draws attention with the intention to identify rather than to make a gesture as is the case in speech. It was also found that the adverbial indexical “today” is used to show not just the time but also how an action took place in the research event. In a similar vein the adjective indexical ‘actual’ is also used to point out the distinctiveness or uniqueness in the action depicted by the verb.

An analysis of the Characteristic Linguistic features of discourse markers revealed that the following discourse markers are characteristically used in Medical Science Journal Articles. They include: Conjuncts, Adjuncts, Summary Statements, Exemplification and Phrases functioning as discourse markers. The analysis revealed that the conjunct discourse marker “but” is not only used to link propositions, but to introduce a contrast between two propositions. It was also observed that the discourse marker “To summarize” not only functions to signal

that the reader is making a summary statement but also to indicate that the writer is shifting from one unit of discourse to another.

The analysis of the characteristics linguistic features of clause relations revealed the occurrence of two clause relations and their sub-types. They are Logical Sequence Relation and contrast matching relation. Logical sequence relation is used in the text to show the cause of an action. That is, what brought about the exhibition of a particular action is a result of one that precedes and acts on it. Contrast matching relation on the other hand is used in the text to modify the proposition made in the main clause.

The high occurrence of indexicals, discourse markers and clause relations, in the texts analyzed might be attributed to the fact that in Medical Science Journal articles writers tend to point at practical and analytical issues that often involve objects, equipment or apparatus used in the process of experimentation by means of pronouns while they tend to coordinate items and issues by means of conjuncts and relate ideas by linking them for better understanding by the reader by means of clause relations.

From the investigation, it can be seen that indexicals, discourse markers and clause relations are features of medical science journal articles whose linguistic features functions to signal information in text that contribute to cohesion and coherence in text creation. Therefore, they collectively function as connectives and linkers which function as signalling devices of text creation in Medical Science Journal Articles. As signalling items, they also help the reader to point out possible breakdowns in meaning arising from their wrong use to signal appropriate information in context.

5.3 Conclusion

Based on the results of this study, a number of conclusions may be drawn;

One of the questions under investigation in this study was whether indexicals, discourse markers and clause relations are significant features of Medical Science Journal Articles. Thus, it can be concluded that indexicals are used in Medical Science Journals to communicate some underlying demonstrative intention of the writer to point at objects in the world of the science.

It can also be concluded that discourse markers function as important sign posts which draw readers' attention to what goes on in scientific texts, thus helping them to navigate easily through the text. Similarly, it can also be said that clause relations serve to signal the cause of an action or event in scientific writing. The overall conclusion, however, is that knowledge of the use of these signaling devices will help new-entrants into the scientific research community write effective research reports. It will also help readers of scientific journal articles make meaning out of what they read, thus reducing the difficulty often associated with the understanding of scientific writing.

5.4 Recommendations

Based on the findings in this study, the following recommendations are made:

1. Postgraduate science students should be taught the use of indexicals, discourse markers and clause relations to enable them write effective science reports.

2 Undergraduate students of Medical Science should constantly be given writing tasks involving the use of indexicals, discourse markers and clause relations in their use of English courses. This will enable them develop the proper use of indexicals, discourse markers and clause relations as they learn to write.

3. New entrants into the academic discourse community, particularly science lecturers should be encouraged to learn the proper use of indexicals, discourse markers and clause relations as these signalling items will help them in writing good articles for scientific journals.

4. ESP practitioners should incorporate the teaching of indexicals, discourse markers and clause relations into syllabus and course design of English for Medical Sciences.

5.5 Suggestions for further studies

Following from this study, some areas of further study can be suggested. A comparative study of the use of indexicals, Discourse Markers and clause relations of undergraduate and postgraduate students of Medical Science classroom learning written texts and texts written under examination conditions can be carried out to determine the effect of writing condition on Indexicals, Discourse Markers and Clause relations of Medical Science texts. Experimental studies can also be carried out to determine the extent to which an application of the findings and teaching implications of this study can contribute to promoting better communication in scientific writing especially among medical science teachers and lecturers who may write academic articles that involve the use of indexicals, discourse markers and clause relations.

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