Metadiscoursal Markers in Medical and Literary Texts

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Abstract

English medical and literary texts were compared and contrasted to find out whether there were any significant differences between the two kinds of texts in terms of the number and types of metadiscoursal markers. To this end, first, 30 medical and literary journal articles were chosen. Then, 3 successive paragraphs were extracted randomly from each of the selected articles which totaled 90 paragraphs out of which 45 were medical and 45 literary. The frequency and type of metadiscoursal markers in each text were investigated in accordance with Vande Kopple's (1985) taxonomy. Next, the total number of metadiscoursal items in each type of the texts under study was determined. Finally, the Chi-square test was applied to the collected data to compare medical and literary texts. The statistical results gained through the computer suggested that there was a significant difference in the amount and type of metadiscoursal markers in medical and literary texts.

Keywords: metadiscoursal markers, medical texts, literary texts, Vande Kopple's taxonomy

1. Introduction

A considerable number of text analysis studies have been conducted during recent years. Among them, some studies have attempted to clarify characteristics of different genres or text types in terms of structural, discoursal, and metadiscoursal properties.

Metadiscourse is quite a new concept in the area of text analysis. In spite of having been investigated from different angles recently, metadiscourse is still unknown to many of those who are involved in the field of linguistics. Thus, it deserves more investigation and warrants comprehensive research.

We use language to talk not only about the world and ourselves, but also to *talk about talk*. We sometimes refer explicitly to ourselves not only as experiencers in the world, but also as communicators. We may also comment on the situation of communicating in addition to the topic of situation (Ädel, 2006). This is what metadiscourse involves itself with. Metadiscourse, usually referred to as "discourse about discourse" can be defined as "text elements which comment about the main information of a text, but which themselves contain only inessential information." (Hui & Na, 2008: 2). Crismore et al. (1993 cited in González, 2005: 37) have defined metadiscourse as "non-propositional aspects of discourse which help to organise the prose as a coherent text and convey a writer's personality, credibility, reader sensitivity and relationship to the message". As Hui and Na (2008: 2) state, "when we talk about the use of metadiscourse in a text, we are talking about metadiscourse features. They are actually those linguistic markers which, while not inherently necessary to the topic, show that the writer is aware of the needs of the audience in order to communicate the semantic content".

In this paper, we have compared English medical and literary texts in terms of metadiscoursal functions. The texts were chosen with a consideration of the differences found in their registers, ranging from *closed / limited* to relatively *free* (Halliday & Hassan, 1991; Esser, 1993 cited in Buitkienė, 2005). Therefore, the primary objective of this study is to gain more insight into the differences between the metadiscoursal markers in medical texts (as a sample of a more *restricted register* (Buitkienė, 2005)) and literary texts (as a sample of a more *open-ended register* (Buitkienė, 2005)) based on Vande Kopple's (1985 cited in Simin & Tavangar, 2009) model. More specifically, we intend to find answers to the following research questions.

1. Is there any difference in the amount of metadiscoursal markers used in medical and literary texts?

2. Is there any difference between the types of metadiscoursal markers used in medical texts and those in literary texts? How are different types of metadiscoursal markers distributed in each text?

2. Classification of Metadiscourse

"Several metadiscourse taxonomies have been proposed in the literature so as to classify metatextual elements according to their form, meaning, or function" (Hernandez Guerra & Hernandez Guerra, 2008: 100). Most of the

classifications suggested for metadiscourse are based on the functions of language. Earlier models have divided metadiscoursal markers into "textual" and "interpersonal" (Vande Kopple, 1985 cited in Simin & Tavangar, 2009; Crismore et al., 1993 cited in Burneikaitė, 2008; Hyland, 1998 cited in González, 2005), whereas later classifications have distinguished between categories such as "interactional" and "interactive" (Hyland & Tse, 2004 cited in Dafouz-Milne, 2008); "intra-textual" and "inter-textual" (Ifantidou, 2005); "personal" and "impersonal" (Ädel, 2006); or "text-organising", "participant-oriented" and "evaluative" (Burneikaitė, 2008).

The classification chosen here is that of Vande Kopple's (1985) which in turn is based on Halliday's (1985 cited in Rahman, 2004) macro-functions of language. Although this model is among the earliest taxonomies suggested for metadiscourse and been criticized by some scholars (Ifantidou, 2005; Ädel, 2006), we found it comprehensive and appropriate for our purposes. As we noted above, Vande Kopple has categorized metadiscourse functions into two types: "textual" and "interpersonal", with subcategories as presented in Table 1.

Textual Metadiscourse helps the organization of the discourse and guides the reader through the text with the help of topic shifts, signaling sequences, cross-referencing, connecting ideas, previewing material, and so on (Hui & Na, 2008). According to Vande Kopple, four categories are placed under this heading: (a) Text connectives, (b) Code glosses, (c) Illocution markers, and (d) Narrators.

Interpersonal metadiscourse, on the other hand, indicates the writer's personality and stance in the text. It also helps the reader to comprehend the writer's attitude towards the propositional content. In Vande Kopple's model, three categories comprise this kind of metadiscourse function: (a) Validity/Modality markers, (b) Attitude markers, (c) Commentary.

Table 1. Vande Kopple's (1985) original classification system for metadiscourse or metatextual functions based on Halliday's functions of language *(taken from Simin & Tavangar, 2009)*

The Textual Function:

1. Text connectives (used to connect particular blocks of information to each other)

- Sequencers *(first, next, in the third place)*

- Logical / Temporal connectors *(however, thus, at the same time)*

- Reminders *(As I noted earlier)*

- Announcements *(I will now develop the idea that)*

- Topicalizers *(There are / is, as for, in regard to)*

2. Code glosses (used to help readers grasp the meanings of words, phrases or idioms)

- Defining *(X can be defined as…)*

- Explaining *(that's to say, namely, in other words)*

- Delimiting *(to some extent, somewhat)*

3. Illocution markers (used to make specific the discourse act performed by the author: *I hypothesize that, to sum up, for example, my purpose is*)

4. Narrators (used to let readers know [to inform] who said / wrote something: *Mrs. Wilson announced that, according to Jane, Brown notes that*)

The Interpersonal Function:

5. Validity / Modality markers (used to assess certainty and uncertainty of propositional content and the degree of commitment to that assessment)

- Hedges *(perhaps, possibly, might, would, seem, tends)*

- Emphatics *(clearly, undoubtedly, it is obvious that, certainly)*

- Attributors *(according to Einstein)* if used to guide readers to judge or respect to the truth-value of propositional content as the author wishes

6. Attitude markers (used to reveal author attitudes toward the propositional content: *surprisingly, I find it interesting that, it is fortunate that*)

7. Commentary (used to draw readers into an impact dialogue with the author)

- Comment on the reader moods, views, reaction to propositional content *(you may not agree that)*

- Comment on reading procedures *(If X, you can skip this chapter; you might wish to read the last section first)*

- Comment on anticipations for readers *(the following materials may be difficult at first)*

- Comment on author / reader relationships *(my friends, dear reader)*

3. Identification of Mediscoursal Markers

Metadiscourse is a fuzzy concept, since it lacks definite boundaries and sometimes it may happen that it would be difficult to make a distinction between metadiscoursal and non-metadiscoursal categories (Ädel, 2006). It is necessary, therefore, to make explicit the criteria by which metadiscoursal markers can be identified in the text.

One of the criteria for identifying metadiscoursal markers is explicitness; that is, "the explicit commentary of the text on itself" (Mauranen, 1993: 158 cited in Ädel, 2006). Contrary to some scholars who consider some phenomena such as italics and boldface as metadiscourse, these are not considered metadiscoursal here, since they do not supply additional meanings with the help of words themselves.

The other factor which should be considered in identifying data is whether the text deals with the items of the ongoing discourse or whether the focus is on the objects external to the text, that is, not the world of discourse but the real world. As it is clear from metadiscourse definition, only devices which are related to the world of discourse can be considered as metadiscoursal.

Similarly, markers which focus on the reader are considered metadiscoursal, only if the reference is to the current reader and not to the readers of other texts.

It was noted earlier that one encounters problems in identifying metadiscoursal markers in the text or in discriminating between its subgroups, since there are some overlaps between metadiscoursal and non-metadiscoursal groups as well as between different subgroups of metadiscourse. Thus, at times it is impossible to decide "in what function a writer has used a particular item" (Markkanen, Steffensen, & Crismore, 1993). Here, however, the interpretation which is the most likely one has been considered true.

4. Review of Literature

Metadiscourse is quite a new concept. However, since its emergence, it has been investigated from different aspects. Some studies have focused on the role of metadiscourse in pedagogy. These include the effect of students' awareness of metadiscourse on their writing abilities (Intaraprawat & Steffensen, 1995; Steffensen & Cheng, 1996 cited in Camiciottoli, 2003), listening comprehension (Pérez & Macià, 2002; Sa, 2008), and reading comprehension (Camiciottoli, 2003; Parvaresh & Nemati, 2008).

On the other hand, some works have been allotted to the analysis of metadiscourse in specific types of texts or genres: written economics lectures (Samson, 2002), editors' letters in academic journals (Chu & Yu, 2002), parliamentary debates (Ilie, 2003), and commercial websites (González, 2005), to name a few.

Metadiscourse has also been investigated comparatively. Most of these studies have compared the use of metadiscourse in a specific area in two or more different languages. Fewer works have been devoted to the comparison of metadiscoursal markers in different genres of a specific language.

In an early study in 1983, Crismore compared school social science texts with nonschool social science texts based on their amount and types of metadiscourse. She distinguished two types of metadiscourse: "informational" and "attitudinal". By "informational metadiscourse", she meant those metadiscoursal markers which direct readers how to understand the primary message by referring to its content and structure or the author's purpose or goals. She used "attitudinal metadiscourse" to refer to those markers which direct readers how to understand the author's perspective or stance toward the content or structure of the primary discourse. She concluded that nontextbooks used more informational metadiscourse than did textbooks, but without any large differences. However, nontextbooks used almost twice as much attitudinal metadiscourse as did textbooks.

In another study by Abdi (2002), two academic fields - the social sciences (SS) and natural sciences (NS) - were compared in terms of the use of interpersonal metadiscourse (signs of the author's personality and presence in a text (Hui & Na, 2008)). The results of the analysis revealed that SS writers employed interpersonal metadiscourse more frequently than NS writers. The types of metadiscourse were also different in the two disciplines.

Ädel (2006) investigated the use of metadiscoursal markers in English essays written by university students who were native English speakers and Swedish speakers. Besides analyzing the differences between the corpora of English and Swedish speakers, Ädel tried to find the possible differences between the American and British speakers' texts. Applying a new model of metadiscourse based on Jackobson's (1998 cited in Ädel, 2006) functional model of language, the researcher analyzed "personal" and "impersonal" metadiscourse in the corpora. She found that the use of metadiscourse differed considerably in the three groups under study, both quantitatively and qualitatively. Moreover, she found that Swedish speakers overused metadiscoursal markers in their corpus.

In a study by C. Hernández Guerra and J. M. Hernández Guerra (2008), in addition to discourse analysis, metadiscourse analysis of economics genre were taken into consideration. In this study, unlike other related

researches which focus on the differences between various genres, different sub-areas within a genre, namely, Applied Economy, Quantitative Economy, Financial Economy, and Management and Business were analyzed. Applying Hyland's (1998 cited in Hernández Guerra & Hernández Guerra, 2008) functional classification, researchers of this study found that all the sub-areas studied preferred the use of interpersonal rather than textual metadiscourse with Management using metatextual words more frequently than the others.

Burneikaitė (2008) contrasted Master theses in the discipline of linguistics written in English by L1 and L2 writers. She compared metadiscourse strategies used in the corpora by L1 and L2 (Lithuanian) writers using a new taxonomy created by herself which consisted of three main categories: "text-organizing", "participant-oriented", and "evaluative" markers. She concluded that the extensive use of text-organizing markers, the limited use of participant-oriented markers, and the spare use of evaluative markers were detected in the theses by both L1 and L2 writers. She indicated that while the overall frequency of metadiscourse was similar in L1 and L2 English texts, the use of specific metadiscoursal categories differed significantly in the texts written by L1 and L2 writers. According to Burneikaitė, this variability was not just a matter of mother tongue/culture; rather, it could be attributed to the conventional practices typical of an educational institution or individual writer style.

5. The Corpus

As mentioned before, the purpose of this research is to compare and contrast medical and literary texts in terms of metadiscourse functions. To carry out this corpus-based study, 30 articles were chosen, 15 medical and 15 literary. All the articles were originally written in English and none of them was a translation. Furthermore, they all were selected from among the articles published since the beginning of this century to be up to date. It is worth mentioning that no particular dialect of English was in focus. The corpus for this research consists of 90 paragraphs extracted from these articles, 45 paragraphs from medical and 45 paragraphs from literary ones.

All the medical and literary texts which served as the corpus for the present study were taken from the following sources including the authors. (For full information see the References).

1) Aldinucci, D. & Perris, R., The Open Pathology Journal

2) Almonte, P., Persuasions, the Jane Austen Journal

3) Bain, B. J., The New England Journal of Medicine

4) Beuf, A. et al., The Open Hematology Journal

5) Bewley, G., Quadrant

6) Buchbinder, R. et al., The New England Journal of Medicine

7) Burns, M., Persuasions, the Jane Austen Journal

8) Chennels, A., Journal of Literary Studies

9) Delvaeye, M. et al., The New England Journal of Medicine

10) Fowler, K. J., Persuasions, the Jane Austen Journal

11) Gossum, A. V. et al., The New England Journal of Medicine

12) Harris, J., Persuasions, the Jane Austen Journal

13) Harris, M., African American Review

14) Harvey, J., The Yearbook of English Studies

15) Horwitz, B. J., & Fisher, R. S., The New England Journal of Medicine

16) Humez, N., Verbatim, Free Online Library

17) Kallendorf, H., Renaissance Quarterly

18) Kearns, G. L. et al., The New England Journal of Medicine

19) Larrea, L. et al., The Open Hematology Journal

20) Lassen, M. R. et al., The New England Journal of Medicine

21) Liang, M., Cowley Jr, A. W., & Greene, A. S., Journal of Physiology

22) Mardis, E. R. et al., The New England Journal of Medicine

23) Meletis, J. et al., The Hematology Journal

24) Mtumane, Z., Journal of Literary Studies

25) Osborne, G., Black Issues Book Review

26) Pratt, D. S. & Kaplan, M. M., The New England Journal of Medicine

27) Roush, S., Italica

28) Savage, K. L., Persuasions, the Jane Austen Journal

29) Wallace, T. G., Persuasions, the Jane Austen Journal

30) Zimetbaum, P. J., & Josephson, M. E., The New England Journal of Medicine

6. Data Collection Procedure

First, as mentioned before, 90 paragraphs were selected out of 30 articles. In each article, the introduction and the conclusion were ignored, due to the fact that they might follow the same features in the two types of texts. From the remaining parts, 3 successive paragraphs were chosen. In order for the selection to be random, each paragraph of each article -excluding ones in the introduction and conclusion- was given a number. For each article, one number was chosen by chance. The paragraph relevant to that number and the two paragraphs following it formed the corpus for this study.

Second, the metadiscoursal markers, in accordance with Vande Kopple's classification, were identified, categorized, and analyzed in the selected paragraphs. (For sample texts and the different types of metadiscoursal markers see the Appendix).

7. Data Analysis

The total number of metadiscoursal markers in both types of texts was determined. The total number of metadiscoursal markers in proportion to the number of content words (words which have lexical meanings like nouns, verbs, adjectives, and adverbs) in medical and literary texts were counted separately. The two acquired figures were compared with each other in order to find out if there was a significant difference between them. This provided the answer to the first research question which asked whether there was any difference in the amount of metadiscoursal markers used in medical and literary texts.

To answer the second research question which sought to find whether there was any difference between the types of metadiscoursal markers in the two types of texts, a one-to-one comparison was carried out. Through using the SPSS program, a chi-square test was run to find out whether the number of each type of metadiscoursal markers in the medical texts was significantly different from that in the literary texts.
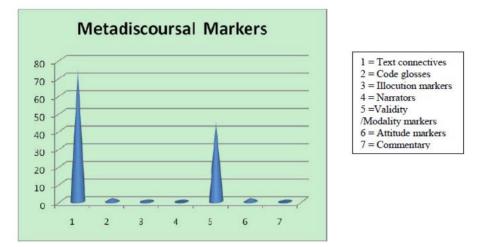
8. Results

Our null hypothesis was that there was no significant difference in the number and types of metadiscoursal markers employed in medical and literary English texts.

Table 2 shows the summary of the data gathered, that is, the frequency of each kind of metadiscoursal markers in total and the total number of metadiscoursal markers and content words which existed in medical and literary texts.
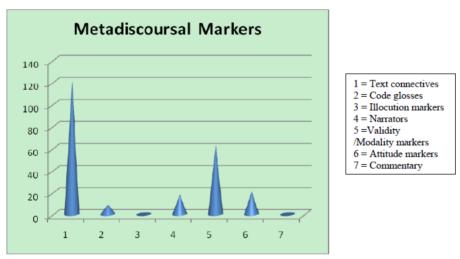
Table 2. The frequency of metadiscoursal markers and content words in selected texts

Metadiscoursal Markers		Medical Texts	Literary Texts
Textual	1) Text connectives	75 (6 sequencers; 66 logical/temporal connectors; 2 reminders; 1 topicalizer)	121 (5 sequencers; 109 logical/temporal connectors; 2 reminders; 4 announcements; 1 topicalizer)
	2) Code glosses	2 (2 explainings)	9 (6 definings; 2 explainings; 1 delimiting)
	3) Illocution markers	1	0
	4) Narrrators	0	18
Interpersonal	1) Validity/Modality markers	45 (43 hedges; 1 emphatic; 1 attributor)	63 (36 hedges; 20 emphatics; 7 attributors)
	2) Attitude markers	2	21
	3) Commentary	0	0
Total Metadiscoursal Markers		125	232
Total Content Words		2908	3509

The distribution of different kinds of metadiscoursal markers based on Vande Kopple's classification, has been shown for medical and literary texts in Graphs 1 and 2 respectively.

Graph 1. The distribution of metadiscoursal markers in medical texts

Graph 2. The distribution of metadiscoursal markers in literary texts

Table 2 shows that the gathered data are nominal. Therefore, the chi-square test should be applied in order to compare the number of metadiscoursal markers in the two types of texts.

As is clear from the table, in medical texts 125 metadiscoursal items were found out of 2908 content words, while in literary texts 232 metadiscoursal items existed among 3509 content words. In "data analysis", it was mentioned that before applying the chi-square test, the total number of metadiscoursal markers in proportion to the total number of content words was counted for both medical and literary texts. However, since the acquired numbers were less than 0 and since applying the chi-square test through the SPSS program was not possible for figures less than 5, we had to ignore counting the proportional numbers, thus the original numbers were kept for statistical procedures. The way the chi-square test was counted, solved this problem to some extent.

Tables 3 and 4 show the result of the application of the chi-square test to the data. Table 3 presents the outcome of the comparison of total metadiscoursal items in medical and literary texts. On the other hand, the result of comparing different types of metadiscoursal markers in the two types of texts appears in Table 4.

Table 3. The application of X^2 to total metadiscoursal markers of medical and literary texts

		Type		Total
		Medical	Literary	
Frequency	Observed	125	232	357
	Expected	179	179	358
	Total	304	411	715
	X^2		16.425	
	df		1	
	P		.000 (P < .05)	

X^2= chi-square

df = degree of freedom

P = level of significance

Table 4. The application of X^2 to different types of metadiscoursal markers in medical and literary texts

		Metadiscourse				Total
		Text connectives	Code glosses	Validity/Modality markers	Attitude markers	
Type	Medical	75	2	45	2	124
	Literary	121	9	63	21	214
	Total	196	11	108	23	338
	X^2			10.743		
	df			3		
	P		.013 (P < .05)			

X^2= chi-square

df = degree of freedom

P = level of significance

Based on the contents of Table 3, the obtained value of X^2 with 1 degree of freedom is 16.425 for .05 level. The significance level reported by the computer is .000 (p < .05).This means that the difference between the number of metadiscoursal markers in English medical and literary texts is significant at .05 level.

Table 4, on the other hand, shows that the significance level calculated by the computer is .013 which is also less than .05 (p < .0.5). Therefore, there is significant difference between the types of metadiscoursal markers used in the two kinds of texts.

Based on these findings, we can reject the null hypothesis. We can conclude that medical and literary texts are different in terms of the number and types of metadiscoursal markers they use.

At this point, we must add that the types of metadiscoursal markers which had the value of 0 or 1 in either of medical or literary texts were not included in Table 4, because they could not be calculated through the computer. Therefore, "illocution markers", "narrators", and "commentary" were not entered into the computer. By looking at Table 2, we find that the frequency of "illocution markers" and "commentary" in neither of the texts is considerable. However, while no "narrator" was found in medical texts, 18 items of this kind were found in literary texts.

Moreover, based on the data in Table 2, the types of metadiscoursal items used in medical and literary texts are different not only in quantity but also in quality. Actually, it seems that literary texts are likely to employ metadiscoursal groups more variantly.

9. Conclusion

Herein, answers to the research questions and a number of conclusions are presented.

The first research question asked if there were any differences in the amount of metadiscoursal markers used in medical and literary texts. Table 3 reveals that the difference between the number of metadiscoursal markers used in the two types of the texts investigated here was significant (p = .000). It is clear that literary texts contain more metadiscoursal markers compared with medical texts.

The second research question asked if there were any differences between the types of metadiscoursal markers used in medical and literary texts. And how were different types of metadiscoursal markers distributed in each text. Table 4 indicates that there was a significant difference between the types of metadiscoursal markers employed in medical and literary texts (p = .013). Statistical findings indicate that this difference could not be accidental.

As mentioned before, the number of content words in the two types of the texts was different. As a consequence, the results obtained through applying the chi-square test are not really dependable, and we cannot rely on these results alone. Here, a number of conclusions which can be reached without subjecting the data to statistical calculation are presented.

• This study demonstrated that literary texts used all types of metadiscoursal items more frequently than did medical texts, except in one case - illocution markers - with a difference of just 1 item which could be ignored. It could be presumed that the degree of "openness" of a register determines the distribution and frequency of metadiscoursal markers. The more open a register is, the more metadiscoursal markers it employs and vice versa.

• Textual functions of metadiscourse were used more frequently than interpersonal functions by authors of both types of texts, while literary texts used both types of functions more frequently than did medical texts. The more frequent use of textual functions in both texts can be due to the fact that in formal writings building a close relationship with readers is not so important as communicating facts and ideas.

• Almost the same distribution of different metadiscoursal categories was observed in the two types of texts, that is, the extensive use of "text connectives" and the rare use of "illocution markers" from among textual functions and the extensive use of "validity/modality markers" and no use of "commentary" from among interpersonal functions of metadiscourse. The reason of this could again be attributed to the formality of the two types of texts; that is, formal texts follow specific rules of writing.

• Literary texts used larger variety of metadiscoursal markers compared with the medical texts. This is more explicit when the subtypes of metadiscoursal markers are taken into consideration. The greater number of metadiscoursal markers used in literary texts can explain why they seem to be less restricted than medical texts. In other words, literary text authors attempt to comment on their writings more, thereby establishing a closer relationship with their readers.

• One of the conclusions we can come to by analyzing the number of subtypes of metadiscoursal markers in this study is that "hedges", which fall under the category of "validity/modality markers", were used very frequently and much more frequently than "emphatics" which are under the same category, in medical texts. Nevertheless, the use of "hedges" and "emphatics" did not show such a great difference in literary texts. This is why literary texts show a greater degree of certitude compared to medical texts. It is obvious that most of the time, authors of medical texts cannot be completely certain of what they say. Being reluctant to express definite ideas on the part of scientific authors, because of lack of confidence, may suggest the reason why there is such a difference between the number of "emphatics" and "hedges" in medical texts. On the other hand, authors of literary texts can much more freely and certainly express their personal points of view.

All in all, this study suggests that English medical and literary texts undoubtedly differ in some points in terms of metadiscoursal functions.

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Appendix

A. A Sample of Medical Text

Somatic stem cell plasticity has been challenged by observations indicating that apparent transdifferentiation of bone marrow-derived stem cells invading other tissues/organs might *(1)* be caused by cellular fusion between stem cells and pre-existing differentiated cells. Since *(2)* current models of carcinogenesis based on the gene mutation hypothesis have limitations in explaining many aspects of cancer, new models of multistage carcinogenesis have been proposed, including the idea that cancer development involves both gene mutations and cell fusions. Specifically, a tumor could result from fusion between an "altered" pre-malignant cell and a stem/progenitor cell resident of that tissue/organ (Fig.1D). "Aneuploidy", which is a hallmark of malignancy [19] is a direct consequence of such cell fusion and the alternative model of tumor initiation might *(3)* be the fusion of stem cells with cells that have undergone a set of mutational events related to cancer development. Such fused cells would *(4)* probably *(5)* express stem/progenitor cell features and might *(6)* show large chromosomal aberrations and aneuploidy. They could also harbor unique cell-survival programs that are shared by normal stem cells and that might *(7)* drive tumor progression. Therefore *(8)*, a stem/progenitor cell fused to a somatic cell that has received a number of defined mutational hits might *(9)* explain the presence of the chromosomal derangements that can occur during early tumor development. Fusion might *(10)* also occur between different tumor cells and, although *(11)* likely *(12)* a rare event, it may *(13)* still have relevance for tumor progression.

A recent hypothesis is that cancer has a fundamentally common basis that is grounded in a polyclonal epigenetic disruption of stem/progenitor cells, mediated by "tumorinducing genes". Accordingly *(14)*, Feinberg and collaborators have proposedthat *(15)* non-neoplastic, but *(16)* epigenetically disrupted stem/ progenitor cells, may *(17)* be a key target for tumor formation [29]. Pathological epigenetic changes (nonsequence-based alterations that are inherited through cell division) are increasingly considered as alternatives to mutations and chromosomal alterations in disrupting gene function. These include global DNA hypomethylation and hypermethylation of selected key genes, aberrant chromatin modifications and loss of imprinting. All of these epigenetic changes have the potential to lead to aberrant activation of growth-promoting genes and aberrant silencing of tumorsuppressor genes. Furthermore, tumor cell heterogeneity is due in part to *(18)* epigenetic variation in progenitor cells, and epigenetic plasticity together with genetic lesions drives tumor progression. This crucial early role for epigenetic alterations in cancer is in addition to genetic alterations that can substitute for genetic variation later in tumor progression. A second step *(19)* involves monoclonal genetic mutation of gatekeeper genes (or characteristic chromosomal rearrangements in leukaemia or lymphoma), followed by a third step *(20)* that involves acquisition of genetic and epigenetic plasticity. The above paradigm *(21)* includes a key step formerly commonly recognized as neoplasia, which can help to explain the late on set of most adult cancers, recurrent disease, environmental effects, tumor heterogeneity and the genetics of cancer risk that may *(22)* be directly or indirectly associated with TIC.

In the adult organism, stem cells reside in a physiologically limited and specialized microenvironment, or niche, that supports stem cells but *(23)* varies in nature and location depending on the tissue type [30]. The stem cell niche is believed to be represented by a group of cells and their surrounding extra-cellular matrix (ECM) that is delimited to special locations within tissues and serves the purpose of sustaining stem cells and keeping them in an undifferentiated state. The niche largely works as a physical anchoring site for stem cells and, accordingly *(24)*, a number of adhesion molecules have been implicated in the interaction between stem cells and niche components. In addition, the niche comprises numerous factors, including various growth factors, cytokines and signalling molecules such as hedgehogs, Wnt:s and BMP:s, that participate in the control of stem cell proliferation and fate determination. In the haematopoietic, intestinal, and hair follicle systems, the niches seem *(25)* to further maintain stem cells in a quiescent state by providing signals that inhibit cell proliferation. Therefore *(26)*, stem cell propagation may *(27)* depend upon dynamic responses of the cells to nicheassociated signals, where the balance between mitogenic signals and growth arresting/ differentiation signals is pivotal in their homeostatic regulation. If *(28)* this balance is disrupted, stem cells may *(29)* proliferate without restraint, such as occurring upon loss of BMP

signalling or abnormal activation of Wntsignalling, and may *(30)* be engaged in tumorigenic processes [31]. However *(31)*, recent evidence has suggested that the stem cell niche may *(32)* have a counteracting function that has thus *(33)* far been underestimated, namely *(34)* to prevent tumorigenesis by controlling stem cell proliferation [32]. The niche aspect nevertheless *(35)* remains crucial since *(36)* recent investigations have commenced to address the possibility that TIC may *(37)* also reside within specific niches [33] and it may *(38)* be speculated that if *(39)* these sites are truly the preferred locations of TIC they may *(40)* represent the original territories of tumor formation.

Types of Metadiscoursal Markers (VandeKopple's Classification)

1. might: validity/modality marker (hedge)

2. since: text connective (logical/temporal connector)

3. might: validity/modality marker (hedge)

4. would: validity/modality marker (hedge)

5. probably: validity/modality marker (hedge)

6. might: validity/modality marker (hedge)

7. might: validity/modality marker (hedge)

8. therefore: text connective (logical/temporal connector)

9. might: validity/modality marker (hedge)

10. might: validity/modality marker (hedge)

11. although: text connective (logical/temporal connector)

12. likely: validity/modality marker (hedge)

13. may: validity/modality marker (hedge)

14. accordingly: text connective (logical/temporal connector)

15. Feinberg and collaborators have proposed that: validity/modality marker (attributor)

16. but: text connective (logical/temporal connector)

17. may: validity/modality marker (hedge)

18. due to: text connective (logical/temporal connector)

19. second step: text connective (sequencer)

20. third step: text connective (sequencer)

21. the above paradigm: text connective (reminder)

22. may: validity/modality marker (hedge)

23. but: text connective (logical/temporal connector)

24. accordingly: text connective (logical/temporal connector)

25. seem: validity/modality marker (hedge)

26. therefore: text connective (logical/temporal connector)

27. may: validity/modality marker (hedge)

28. if: text connective (logical/temporal connector)

29. may: validity/modality marker (hedge)

30. may: validity/modality marker (hedge)

31. however: text connective (logical/temporal connector)

32. may: validity/modality marker (hedge)

33. thus: text connective (logical/temporal connector)

34. namely: code gloss (explaining)

35. nevertheless: text connective (logical/temporal connector)

36. since: text connective (logical/temporal connector)

37. may: validity/modality marker (hedge)

38. may: validity/modality marker (hedge)

39. if: text connective (logical/temporal connector)

40. may: validity/modality marker (hedge)

Table 1. The frequency of metadiscoursal markers in the medical text

Types of Metadiscoursal Markers		Frequency
The Textual Function	Text connectives	18 (15 logical/temporal connectors; 2 sequencers; 1 reminder)
	Code glosses	1 (1 explaining)
	Illocution markers	0
	Narrators	0
The Interpersonal Function	Validity/Modality markers	21 (20 hedges; 1 attributor)
	Attitude markers	0
	Commentary	0
		Total: 40 Total content words: 495

B. A Sample of Literary Text

The adjective "humorous" is derived from the noun "humour". It is therefore *(1)* significant to define humour before *(2)* commencing with the discussion in this paper *(3),* to have a clearer idea of what the paper is all about. The definition of humour *(4)* is discussed by Mturnane (2001) *(5)* as follows:

Humour is not an easy concept to define. Pirandello (1960:107) *(6)* views this difficulty as being caused by the infinite varieties and characteristics of the phenomenon. This difficulty may *(7)* also be the reason why Lewis (1989: X) *(8)* views a clear-cut definition of humour as impossible, and maintains that it can only be described by means of a series of generalizations. However *(9)*, in spite of this difficulty, this study wishes to give the opinion of the author about what humour is *(10)*. This opinion will be based on definitions that are already in existence.

The word "humour" originates from the Latin word humores, which means *(11)* a balanced mixture of the body fluids. These fluids include <u>phlegm</u>, <u>choler</u> and <u>melancholy</u> (Matthew 1969: 115; Nutting 1976: 5). Normally *(12)*, the imbalance of these body fluids may *(13)* result in abnormal behaviour by the person and <u>incite</u> laughter in the observer. While *(14)* in literature humour is not used to <u>signify</u> these body fluids, its employment has some connection with their state, as Pirandello (1960: 103) *(15)* contends that humour must originate out of a special state of mind.

Types of Metadiscoursal Markers (VandeKopple's Classification)

1. therefore: text connective (logical/temporal connector)

2. before: text connective (logical/temporal connector)

3. It is therefore significant to define humour before commencing with the discussion in this paper: text connective (announcement)

4. The definition of humour: code gloss (defining)

5. discussed by Mturnane: narrator

6. Pirandello: narrator

7. may: validity/modality marker (hedge)

8. Lewis: validity/modality marker (attributor)

9. however: text connective (logical/temporal connector)

10. this study wishes to give the opinion of the author about what humour is: text connective (announcement)

11. the word humour means: code gloss (defining)

12. normally: attitude marker

13. may: validity/modality marker (hedge)

14. while: text connective (logical/temporal connector)

15. Pirandello: validity/modality marker (attributor)

Table 2. The frequency of metadiscoursal markers in the literary text

Types of Metadiscoursal Markers		Frequency
The	Text connectives	6 (4 logical/temporal connectors; 2 announcements)
Textual	Code glosses	2 (2 definings)
Function	Illocution markers	0
The	Narrators	2
	Validity/Modality markers	4 (2 attributors; 2 hedges)
Interpersonal	Attitude markers	1
Function	Commentary	0
		Total: 15 *Total content words: 116*