

INDEXICALS AS SIGNALLING FEATURES OF MEDICAL SCIENCE JOURNAL ARTICLES

Jauro, Luka Barnabas

*Department of Languages and Mass Communication,
Adamawa State Polytechnic, Yola,
Adamawa State, Nigeria.*

Emmanuel C. Sharndama

*Department of Information Technology,
Modibbo Adama University of Technology, Yola*

Abstract

This work investigated indexicals in Medical Science Journal Articles. The corpus for the study consists of 15 texts from 5 reputable Medical 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. Descriptive approach was adopted in the analysis of data. The findings show that indexicals are significant features of Medical Science Journal Articles. It 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. The study recommends that neophytes in the academic discourse community should be encouraged to learn the proper use of indexicals as these signalling items will help them in writing good articles for scientific journals.

Key words: indexical, signalling, medical science

Introduction

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 Pierce (1931) to refer to demonstrative pronouns and other words which call the attention of the hearer to aspects of the immediate situation on which attention is focused upon, otherwise

known as index. Indexes function to draw the attention of the hearer and make him use his/her power of observation, to establish a real connection between his mind and the objects. Abercrombie (1967) cited by Lyons (1977) uses the term “indexes” to refer to “signs which reveal personal characteristics of the writer or speaker”. These signs are used as signalling lexemes in writing medical science journal articles.

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). The term signalling in telecommunication has been adopted in linguistics by linguists like Kaplan (1989a) to refer to indexicals as signalling devices in any discourse. He uses 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 in information transmission.

Indexical can also be referred to as signs sent by a sender to a receiver for interpretation. This is derived from Moris’ (1938) characterization of semiotics into syntactic, semantics and pragmatics and in line with Montague’s (1970) proposal that pragmatics should be considered with the study of signs and their users in contexts including indexicals. Filmore (1972, 1975) and Lewis (1983) on the other hand, point out those utterances such as: **come, go, left, and right**, which seem to invoke different points of reference, or different perspectives in different contexts. Based on this, they contend that indexical markers make a speaker to engage in gesticulatory expressions of what is intended and concluded that indexicals are determined in part by the **extra - linguistic** features of time and location of the speaker’s intention. Indexicals can also vary from context to context; hence they are commonly referred to as **context-sensitive expressions**. In the same vein, Reichenbach (1947) points out that words and morphemes that indicate tense are also indexicals, because they refer to different time intervals from context to context.

Indexicals are therefore 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. Deixis is realized by means of demonstratives, first and second person pronouns, and specific time

and place adverbs such as **now** and **here**, and any other grammatical features that are connected to the circumstances of utterance. Thus, Perry (2001) contends that not all pronouns are indexicals, and not all indexicals are pronouns. Levinson (1983) points out that deixis or deictic words and expressions can also be referred to as indexicals.

Indexicals are very important linguistic features for the communication of ideas in 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). This linguistic model helps in achieving textuality, as indexicals combine in text to achieve the textuality.

Therefore, this study seeks to examine the use of indexicals 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.

Theoretical Framework

This study is based on Kaplan's (1989a) theory of indexicals, which describes the meaning of indexicals in a systematic way. Kaplan identifies three categories of indexicals as: Pronoun, (I, he, she, this and that); Adverb, (here, now, actually, presently, today, yesterday and tomorrow) and Adjectives (actual and present). He further distinguishes between two types of indexicals: pure indexicals such as: I, today, tomorrow, actually, present, and (perhaps) here and now, which are not determined by the speaker's actions or intentions and true demonstratives, which are determined (in part) by the speaker's accompanying pointing gestures, or by the speaker's intention to refer to a particular object. Thus, it can be said that reference to pure indexical is automatic while reference to true demonstratives requires the use of extra-linguistic factors.

One of the fundamentals of Kaplan's theory is that linguistic expressions have contents or contexts. He refers to the content as "C". Each context has at least an agent, time, location, and possible world associated with it.

Kaplan points out that the content of a sentence, with respect to context, has a truth value at the world of the context. He also states that the content of a sentence with respect to a context can be evaluated for truth at a world other than the world of the context. For example, the content of 'I am a philosopher' with respect to C, is the proposition that Fred is a philosopher. At W (presumably), this proposition is false, but it can be true at some other world, say W, in which Fred is a philosopher. In this way, the sentence 'I am a philosopher' is false in C and W, but true at C and W*. (Notice that the context is the same both times, while the world is different.) Therefore, the sentence "it is possible that I am philosopher' is true with respect to C and W; and the content of the sentence, with respect to C, is true in C.

The frame for this analysis is therefore based on Kaplan's (1989a) classification of indexical markers into pronouns, adverbs and adjectives.

Methodology

This is a corpus based study. Therefore, the approach to research adopted is descriptive. 15 texts from 5 reputable Medical 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 stratified random sampling from each of the journals which were published between 2006 and 2008 for the study to ensure that every article published in the five journals over the period covered by the study had equal chance of being selected.

Indexicals were analyzed based on Kaplan's (1989a) classification of indexicals. The corpus for the study consists of the following articles:

Table 1: Journal articles (corpus) for the study

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, 2006 (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	Vol.10, No.1 January	Recent Development in Biotech

of Biotechnology	15, 2008	Industry outside of the USA and Western Europe: Report from Bio 2005
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

Results and Discussion

The study sets out to investigate (1) whether indexicals are features of Medical science journal articles. (2) To determine the extent to which the use of indexicals is constrained by their context of use.

The analysis of data for (1) above is presented in Tables 2 and 3 below.

Table 2: Analysis of Frequency of 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 Table 2 above, 220 indexicals were identified with Pronouns having the highest number of occurrences with a total of 165 (75%); followed by adjectives with 32 (14.55%) and adverbs with the least number of occurrences with a total of 23 (10.45%).

Table 3: Distribution of Indexicals in each Section

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 above presents the occurrences of each of the indexicals in texts in the corpus. 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%) occurrences.

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 occurrences of indexicals with a total of 77 (35%) instances, while both Conclusion and Acknowledgements have the least with a total number of 7 (3.18%).

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.

Therefore, from the analysis on Table 3 above, it can be said that pronouns are the most predominant indexicals used to express ideas in Medical Science Journal Articles. The pronouns were found to be predominantly used to point to a proposition in an utterance or in proceeding context as illustrated in the examples below:

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 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

Today, sonographic predictions were based on algorithms using various combinations of foetal parameters such as abdominal circumference (AC), femur length (FC), 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 the time something is done or is to be done. The pointing need 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 III 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 IV

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.

Text V

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.

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 VI

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 foregoing, 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.

Conclusion

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. An attempt has been made in this investigation to show that indexicals are an important feature of language in medical science journal articles. Pronouns were found to be the most predominant form of indexicals in the texts analyzed because they enable article writers point out the subject matter of discourse and the personalities involved to the reader. The study recommends that medical scientists should vary their choice of indexicals for a more effective style and students of medical science should be taught the proper use of indexicals in articles and journal writing.

References

- Filmore, C. (1972). “How to know whether you are coming or going” in Karl Hylgaard- Jensen (Ed) *Linguistik-1971*:Konigstein, Germany: Athenaum-Verlag.
- Filmore, C. (1975). *Santa Cruz Lecturers on Deixis* Distributed by Indiana University Linguistic Club, Bloomington, IN.
- Kaplan, D. (1989a). “Demonstratives” in Almog Perry J, and Wettstein, H (1989) *Themes from Kaplan*. Oxford: Oxford University Press.
- Levinson, S.C. (1983). *Pragmatics*: Cambridge: Cambridge University Press.
- Lewis, D. (1983). *Philosophical Papers Vol.1* Oxford: Oxford University Press.
- Lyons, J. (1977). *Semantics Vol.1* Cambridge: Cambridge University Press.

- Mey, J. (2006). *Pragmatics: An Introduction*. Oxford: Blackwell Publishing.
- Morris, C. (1938). *Foundations of the Theory of Signs*: Chicago, IL: Chicago University Press.
- Peirce, C.S. (1931). *Collected Papers i-viii*. Hartshorne, C, Weiss, P, & Burks, A, (eds) Cambridge, Mass. Harvard University Press.
- Perry, J. (2001). *Reference and Reflexivity*, Stand Ford: CSLI Publications.
- Reichenbach, H. (1947). *Elements of Symbolic Logic*. New York: Macmillan.
- The World Book Encyclopedia Vol.19* (2006). Chicago: World Book, Inc.