VERB TENSE IN ESSAY WRITING: FREQUENCY OF USE IN HEALTH SCIENCES

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It is a widely spread belief that writing cannot be taught; some writing skills, however, can be acquired. At the same time, researchers in the humanities are supposed to have a more natural talent for writing, whether academically or fictionally, whereas those researching in the area of science and technology are supposed to have none. Neither of these assumptions is correct, although it is probably true that those in the humanities have to face writing tasks more often and, therefore, have more practice. Science professionals, on the other hand, frequently have the need to communicate their knowledge and findings to other colleagues and they have to do so in a clear, organized and attractive way. If there is a gap between their needs and their ability to communicate, this should be covered by means of acquiring specific writing skills.

Some areas of study related to possible needs of these professionals could be: a facility for the language and a sense of grammar, syntax or writing structure. They should learn how to turn complex and/or vague thoughts into tangible and concrete words, sentences and paragraphs. Contents are very important, but we should not forget that they have to be read and understood by an audience and, as Gartland says when speaking about health science professionals, 'Writing without any sense of audience is as bad as writing without any sense of purpose' (1993:24). It is also Gartland's opinion (1993:27) that medical articles should provide information that meets not only the criteria of being new, true and important, but also that of being comprehensible. Writing about health sciences is actually a form of technical writing and precisely because of that a bit more is required from their professionals, especially from physicians: not just the fact that they must control the requirements of scientific proof, the logical development of their scientific argumentation and a precise expression; they must also have a sound basis of English grammar and composition. One of the major difficulties in writing scientific papers can be found in the use of verb tenses, which often present many inconsistencies. Authors would venture a general verb-tense structure for the different sections within a scientific essay. This paper aims at analyzing verb tense use in a given corpus of health science research articles (RAs), while at the same time giving a few clues for young writers to improve this skill.

Since the American National Standards Institute, first in 1972 and again in 1979, prescribed the IMRD system, it has been widely accepted by academic writing scholars (Day, 1988: 11; Swales, 1990: 133ff, and others). Although it is a well-known piece of information among science writers, before we start talking more in detail about tense use, we would like briefly to recall the IMRD macrostructure of science academic texts which divides them into four clearly defined sections: Introduction, Materials and Methods, Results, and Discussion (usually introduced by Title and Abstract, hence TAIMRAD for Maher, 1992: 22ff). This division is important because, as we will try to show later, specific tense use is often linked to each of these sections. Obviously not all science texts, or health science texts for the purpose of our study, abide by this division, but it is the general tendency. In our corpus the six chosen RAs contain these five sections, including the abstract.

In his handbook for writing and publishing scientific papers, Robert Day (1988) gives us several pieces of advice regarding the tense we should use on each occasion. It is generally considered that when a scientific paper has been validly published in a primary journal, it becomes knowledge; therefore, whenever we quote or discuss previously published work, we should use the

present tense as we are quoting established knowledge. However, if we refer to our own present work, we should use the past tense. Although most typically a paper will normally go back and forth between the past and present tenses, there seem to be some set patterns: most of the abstract (A) should be in the past tense, because we are referring to our own paper and results. Likewise, the sections dealing with materials and methods (M) and results (R) should be in the past tense, as we describe what we did and what we found. Most of the introduction (I) and the discussion (D) should be in the present tense, as these sections usually emphasize previously established knowledge, although the discussion section would generally offer a shift from present to past, since the author usually compares his/her findings with already published information.[1]

Hinkel (1997: 295), quoting Biber's *Variation Across Speech and Writing* (1988), suggests that in academic texts the past and present tenses occur with similar frequency. However, it is important to distinguish between objective time and the conventions of tense use in discourse, and more concretely in scientific discourse. Therefore, in its analysis, we should bear these conventions in mind in order to come to grips with the way some authors express 'the temporality of the explicit discourse frame' and the use of 'time markers ... for tense continuity and shifts' (Hinkel, 1997: 311). Thus, and in line with Day's proposal, we would also suggest that health science writers broaden their understanding of how the English verb system works.

Susan Peck MacDonald (199 0) brings up another important feature in text analysis: the fact that academic writing is characterized by longer sentences –an average of 23.26 words per sentence– than other kinds of writing, for example, journalistic or fictional (1990: 35). Within academic writing she focuses on literary criticism, where the average sentence length is greater than in other disciplines reaching, as is the case with the two RAs she analyzes, figures as high as 44.32 and 60.42 words per sentence (1990: 37). She also reports the widely shared opinion that two features of sentence structure may affect readability in a negative way: on the one hand, excessive clause length; on the other, excessive nominalization (1990: 34). She further emphasizes the idea that both features are connected and therefore longer-than-average sentences are likely to contain more nominalizations, as they involve more complex transformations. MacDonald also refers to Williams's (1989) concept of 'grammar of clarity,' which advises reducing sentence length and nominalization by using a verbal rather than a nominal style.

Our aim was to analyze whether our corpus (see Appendix), made up of six randomly selected RAs on health sciences (see Table 1), complied with the set patterns mentioned above and, if there were any exceptions, and try to explain the reasons why. In our analysis we grouped, under present tenses, the following: simple present, present progressive and present perfect; under past tenses: simple past, past progressive and past perfect. We did not take into consideration either modals, which represented 11.47% of all finite verb forms in our corpus, or non-finite verb forms.

Table 1. Corpus of RAs: number of words, number of sentences and sentence length.

	Number of words	No. of sentences	Ave. sentence length in words	Standard deviation
RA 1	4,567	167	27.02	11.55
RA 2	2,599	93	27.95	17.36
RA 3	5,411	250	21.64	11.21
RA 4	5,136	204	25.16	16.49
RA 5	4,803	244	19.68	9.04
RA 6	4,064	181	22.45	11.96
Totals	26,580	1,139	23.29	12.95

[1] By way of an illustration, Day (1988: 159-160) includes a text based on hypothetical research in which tense use is being exemplified.

The average sentence length in our corpus remained within the limits of academic writing in general,[2] ranging from 19.68 words per sentence (RA 5) to 27.95 words per sentence (RA 1). This gave us an average length of 23.29 words per sentence, an essential factor for clarity and intelligibility. As we stated above, this made the study and analysis of finite verb forms even more useful.

Taking a close look at the texts themselves, the results (Figure 1) basically agreed with what specialists have pointed out in regard to the preeminence of active over passive verb forms, as expected (70.55% actives versus 29.45% passives). The amount of active verb forms, however, was somewhat lower than the results from Wingard's (1981: 61) study of medical journal articles with a 76/24 percentage ratio and from Master (1991: 21), with a 77/23 ratio in scientific prose in general.

Figure 1. Tense and Voice distribution (n = 1735 finite verb forms).

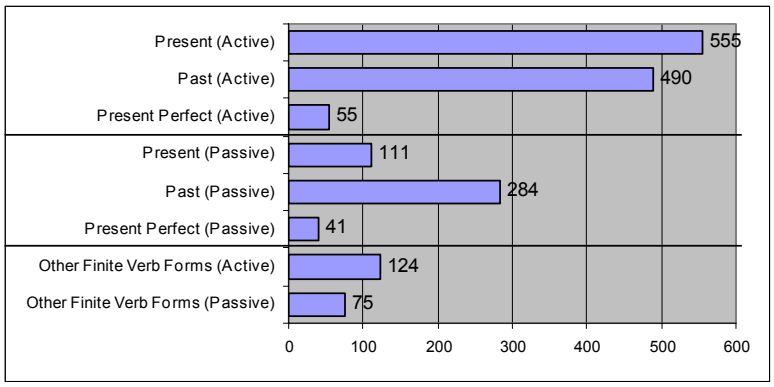


Figure 1 graphically brings up another important fact in terms of verb tense distribution. It shows a predominance of the present tense (n = 610, including the present perfect) over the past (n = 490) in active verb forms (55.45% vs. 44.55%), while the opposite (past, [n = 284] over present [n = 152]) occurs in passive verb forms (65.14% vs. 34.86%).

There was, however, a discrepancy between our results and previous research in regard to tense distribution across RA sections. Swales (1990: 135), speaking of Heslot's (1982) study of scientific papers on phytopathology, quotes 'very high' percentages of past tenses in M (particularly the past passive [Swales, 1990: 167]) and R sections (over 94%),[3] while the scores for sections I and D roughly coincide with our results. In regard to medical abstracts, Salager-Meyer (1992: 99) speaks of 38.4% for present tenses, and 52.5% for past tenses; we in turn reported a 56/44 percentage ratio. Analyzing a medical RA, Beaufrère-Bertheux (1994: 32) reports an absolute predominance of the past tense in M, R and D (close to 100%), except in section I, with only 27%.

Table 2. Tense Distribution (both Active and Passive Voices).

	Present Tenses		Past Tenses	
	f	%	f	%
A	33	55.93	26	44.07
I	185	64.24	103	35.76
M	57	20.96	215	79.04
R	210	48.05	227	51.95
D	277	57.71	203	42.29
Totals	1,292	62.54	774	37.46

[2] In a larger corpus of health science RAs of 57,237 words, we drew an average word count per sentence of 21.40 words (SD = 12.41). A higher score was obtained, however, from health science abstracts (corpus of 476,430 words) with an average of 23.33 words per sentence (SD = 11.72).

[3] Wingard (1981: 61) and Williams (1994: 150) find values for sections I, R and D slightly higher for the past over the present tenses. In the M section, however, the past tenses totally outscore the present.

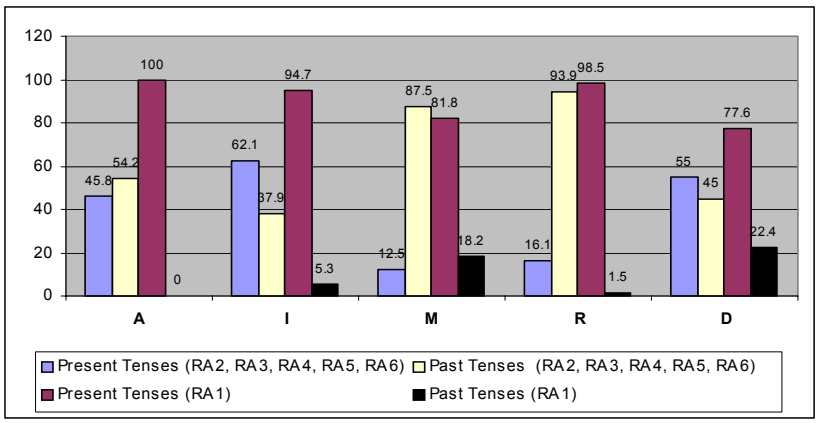
The discrepancy shown in our sample with previous research, especially in the R section, could be basically attributed to the data obtained from a paper by Armstrong-Esther and Hewitt (RA 1). Apparently they have written their article disregarding the typical conventions of essay writing. For instance, our corpus showed excessive high percentages for the present tense in the M and R sections (Table 2), whereas the general trend is the predominance of the past in both sections. RA 1 of our sample (Table 3) clearly showed very high scores in the use of the present tense across the whole essay.

Table 3. Tense Distribution (both Active and Passive Voices) in Armstrong-Esther & Hewitt's RA.

	Present Tenses		Past Tenses	
	f	%	f	%
A	11	100.00	0	0
I	18	94.74	1	5.26
M	27	81.82	6	8.18
R	127	98.45	2	1.55
D	45	77.59	13	22.41
Totals	228		22	

In RA 1 we found the present tense (including the present perfect) used on 228 occasions (91.2%) and the past tense only on 22 occasions (8.8%). The percentages in this RA, as shown in the preceding table, would apparently result from a very anarchic tense distribution according to sections with very striking percentages in M (81.82%) and R (98.45%). Existing research reports that in these two sections the past tenses should predominate, especially the past passive in M (Swales, 1990: 167) and the simple past in R (p. 170). The comparison between RA 1 and the rest of the corpus (Figure 2) is self evident. This, obviously, has a direct bearing on the total scores of our corpus and explains the partial disagreement of our results with those of other researchers.

Figure 2. Percentage Distribution per Section of Present and Past Tenses (RA 1 vs. RA2 through 6).



Could we, then, justify the overwhelming use of present tense in RA 1? Lois Malcolm (1987: 32) speaks about aspects of the research process that are 'timeless' or, at least, 'omnitemporal' generalizations; she further adds that the decision of tense use is ultimately left to the individual writers themselves who definitely have the 'capacity of manipulating temporal references for their own rhetorical purposes.' Objectively speaking, however, there seems to be no reason for using present tenses, especially throughout the M and R sections, where the authors describe the activities that went on during their experiment (the 'referential axis' Malcolm [1987: 41] speaks about), as opposed to the authors' references to the report itself (Malcolm's 'deictic axis'). We would then agree with her when she says that the choice of tense is 'nontemporal' and she would, therefore, tend to respect tense choice on the authors' part.

While RAs 2 through 6 in our corpus complied with established criteria on verb tense use in scientific essay writing, a closer analysis of RA 1 uncovered that the authors referred constantly to their own report (Malcolm's 'deictic axis'). Said in another way, the treatment of questionnaires, followed by tables and their explanation, would fall under the exception of what Day (1988: 160) calls 'the area of attribution and presentation.' This would make, then, the choice of the present tense perfectly feasible, since the tense formula is actually constrained by specific characteristics which, experience shows, belong to the genre of scientific papers.

Thus, while we do think there are certain grammatical directives to be followed along with essay writing conventions when applied to scientific written production, we also believe in the authors' freedom to use verb forms as they see fit and adequate. Although it is usually said that more ample research is necessary to prove an assertion fully, we think that the sample RAs we have analyzed throw significant light on the matter. It is also indicative of the fact that freedom of choice does exist along with some scientific conventions that should be taken into consideration according to the characteristics of the research undertaken.

REFERENCES

Beaufrère-Bertheux, C. 1994. "De L'Anglais Médical." *Unesco ALSED-LSP Newsletter*. 17/2, 16-43.

Day, R.A. 1988. *How to Write and Publish a Scientific Paper*, 3rd ed. Phoenix-New York: Oryx Press.

Gartland, J. J. 1993. *Medical Writing and Communicating*. Frederick, MD: University Publishing Group.

Hinkel, E. 1997. "The past tense and temporal verb meanings in a contextual frame." *TESOL Quarterly* 31, 289-313.

MacDonald, S. P. 1990. "The literary argument and its discursive conventions." In W. Nash (ed.). *The Writing Scholar*, 31-62. Newbury Park: Sage Publications.

Maher, J. C. 1992. *International Medical Communication in English*. Ann Arbor. The University of Michigan Press.

Malcolm, L. 1989. "What rules govern tense usage in scientific articles?" *English for Specific Purposes* 6, 31-43.

Master, P. 1991. "Active verbs with inanimate subjects in scientific prose." *English for Specific Purposes* 10, 15-33.

Salager-Meyer, F. 1992. "A text-type and move analysis study of verb tense and modality distribution in medical English abstracts." *English for Specific Purposes* 11, 93-113.

Swales, J. M. 1990. *Genre Analysis. English in Academic and Research Settings*. Cambridge: Cambridge University Press.

Williams, I. A. 1994. "Contrastive analysis of finite verb profiles in 2 medical texts translated from Spanish into English." *Babel* 40/3, 146-169.

Williams, J. M. 1989. *Style: Ten lessons in clarity and grace*, 3rd ed. Glenview, IL: Scott, Foresman.

Wingard, P. 1981. "Some verb forms and functions in six medical texts." In Selinker, L.; Tarone, E.; Hanzeli, V. (eds.). *English for Academic and Technical Purposes*, 53-64. Rowley, MA: Newbury House.

APPENDIX

RA 1. Armstrong-Esther, C.; Hewitt, W. E. 1989. "Knowledge and perception of AIDS among Canadian nurses." *Journal of Advanced Nursing* 14, 923-938.

RA 2. Brenner, H., et al. 1991. "The role of socioeconomic factors in the survival of patients with colorectal cancer in Saarland/Germany." *Journal of Clinical Epidemiology* 44, 807-815.

RA 3. Burge, F. I. 1993. "Dehydration symptoms of palliative care cancer patients." *Journal of Pain and Symptom Management* 8, 454-464.

RA 4. Denyes, M. J., et al. 1991. "Nursing actions to prevent and alleviate pain in hospitalized children." *Issues in Comprehensive Pediatric Nursing* 14, 31-48.

RA 5. Ferrell, B. R., et al. 1991. "Clinical decision making and pain." *Cancer Nursing* 14, 289-297.

RA 6. Rabeneck, L., et al. 1997. "Predicting outcomes in HIV-Infected Veterans: I. Progression to AIDS." *Journal of Clinical Epidemiology* 50, 1231-1240.