Communication & Medicine

equinox

Volume 10(1) (2013), 63–80

Sheffield
http://equinoxpub.com
DOI: 10.1558/cam.v10i1.63

Titling and authorship practices in medical case reports: A diachronic study (1840–2009)

FRANÇOISE SALAGER-MEYER[1], MARÍA ÁNGELES ALCARAZ ARIZA[2] AND MARIANELA LUZARDO BRICEÑO[1]

(1) Universidad de Los Andes, Mérida, Venezuela (2) Universidad de Alicante, Spain

Abstract

This paper is a diachronic analysis of a corpus of 180 titles drawn from Case Reports (CRs) published in the BMJ *and* BMJ Case Reports *between 1840 and 2009. The corpus was divided into three blocks, and the frequency of occurrence of 69 text-internal variables was recorded in each title. Between-block comparisons were carried out, and Student's* t*-tests were applied to the quantitative results. Our findings show that CR titles have evolved over the 160-year period studied in the sense that they have increased in length, syntactic complexity, semantic richness and title-type diversity. Authorship patterns and collaboration practices have changed too. Although internationalization of case reporting has increased over time, today's preferred practice is still local collaboration. The only variable that has remained constant over the years is the* nominal *nature of CR titles. We put forth several social and scientific factors that could account for the various shifts observed. We claim that non-informativeness of CR titles that persisted over time can be explained by the fact that CR authors are reluctant to give a generalization flavor to their findings.*

Keywords: BMJ*;* BMJ Case Reports*; case reports; diachrony; medicine; titles*

1. Introduction

Since before Hippocrates, case reports (CRs) have made, and still make, a valuable contribution to the advancement of medical science (Friedell 1973; Morgan 1985; Pascal 1985; Simpson and Griggs 1985; Morris 1989). McCarthy and Reilly (2000) report, for example, that a search of the MEDLINE database from 1996 to 2000, using the Medical Subject Heading term 'case report', retrieved more than 140,000 citations. More recently a search of Web of Science using the same MSH term retrieved 160 articles from 1953 and 4,011 from 2006 (cited in Gawrylewski 2007).

Given the unpredictable nature of medicine, many medical professionals will indeed have come across a patient who has not been a textbook case. The patient may have presented in an unusual way, had a strange pathology, or reacted to a medical intervention in a manner that has not been seen before. The publication of such novelties and curiosities as CRs has for many centuries been a fundamental way of sharing knowledge and conveying medical experience, and throughout history there have been famous CRs that have helped shape the way we view health and disease (Jamjoom *et al.* 2009; Salager-Meyer 2012).

In recent years, though, and especially since the 1990s (Maisonneuve *et al.* 2010), CRs have come under scrutiny and disfavor among some members of the medical scientific community, and they are now frequently relegated to the lowest rank in the hierarchy of study design. Indeed, there are those who argue, for example, that CRs are 'passé, trivial' (Rose and Corn 1984), and that they are increasingly irrelevant in current medical practice and education (Yadav 2006) because their obscurity and rarity appeal only to a specialized few, and because they add little to everyday medical practice. What is more, so argue the 'opponents' of CR publishing, their anecdotal nature lacks the scientific rigor of large, well-conducted studies. CRs have therefore fallen down the hierarchical ladder of medical evidence, and many

medical journals, for 'shortage of page space', now refuse to publish CRs (for a thorough analysis of the growing obsolescence of the *psychiatric* case report as a knowledge-bearing text, see Berkenkotter 2008).

Another reason why this 'endangered species' (Rose and Corn 1984) sometimes receives low esteem and 'is frequently dismissed – unfairly so – as unscientific' (Simpson and Griggs 1985: 403) is because CRs are considered to be non-citable items (Morris 1989), thus lowering the impact factor of journals where citation data rule decisions (Van der Wall and Wilde 2009; Maisonnneuve *et al.* 2010). Indeed, Patsopoulos *et al.* (2005) found that CRs receive the fewest citations of all other study designs (research papers, clinical controlled trials, meta-analyses, etc). Their study shows that in a group of 416 CRs published between 1991 and 2001, less than two percent received 10 or more citations in the first two years of publication.

Nevertheless, although they do not test hypotheses, prove associations or establish the frequency of occurrence of an event (Gotti 2001), CRs represent, as Carey (2010) puts it, a relevant, timely and important study design in advancing medical scientific knowledge, especially of rare diseases. Simpson and Griggs (1985), for their part, inveighed against throwing the baby out with the bath water. Indeed, these authors and many other renowned medical researchers, such as Vanderbroucke (2001), Tomaszewski (2006), Maisonneuve *et al.* (2010) and Smith (2008), to name just a few, assert that CRs still have a role to play in furthering medical knowledge and education (Salager-Meyer 2012).

1.1. Applied linguistics research on medical case reports

Apart from the above-mentioned papers published by members of the medical scientific community about the relevance (or lack of) of CRs in their profession and about guidelines on how to write a CR (DeBakey and DeBakey 1983; McCarthy and Reilly 2000; Cohen 2006), a few rhetoricians and applied linguists have also studied CRs from various perspectives. Atkinson (1992), Taavitsainen and Pahta (2000) and Gotti (2001), for example, examined the development of this narrative genre. Berkenkotter (2008), for her part, examines the evolving role of case history narratives in the growth of *psychiatry* as a profession, while Hunter (1991), in her study of medical case narratives in general, hints at the paradox that lies at the heart of contemporary medical science: i.e. the tension that exists between Baconian science based on empirical observations and laboratory-based 'experimental medicine' of Bernard, Pasteur and Lister. More recently, Murawska (2010) examined the construction of impersonality with respect to agency and patient presentation in a corpus of medical CRs. The author reached the conclusion that agency and patient presentation in today's medical CRs are in line with the commonly-held assumption that what medicine focuses on is the patient as a case of a given disease and not the whole person experiencing illness. To our knowledge, the most recent paper on medical CRs is Mungra and Canziani's lexicographic research (2013).

The aforementioned studies have helped us understand better not only the essence and *raison d'être* of the CR narrative, but also its evolution from a rhetorical, structural, stylistic and linguistic standpoint. Nonetheless, to the best of our knowledge, no study has ever been conducted on the evolution of CR *titles*.

Since there is evidence that doctors sometimes make clinical decisions from the titles of journal articles (Haynes *et al.* 1990; Goodman 2000), titles should convey effectively the scope of the research and topic of the report, and, if possible, the design of the reported investigation, while attracting the attention of and informing the primary target audience, editors and reviewers. Despite their succinctness, 'titles are serious stuff', asserts Swales (1990: 224), in that they 'intrigue the reader and lure him into reading the whole article' (Haggan 2004: 298). This is why titles should be clear, accurate and precise (Swales and Feak 1994; Day 1995; Hartley 2008). Also, the more precise and accurate the title is, the easier it is for bibliographers to compile data for indexing, abstracting and other documentation purposes. Economy and conciseness are the features of a title to which scientific journal editors sometimes devote a few words in their instructions to contributors, but the only concrete guideline provided concerns title length (Yakhontova 2002; Haggan 2004; Soler 2007). However, as Goodman *et al.* (2001) report, some monographs about writing scientific papers (Day 1995; Huth 1999; Zeiger 2000) do stress the importance and pivotal role of titles.

In 1973 Claude Duchet coined the neologism '*titrologie*' ('titleology', *cf.* Biacchi 2003, cited in Soler 2011: 124) to refer to research that deals with titles.[1] At that time, research in titles exclusively dealt with literary works (Roy 2008). Twenty years later, Swales (1990) claimed that titles were an issue in academic genres that had not been fully addressed. Since then, as Soler (2011) remarks, the field has not only grown quite substantially, but has also diversified into a vast and heterogeneously rich literature that has examined

the issue from a range of perspectives (see Jaime-Sisó 2009 and Soler 2011 for an excellent review of the literature on the subject). However, medical *CR* titles have never been the object of any study, very likely because CRs are considered a low-profile genre – which, as the Introduction of this paper has hopefully demonstrated, is not entirely true.

It is thus our intention here to fill this conceptual gap by presenting the results of a diachronic analysis of a corpus of CR *titles* from 1840 to the present (see Section 2 'Corpus and methods' below) and compare these with the results obtained by previous research on titles in other scientific genres, such as the research paper and the review article. More precisely, the present study aims at answering questions related to the *evolution* of the type of CR titles, their length, their grammatical and syntactic complexity, and their authorship practices. By examining authorship data, this study seeks to develop, *inter alia*, a sense of the collaborative practices of medical CR writers over time.

2. Corpus and methods

We analyzed a corpus of 180 randomly selected CR titles divided into three blocks comprising 60 CR titles each: Block A from 1840 to 1850, Block B from 1920 to 1930, and Block C that covers the year 2009. Titles from Blocks A and B were drawn from one single journal, the *British Medical Journal* (*BMJ*). Since the *BMJ* stopped publishing case reports in the late 1990s, Block C titles were drawn from *BMJ Case Reports*, which was launched at the end of 2008, and whose 2008 and 2009 issues are freely accessible on line. This explains why we chose the year 2009 as our Block C.

Neither the *BMJ* nor *BMJ Case Reports* has a stated policy regarding the writing of CR titles. The only policy the *BMJ* has addresses the length of titles and the (non-) use of abbreviations and, recently, the maximum number of authors allowed.

In Table 1 as well as in the 'Discussion' Section 4 of this paper, the examples are followed by the block (A, B or C, indicated in brackets) from where they were drawn, and the particular grammatical or syntactical variable they illustrate is written in italics.

We will now present the quantitative results of our research. The discussion of our findings follows in Section 4, where examples drawn from our corpus are presented in order to illustrate and support our arguments.

3. Results

The frequency of occurrence of six different categories of variables was recorded in each of the 180 titles (see Table 2) according to the interpretative skills of the first two authors of this paper, and the quantitative data were compared by means of Student's *t*-tests.

3.1. Title length

As Table 2 shows, 1,749 running words were recorded in the whole corpus, the highest percentage being observed in Block C (37.9%). The table also indicates that the overall average length of the 180 CR titles analyzed here is 9.7 words, and that CR titles in Block C are, on average, longer (11 words) than those recorded in the two previous Blocks.

3.2. Title types

3.2.1. Indicative/nominal vs. informative/verbal

An overwhelming majority of indicative titles (97.2%, p=.000) was recorded in the whole corpus. As Table 2 shows, only five informative titles (three from Block C) were recorded in the 180 CR titles we examined.

3.2.2. Topic/subject titles

Table 2 also indicates that topic/subject titles significantly outnumber the other title categories (they account for 62.8% of the whole corpus, p=.000), and that their frequency is significantly greater in Blocks B and C (90% and 85%, respectively, of the total number of CR titles making up each Block) than it is in Block A, where they represent 13.3% only of the 60 titles in that Block (p=.000).

3.2.3. 'A case of' titles

The second-most frequent title category (33.3% of the 180 CR titles) is '*A case of*' titles, whose frequency of occurrence in Block A (86.7% of all the titles making up that Block) significantly outweighs that of the other two Blocks (p=.000).

3.2.4. Attention-bidding and question titles

Only seven CR titles belonged to these two title categories (i.e. less than 4% of the total number of titles). All of them were found in Block C.

3.3. Semantic content of titles

As can be seen in Table 3, 70 titles (38.9% of the 180 CR titles) mentioned key research concepts, such as the study purpose, methods/design, and/or outcome/

Table 1. *List of variables, definitions and examples drawn from Blocks A, B and C*

VARIABLE	DEFINITION	EXAMPLES
1. TITLE LENGTH	Number of tokens (running words)	MRI (magnetic resonance imaging): 3 words
2. TITLE TYPE verbal (*)	contains an active verb with a full sentence that usually states the findings or the conclusion of the research being reported	Bariatric surgery *does not cure* all type 2 diabetes (C)
nominal (†)	does not contain any conjugated verb	Chloroform in catalepsy (A)
General subject title	states the scope/topic of the case being reported	Epiploic appendagitis (C)
Titles that start with '*A case of*'...		*A case of* narcolepsy (A)
Attention-bidding title	uses startling openings	Wedding ring in the wrong place (C)
Question title	contains a question	One man, one disease? (C)
Research procedure title	contains a statement of purpose, method, and/or outcome	Case of poisoning by arsenic: employment of the hydrated peroxide of iron: Recovery (A)
3. PUNCTUATION DATA	frequency of commas, colons and semi-colons	Case of hydrocephalus; treatment by puncture and seton; autopsy: with remarks (B)
	frequency of full stops	Dislocation of the humerus reduced under the influence of chloroform. With observations (B)
4. GRAMMATICAL DATA and SYNTACTICAL DATA	frequency of present participles	Dissecting thoracic aortic aneurysm *presenting* with haematemesis (C)
	frequency of past participles	A case of ovarian tumour successfully *removed* (A)
	frequency and length of compound words	- insulin treatment (B: 2 words) - sotanol-induced QT prolongation (C: 4 words)
	frequency of prepositions (in, of, with, without, *etc.*)	Case *of* contraction *of* the mitral valve *without* vegetation or ossification (A)
	frequency of coordinating conjunctions (and, or, *etc.*)	A rare cause of dysphagia *and* gastroparesis (C)
	frequency of subordinating conjunctions (as, while, whilst, etc.)	Fatal case of gastro-intestinal hemorrhage from cardiac disease, *whilst* under the influence of mercury (A)
	frequency of relative pronouns (that, which, who/m, whose)	Case in *which* the urachus remained pervious after birth (A)
5. NUMBER OF AUTHORS AND THEIR INSTITUTIONAL AFFILIATIONS		
6. COLLABORATION PRACTICES	local collaboration	Delhi University. New Delhi, India; Safdarjung Hospital New Delhi, India.
	national collaboration	Bern University Hospital, Switzerland; Lausanne University, Switzerland
	international collaboration	UK, France, Germany

*Verbal titles are also called 'informative' (Huth 1999: 90; Goodman 2000: 914; McGowan and Tugwell 2005: 83); 'declarative' (Smith 2000: 915); 'declaratory' (Goodman *et al.* 2001: 76); 'conclusion titles' (Fischer and Zigmond 2004); 'assertive sentence title' (Rosner 1990: 108); or 'full sentence title' (Haggan 2004; Soler 2007).

†Nominal titles are also called 'indicative' (Huth 1999: 90; Goodman 2000: 914) or 'descriptive' (Fischer and Zigmond 2004).

Table 2. *Total number of words, mean number of words per case report title, and title types in each block and in the whole corpus*

	Block A 60 CRs (1840–1850)	**Block B 60 CRs (1920–1930)**	**Block C 60 CRs (2009)**	**TOTAL 180 CRs (1840–2009)**
Total N words	583 (33.3%)	503 (28.8%)	663 (37.9%)	1,749 (100%)
Average length	9.7	8.4	11	9.7
Informative	1 (1.7%)	1 (1.7%)	3 (5%)	5 (2.8%)
Indicative	59 (98.3%)	59 (98.3%)	57 (95%)	175 (97.2%)
TOTAL	**60**	**60**	**60**	**180**
Topic/Subject	8 (13.3%)	54 (90%)	51 (85%)	113 (62.8%)
'A case of…'	52 (86.7%)	6 (10%)	2 (3.3%)	60 (33.3%)
Attention-bidding	0	0	3 (5%)	3 (1.7%)
Question	0	0	4 (6.7%)	4 (2.2%)
TOTAL	**60**	**60**	**60**	**180**

Table 3. *Mention of key research concepts (purpose, methods/design, results/outcomes) in each block and in the whole corpus*

	Block A 60 CRs (1840–1850)	**Block B 60 CRs (1920–1930)**	**Block C 60 CRs (2009)**	**TOTAL 180 CRs (1840–2009)**
Mention of purpose	1 (16.7%)	3 (50%)	2 (33.3%)	6 (8.6%)
Mention of methods/ design	17 (50%)	16 (47%)	1 (2.9%)	34 (48.6%)
Mention of outcome/ results	17 (56.7%)	10 (33.3%)	3 (10%)	30 (42.8%)
TOTAL	**35 (50%)** **over 60 titles (58.3%)**	**29 (41.4%)** **over 60 titles (48.3%)**	**6 (8.6%)** **over 60 titles (10%)**	**70 (100%)** **over 180 titles (38.9%)**

results. Mention of study methods/design and of research outcome/results are the two most frequent semantic categories referred to in CR titles (48.6% and 42.8%, respectively, of the 70 titles that refer to key research concepts), most of them being recorded in Blocks A and B. By contrast, the overall frequency of mention of purpose (8.6% of the 70 CR titles that mention key research concepts) is very low in the three Blocks. It is also interesting to observe that only 10% of Block C CR titles mention key research concepts, a significantly lower overall frequency than that observed in Blocks A and B (p=.0000).

3.4. Punctuation in CR titles

3.4.1. Colons, semi-colons and full stops

Table 4 above shows that 61 CR titles contained punctuation marks (33.9% of the total number of CR titles), that the most frequently used punctuation mark is a single colon (representing 55.7% of the total number of punctuation marks used in the whole corpus), and that the *overall* frequency of use of punctuation marks has not significantly changed over time. What has significantly changed, however, is the frequency of use of *particular* punctuation marks. As Table 4 indicates, the use of one colon in CR titles increased eight-fold between Block A and Block C (8.8% vs. 67.6%, respectively, p=.0005). Indeed, it is the only punctuation mark used in Block C. Conversely, the use of two colons exhibits a two-fold increase between Block A and Block B (37.5% vs. 62.5%), and a dramatic fall between Block B and Block C (its frequency falls from 62.5% to zero). Semi-colons and full stops were hardly ever used. Only three cases of semi-colons and four of full stops were recorded in the whole corpus; all of them were found in Blocks A and B.

3.4.2. Commas

It is interesting to observe that commas (one, two and more than two) were exclusively used in Block A CR titles.

3.5. Present and past participles, prepositions, coordinating conjunctions, relative pronouns and subordinating conjunctions

3.5.1. Present and past participles

Although the overall frequency of both present and past participles was quite low (11 cases of the former and 37 of the latter were recorded in the whole corpus), Table 5 shows that use of the present participle increased over time (its frequency almost doubled

Table 4. *Punctuation (colons, semi-colons, full stops and commas) in each block and in the whole corpus*

	Block A 60 CRs (1840–1850)	**Block B 60 CRs (1920–1930)**	**Block C 60 CRs (2009)**	**TOTAL 180 CRs (1840–2009)**
1 colon	3 (8.8%)	8 (23.5%)	23 (67.6%)	34 (55.7%)
2 colons	3 (37.5%)	5 (62.5%)	0	8 (13.1%)
Semi-colon	0	3 (100%)	0	3 (4.9%)
Full Stop	2 (50%)	2 (50%)	0	4 (6.6%)
1 comma	10 (100%)	0	0	10 (16.4%)
2 comma	1 (100%)	0	0	1 (1.6%)
More than 2 commas	1 (6 commas) (100%)	0	0	1 (1.6%)
TOTAL	**20 (32.8%)** **over 60 titles (33.3%)**	**18 (29.5%)** **over 60 titles (30%)**	**23 (37.7%)** **over 60 titles (38.3%)**	**61 (100%)** **over whole corpus (33.9%)**

Table 5. *Frequency of present and past participles, prepositions, coordinating and subordinating conjunctions and relative pronouns in each block and in the whole corpus*

	Block A 60 CRs (1840–1850)	**Block B 60 CRs (1920–1930)**	**Block C 60 CRs (2009)**	**TOTAL 180 CRs (1840–2009)**
Present participles	3 (27.3%)	3 (27.3%)	5 (45.4%)	11 (100%)
Past participles	19 (51.4%)	13 (35.1%)	5 (13.5%)	37 (100%)
Prepositions	**190 (50%)**	**105 (27.5%)**	**86 (22.5%)**	**381 (100%)**
Of	125 (57%)	59 (27%)	35 (16%)	219 (57.5%)
By	16 (50%)	13 (40.6%)	3 (9.4%)	32 (8.4%)
In	10 (24.4%)	10 (24.4%)	21 (51.2%)	41 (10.8%)
With	6 (24%)	9 (36%)	10 (40%)	25 (6.6%)
On	3 (33.4%)	4 (44.4%)	2 (22.2%)	9 (2.4%)
Without	1 (33.3%)	2 (66.7%)	0	3 (0.8%)
After	2 (40%)	1 (30%)	2 (40%)	5 (1.4%)
Following	0	1 (11.1%)	8 (88.9%)	9 (2.4%)
At	2 (66.7%)	1 (33.3%)	0	3 (0.8%)
From	6 (75%)	1 (12.5%)	1 (12.5%)	8 (2.1%)
Into	2 (66.7%)	1 (33.3%)	0	3 (0.8%)
To	0	1 (33.3%)	2 (66.7%)	3 (0.8%)
Upon	0	2 (100%)	0	2 (0.6%)
Despite	0	0	1 (100%)	1 (0.2%)
During	0	0	1 (100%)	1 (0.2%)
Through	0	0	1 (100%)	1 (0.2%)
Towards	0	0	1 (100%)	1 (0.2%)
For	0	0	2 (100%)	2 (0.6%)
As	0	0	4 (100%)	4 (1%)
Under	6 (100%)	0	0	6 (1.6%)
0ff	1 (100%)	0	0	1 (0.2%)
Above	1 (100%)	0	0	1 (0.2%)
Between	1 (100%)	0	0	1 (0.2%)
Coordinating Conjunctions	4 (18.2%)	2 (9.1%)	16 (72.7%)	22 (100%)
And	2 (11.1%)	2 (11.1%)	14 (77.8%)	18 (81.9%)
or	2 (50%)	0	2 (50%)	4 (18.2%)
Relative pronouns	2 (50%)	1 (25%)	1 (25%)	4 (100%)
which	2 (66.7%)	1 (33.3%)	0	3 (75%)
who	0	0	1 (100%)	1 (25%)
Subordinating conjunctions	1 (whilst) (100%)	0	0	1 (100%)

between Blocks A and C), whereas the past participle significantly decreased (its frequency exhibits a four-fold decrease between Blocks A and C, p=.05).

3.5.2. Prepositions

A total of 380 prepositions (23 *different* prepositions) was recorded in the whole corpus, exactly 50% of which were recorded in Block A titles. Diachronically speaking, a two-fold significant decrease in the overall frequency in the use of prepositions can be observed from Block A (50% of the total number of prepositions recorded in the whole sample) to Block C (22.5% of the total number of prepositions recorded in the whole sample, p=.001). By far, the most frequently used preposition in the three Blocks is the preposition 'of' (accounting for 57.5% of the total number of prepositions recorded in the 180 CR titles), although its use significantly decreased from Block A to Block C (p=.000). The other three most frequently-used prepositions (although much less frequently used than 'of') are: 'by,' 'in' and 'with.' They together account for 25.8% of the total number of prepositions recorded in the 180 CR titles. It is interesting to observe not only that the overall frequency of the remaining prepositions mentioned in Table 5 is rather low in the three Blocks, but also that the *variety* of prepositions is greater in Block C than it is in the other two Blocks.

3.5.3. Coordinating conjunctions

Table 5 shows that 22 coordinating conjunctions (only two *different* coordinating conjunctions) were recorded in the whole corpus. It can also be seen that the conjunction 'and' is not only the most frequently used coordinating conjunction in the three Blocks, but also that it is significantly more frequent in Block C than it is in the remaining two Blocks, a seven-fold increase in relation to Blocks A and B (p=.01).

3.5.4. Relative pronouns and subordinating conjunctions

The quantitative data displayed in Table 5 clearly show that the frequency of relative pronouns and subordinating conjunction is very low in the three blocks. Five cases only were recorded in the whole corpus.

3.6. Compound words

Table 6 indicates that 75 compound words were recorded in the 180 CR titles. The following quantitative findings are particularly worth mentioning:

1. The overall frequency of compound words exhibits a two-fold increase between Block A and Block B (8% and 16%, respectively), and a five-fold significant increase between Block B and Block C (16% to 76%, respectively, p=.0000).
2. Overall, two-word compound words significantly outweigh longer ones (p=.01 when compared to the overall frequency of three-word compound words). Two-word compound words indeed make up 54.7% of the total number of compound words recorded in the whole corpus, over three times as frequent as their three- and four-word counterparts.
3. Two-, three-, four- and over four-word compound words all significantly increased over time.
4. Three-, four- and over four-word compound words are characteristic of Block C.

Table 6. *Frequency and length of compound words in each block and in the whole corpus*

	Block A 60 CRs (1840–1850)	**Block B 60 CRs (1920–1930)**	**Block C 60 CRs (2009)**	**TOTAL 180 CRs (1840–2009)**
2	5 (12.2%)	10 (24.4%)	26 (63.4%)	41 (54.7%)
3	1 (7.1%)	2 (14.3%)	11 (78.6%)	14 (18.7%)
4	0	0	12 (100%)	12 (16%)
> 4	0	0	8 (100%)	8 (10.7%)
TOTAL	**6 (8%)**	**12 (16%)**	**57 (76%)**	**75 (100%)**

3.7. Number of authors per case report

As can be seen from Table 7, 371 authors were recorded in the whole corpus, the great majority (64.4%) belonging to Block C, whereas the total number of authors recorded in Blocks A and B accounts for less than 20% each of the total number of authors making up the whole corpus. This means that there is a significant four-fold increase in the total number of authors from Block A to Block C (16.2% vs. 64.4%, respectively, p=.000). As for the *mean* number of authors per CR, the overall mean is 2, but, here too, a four-fold increase between Block A and C can be observed.

Table 7 moreover shows that *single-authored* CRs – representing 62.8% of the total number of CRs analyzed in this study – by far outnumber multi-authored CRs. However, when examined diachronically, our quantitative data reveal a drastic decrease in the number of single-authored CRs. In Block A, indeed, the 60 CRs making up that Block were written by one author only. The proportion of single-authored CRs remained very high in Block B (85% of the 60 CRs making up that Block), but displays a dramatic decline from Block B to Block C, to the point that only two CRs from Block C were single-authored (p=.000).

By contrast, *multi-authored* CRs are a distinctive feature of Block C. As Table 7 indicates, three- and four-authored CRs make up almost 50% of the total number of CRs in that block. Those written by more than four authors account for 30% of all the CRs making up Block C, whereas CRs written by one and two authors account for about 20% of the total number of Block C CRs.

3.8. Authors' institutions

Table 8 discloses that an overwhelming majority (73.3%) of the CRs we examined were written by UK-based authors. However, when examined from a diachronic perspective, our quantitative data reveal that the frequency of CRs written by UK-based authors only significantly decreased over time (it fell

Table 7. *Number of authors in each block and in the whole corpus*

	Block A 60 CRs (1840–1850)	**Block B 60 CRs (1920–1930)**	**Block C 60 CRs (2009)**	**TOTAL 180 CRs (1840–2009)**
N authors	60 (16.2%)	72 (19.4%)	239 (64.4%)	371 (100%)
Mean/CR	1	1.2	4	2
1 author	60 (100%)	51 (85%)	2 (3.3%)	113 (62.8%)
2 authors	0	6 (10%)	11 (18.3%)	17 (9.4%)
3 authors	0	3 (5%)	15 (25%)	18 (10%)
4 authors	0	0	14 (23.3%)	14 (7.8%)
5 authors	0	0	7 (11.7%)	7 (3.9%)
6 authors	0	0	5 (8.3%)	5 (2.8%)
7 authors	0	0	2 (3.3%)	2 (1.1%)
8 authors	0	0	2 (3.3%)	2 (1.1%)
9 authors	0	0	1 (1.7%)	1 (0.5%)
10 authors	0	0	1 (1.7%)	1 (0.5%)

Table 8. *Case report authors and their geographical location in each block and in the whole corpus*

	Block A 60 CRs (1840–1850)	**Block B 60 CRs (1920–1930)**	**Block C 60 CRs (2009)**	**TOTAL 180 CRs (1840–2009)**
UK authors alone	49 (81.7%)	59 (98.3%)	24 (40%)	132 (73.3%)
Authors from Europe but no UK	1* (1.7%)	1‡ (1.7%)	17§ (28.3%)	19 (10.5%)
Others (outside Europe)	1† (1.7%)	0	18 ** (30%)	19 (10.5%)
Europe no UK + others	0	0	1 (1.7%)	1 (0.6%)
Unspecified	9 (15%)	0	0	9 (5%)
TOTAL	**60**	**60**	**60**	**180**

*Germany
†USA
‡Ireland
§Denmark, France, Belgium, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Switzerland
**Australia, India, Jamaica, Japan, Lebanon, New Zealand, Pakistan, Saudi Arabia, South Africa, Sudan, Taiwan, Turkey

Table 9. *Collaboration practices in each block and in the whole corpus*

Blocks	**Single-authored**	**Local (same city)**	**National**	**International**	**TOTAL CRs**
A (1840–1850)	60 (100%)	0	0	0	60
B (1920–1930)	51 (85%)	9 (15%)	0	0	60
C (2009)	2 (3.3%)	41 (68.3%)	16 (26.7%)	1 (1.6%)*	60
TOTAL (1840–2009)	**113 (62.8%)**	**50 (27.8%)**	**16 (8.9%)**	**1 (0.5%)**	**180**

*France and Lebanon

from 98.3% in Block B to 40% in Block C, p=.000). Conversely, the frequency of non-UK-based authors (authors from other European countries or from outside Europe) exhibits a thirty-fold increase from Blocks A/B to Block C. It is also interesting to note that in nine CRs from Block A (15%), the authors' institutional affiliation was not mentioned.

3.9. Collaboration practices

The quantitative data in Table 9 reveal that collaboration practices in CR-writing significantly changed over time. As stated before (Table 7, Section 3.7 above), there was hardly any collaboration at all in Blocks A and B (the overwhelming majority of CRs were single-authored), whereas 95% of Block C CRs were written in collaboration, either local (i.e. 68.3%), national (26.7%) or international (1.6%), thus showing that the most frequent collaboration type in today's CRs is the local one.

4. Discussion

4.1. Indicative/nominal group titles

As noted in the previous section, all but five of the 180 titles consist of more or less expanded *nominal* phrases, also called 'indicative titles', which give a

straightforward presentation of the object of the study. Here are three examples, one from each Block:

1. Chloroform in catalepsy (A)
2. Intravenous pyelography (B)
3. Hip pain in pregnancy (C)

This result clearly corroborates those of previous cross-disciplinary research on scholarly paper titles that also found a marked preponderance of nominal/indicative titles over verbal/informative/full-sentence titles. Busch-Lauer (2000), for example, observed a much higher frequency of indicative titles over full-sentence ones in a corpus of German and English medical *research article* titles, as did Haggan (2004) in a sample of *research article* titles in linguistics, literature and science. Soler (2007), for her part, found that 72% of the English-medium *research papers* and *review articles* titles she analyzed in the field of biology belonged to the nominal group. In another study, that same researcher analyzed the structural construction of a corpus of *Spanish* titles of *research papers* and *review articles* in the biological and the social sciences, and found a prevalence of nominal group title construction in both textual genres and both disciplines (Soler 2009). This led Soler to conclude that the prevalence of the nominal group construction in scholarly titles is a means to imprint the nominal, lexically dense and impersonal style that typifies scientific discourse. This is why the nominal construction is the one that is most frequently recommended by (English) scientific writing advisory manuals (O'Connor 1991; Alley 1996).

When referring to the *evolution* of scientific titles, our results contrast with those of previous research. Indeed, most research on the topic has underlined a shift over time towards more full-sentence (informative) titles. Almost twenty years ago, Berkenkotter and Huckin (1995), for instance, had already reported that titles of *research articles* had become more informative over time. The findings of their research showed that in the 1970s full-sentence titles were very rare, but that in the mid-1990s they constituted more than 20% of all journal articles and were especially common in biology. An increasing number of conclusive/full-sentence titles was also found in the multidisciplinary journal *Nature*, where almost a quarter of the titles of the *research articles* published in that journal in the last two decades anticipate the research conclusions, especially in molecular and developmental biology (Jaime-Sisó 2009), thus adopting a journalistic style. This was not so, however, in another multidisciplinary journal, *Science*, where only a few *research article* titles were found to be verbal (Jaime-Sisó 2009). Goodman (2000, 2010) too asserts that *research article* titles are becoming more informative: the third-person singular in *research articles* titles increased on average 43-fold between 1970 and 2009, and 105-fold in *core* clinical journals.

Since the overwhelming majority of our CR title corpus was found to be nominal, it would seem that the use of full sentences in scientific title-writing is a *generic* question. In that sense, our findings lend support to the conclusion reached by Soler (2011) on the generic and disciplinary nature of verbal/informative titles. Indeed, the studies we mentioned above deal with *research* and *review articles*, whereas ours exclusively focuses on CRs. We can thus assert that CR titles – at least, those published in the *British Medical Journal* – have always been, and still are, written as nominal phrases. The format of the CR being essentially that of a narrative, it is not surprising that its titles show a different line of evolution from that of the *research article*, a genre in which the narrative elements were gradually eliminated (Atkinson 1992). What is more, because in a CR, the *n* of 1 precludes generalizations across population groups and because a single case history cannot be replicated, CR writers are most likely to be reluctant to use conclusive or informative titles that would tend to give a generalization 'flavor' to their findings.

4.2. Title length

4.2.1. Average length

The length of a title is an indicator of the amount of information an author intends to give the readers prior to text reception. The average length of the 180 CRs examined in the present study (9.7 words) is somewhat lower than that reported in previous cross-disciplinary and cross-generic research on scholarly publication titles: 12 words in psychology *research articles* (Whissell 1999), 10.9 words in medical *research articles* (Wang and Bai 2007), and 15.5 in medical *research* and *review articles* (Soler 2007). The difference observed between these averages and ours is very likely due to the different genres analyzed. Indeed, as we noted in Section 4.1 above, previous studies on academic titles deal almost exclusively with *research articles*, with one paper (Soler 2007) addressing the issue in relation to *review articles*, whereas ours deals with CRs.

The present study also showed that CR titles are longer in Block C than in the two previous blocks. This means that the information load and semantic richness of CR titles have increased over time. In this respect, our findings corroborate the results of previous studies, such as that conducted by Buxton

and Meadows (1977) on *research article* titles from the natural and social sciences that indicated that the overall length of titles in both disciplines increased over time, corresponding to an informativity increase. Lewinson and Hartley (2005), too, reported a 1.25-fold increase in *research paper* title length between 1970–1974 and 2005–2009, and Goodman (2011) found an approximate doubling in the number of words in *research article* titles since the 1970s. On this dimension at least, that of title length, the evolution of CR titles resembles that of research article titles, although the increase reported in the former genre is lower than that observed in the latter. We would, however, like to mention an oddity in Block A where we found the following 39-word long CR title:

4. A case of muco-enteritis, followed by acute peritonitis, terminating in effusion into the abdominal cavity, relieved by profuse serous discharge from a spontaneous opening of the umbilicus by ulceration, followed by prolonged suppuration, repeated hemorrhage, and stercoraceous vomiting (A)

4.2.2. Coordinating conjunctions

Coordinating conjunctions were found to be more frequent in today's titles than in those from earlier periods. This finding is directly related to title length. Indeed**,** the more numerous the coordinating conjunctions in a title, the longer the title. The most frequently used coordinating conjunction found in Block C was 'and'. Here is an example:

5. Giant true cyst of the spleen with elevated serum markers, carbohydrate antigen 19-9 *and* cancer antigen 125 CC)

4.2.3. Colon titles

The *colon* variable was also found to characterize today's CR titles, and its use to have increased over time. This confirms previous title research findings conducted in a variety of different disciplines (e.g. education, psychology, literary criticism) that found that colon titles is a predominant characteristic of today's scholarly publication. Dillon's (1982) hypothesis of 'titular colonicity' suggests that colons are a primary correlate of scholarly quality, and their increasing use has been described as the 'Dillon Effect'.

The frequent use of colons in today's titles also has a direct bearing on title length. It has been shown indeed that titles with colons – also called 'hanging titles' (Day 1995), 'colonic titles' (Hartley 2005), or 'compound titles' (Hartley 2007) – are longer on average and contain more information than titles without them.

An interesting qualitative finding regarding the use of colons in CR titles is that the semantic function of colons has changed over time. In both Blocks A and B, colons were mainly used to introduce the findings of an autopsy (example 6 below) or of a surgical procedure (example 7):

6. Obscure case of sudden death: Enlarged thymus (A)
7. A case of hydatid cyst of orbit: Removal of cyst with preservation of eye and vision (B)

Conversely, in today's CR titles, colons are mostly used to underline the *rarity* of the CR (examples 8 and 9 below):

8. Subpubic cartilaginous cyst: An unusual cause of a vulval mass (C)
9. Merkel cell carcinoma: A rare, aggressive cutaneous malignancy (C)

Characteristic of both Blocks A and B as well, but more frequent in the former than in the latter, was the use of two colons in the same title, where the first colon introduces the consequence of the event described in the first part of the title (example 10) or a surgical procedure (example 11), and the second precedes the treatment outcome, either death or recovery:

10. Poisoning by Fowler's solution: Abortion: Mortal fainting (A)
11. Three cases of acute perforation of duodenal ulcer: Laparatomy: Recovery (B)

It is also interesting to note that the use of colons in today's medical CR titles contrasts quite sharply with the use of colons in today's medical *research article* titles where, at least in the *British Medical Journal*, colons precede a piece of information that is compulsory, such as the type of the research being reported, whether it is a systematic review, a meta-analysis, a data base survey, a cross-sectional analysis, etc.:

12. Kidney stone and kidney function loss: A cohort study (C)

Thus, our findings regarding the increasing use of colon titles in medical CRs do not seem to lend support to Soler's (2007, 2011) hypothesis, according to which this title construction could be a disciplinary and generic characteristic of the *research article* in the social sciences, both in Spanish and in English.

Our study indeed shows that colon titles are very frequently used in other genres as well, such as the CR, and in other disciplines, such as medicine.

All in all, our results lead us to put forward the hypothesis that the longer titles from Block C could be explained by the fact that today's titles require more detailed information about the type of disease and its consequences, the uniqueness of the CR, its educational value and its originality. In short, today more bottom-line information is being loaded into the most highly fore-grounded part of any article, the title.

4.3. Syntactic complexity

Block A titles were generally understandable to the layman, an assertion that reminds us of Gunnarsson's (1998) remark about nineteenth-century single medical cases written in Swedish. The great majority of Block A titles started with the expression '*[A] Case of*', as the following examples illustrate:

13. *Case of* placenta previa (A)
14. *Case of* idiopathic tetanus successfully treated (A)

Such titles were usually very short and syntactically and semantically rather simple. However, CR titles became more and more complex, both semantically and syntactically.

4.3.1. Compound words

The increasing syntactic complexity and semantic richness of CR titles are not only related to increasing length (see Section 4.2 above), but also to the increasing number of compound nouns and adjectives used in Block C as a way to condense information (Salager-Meyer 1984). What in Block A or B would have been expressed as 'Case of profuse uterine hemorrhage successfully treated by galvanism' (Block A, CR number 8) would in Block C be rendered as 'Successfully galvanism-treated profuse uterine hemorrhage'. Along with examples 3, 5, 9, 10 and 12 above, here are two additional examples of titles with several compound words.

15. *Skull metastases* from *thyroid carcinoma* (C)
16. *Compartment syndrome* after *low molecular weight heparin* following *lower limb blunt trauma:* lessons from *outpatient deep vein thrombosis protocols (C)*

We recorded five cases, all in Block C, where the whole title is a compound noun or compound adjective. Here are three of them:

17. *Cough's postulates* (C)
18. The '*fish-vertebra*' sign (C)
19. *Gefitinib-induced hair alterations* (C)

What is also interesting to observe is the fact that not only are compound nouns and adjectives more numerous in Block C than they are in Blocks A and B, but they are also longer, as example 16 above and examples 20 and 21 below illustrate:

20. *Primary orbital yolk sac tumour* in a 14-year-old girl (C)
21. *Off-pump coronary artery surgery* in a patient with essential thrombocythaemia: two *life-threatening complications* in the same patient (C)

Regarding the increase in the use of compound words over time, we could put forward the hypothesis that there is a relationship between the syntactic complexity of CR titles and the complexity of the research field, as has been suggested by White and Hernández (1991) in relation to *research article* titles.

4.3.2. Prepositions

The higher frequency of compound nouns and adjectives in Block C is directly related to the low frequency of prepositions recorded in that same Block, i.e. the higher the frequency of compound nouns and adjectives, the lower the frequency of prepositions (Block C), and *vice versa*: the lower the frequency of compound nouns and adjectives, the higher the frequency of prepositions (Block A).

Prepositions, especially 'of', 'by', 'in', and 'with', were indeed found to be a distinctive feature of mid-nineteenth century titles, as in the following examples:

22. Case *of* fracture *of* the superior maxilla, *with* displacement *of* the malar bone (A)
23. Case *of* fungus haematodes *in* a child two years *of* age (A)
24. Case *of* long standing disease *of* simulating phthisis: death *by* inanition *from* the lower end *of* the oesophagus (A)

4.4. Commas, past participles and mention of study research/outcomes (Block A)

Our results clearly show that the variables 'comma', 'past participle' and 'mention of methods/treatment/outcome' distinguish Block A titles from those of the remaining two blocks. There are several reasons for this. First, in the mid-nineteenth century, past

participles were used to refer either to a therapeutic procedure (example 25 below) or to a surgical outcome (example 26 below), and all these *-ed* forms were preceded by a comma:

25. Case of asphyxia from hanging, *treated* by bleeding (A)
26. A case of muscular amaurosis, *cured* by operations on the recti muscles (A)

Example 4 above (Section 4.2.1), drawn from Block A, contained six commas, each one of which, as can be seen, preceded a past participle which, in turn, expressed either a therapeutic procedure or a treatment outcome.

These three examples show that at that time much emphasis was put on the treatment administered and/or the surgical procedure performed and the final outcome (compare with the use of colons for introducing results/outcomes in Block A titles, discussed in Section 4.2.3 above), and not on the CR originality or educational value, as is the case in today's CRs (see examples 8 and 9 above). By the mid-twentieth century, that practice had disappeared almost entirely. Indeed, not a single comma, and only a few cases mentioning methods/outcome, were registered in CR titles from Blocks B and C.

It is also worth noting in relation to the evolution of the use of both the present and past participles that in today's CR titles, both grammatical forms form parts of compound words:

27. A case of *IgG4-related sclerosing disease* complicated by *sclerosing cholangitis*, retroperitoneal fibrosis and orbital pseudotumour (C)

(see also examples 19 and 21 above)

4.5. Title-type diversity (Block C)

4.5.1. Topic/Subject titles

Topic/subject titles, which simply announce what the paper is about, were found not only to be the most frequently used title type but also to be clearly characteristic of Blocks B and C. Some were very short (one or two words only; see examples 1, 2 and 3 above, which resemble textbook chapter titles), while others – indeed the great majority – were longer, coming to six or seven words:

28. Metastatic staphylococcal infection of the kidney (B)
29. Multiple giant saccular aneurysms in coronary circulation (C)

4.5.2. Question titles

Only three question titles were recorded in our sample, all of them in today's CR titles. Here are two examples:

30. Locked knee? (C)
31. Septic polyarthritis caused by Streptococcus pneumoniae: primary pneumococcal pneumonia as a risk factor in older patients? A case report (C)

As can be seen, these question titles do not really suggest a lack of definite conclusions on a given topic, but are rather yes/no questions, the specific pragmatic thrust of which must be regarded as a specific rhetoric procedure by which authors try to advertise their texts in order to attract possible readers. As Dietz (2001) points out, there is a kind of pedantic academic suspense to such questions that arouses the curiosity of colleagues by questioning a hitherto accepted thesis. What is more, with such titles, the author already presents solutions to a controversial problem that can then be seen as a specific means to 'sell' one's text (Dietz 2001: 31). However, Maisonneuve *et al.* (2010) do not recommend question titles for CRs and research articles, and posit that such titles are better suited for editorials and/or oral communications. This is probably why their frequency, although higher in Block C than in earlier periods, was found to be in general very low, a finding that corroborates that of cross-disciplinary (humanities, social sciences and biological sciences) and cross-linguistic (German, English and Spanish) research on titles (Busch-Lauer 2000; Anthony 2001; Hartley 2007; Soler 2007, 2011).

4.5.3. Attention-bidding titles

Attention-bidding titles were very rare, too, and the only four examples found in our corpus belonged to Block C. Along with the example given in Table 1 in Section 2 above, here are two additional examples. Example 33 even includes an exclamation mark:

32. The cry of a trapped heart (C)
33. Neonatal respiratory distress: Do not forget the rarer causes! (C)

Goodman (2011: 39) qualifies such titles as 'soundbite' titles. As with question titles, attention-bidding titles' *raison d'être* is to attract the reader's attention: 'Presumably, for good or ill, and whether mistaken or not, such a tactic is intended to get articles better noticed', sustains Goodman (2011: 39).

We can see then that both question and attention-bidding titles are not only rare, but also characteristic

of today's CR titles, and we can thus suggest that today's CR titles exhibit a greater stylistic variety than their mid-nineteenth and mid-twentieth century counterparts.

4.6. Authorship and collaboration practices

The institutional affiliations of nine out of 60 (15%) CR authors in the mid-nineteenth century were not identified, probably because it was 'obvious' that they worked at a British institution, the *BMJ* being a British journal. This practice had totally disappeared by the mid-twentieth century, where all authors' institutional affiliations were mentioned in the CR bylines.

Our findings also revealed that the total number of authors recorded in today's CRs was much greater than that recorded in either Blocks A or B; i.e. it has been increasing over time. There was indeed no collaboration whatsoever in Blocks A and B, where an overwhelming majority of the CRs were single-authored. Today, in spite of the fact that the *BMJ* guidelines for authors set a limit to the number of CR authors (a maximum of four), over 10% of the CRs making up Block C more than double that limit. We recorded one CR written by nine authors, and another written by ten authors!

The growth in scientific collaboration – also called 'hyper-authorship' (Cronin 2002: 560) – across disciplines, institutions, sectors and national borders has been extensively documented (e.g. Cronin 2005, 2012), and numerous diachronic studies of different disciplines, fields and sub-fields have revealed a striking growth in the average number of co-authors per paper (Laband and Tollison 2000; Cronin *et al.* 2003). This phenomenon, referred to by Cronin (2012: 22) as a 'chorus of authorial voices of Malherian proportion', has been related to the growing specialization of science in general. In the particular case of medical case reporting, multiple perspectives on different aspects of a clinical CR illustrate the value of team work among a diverse group of specialists over a particularly difficult or complex case presentation. To appropriate Castells' phrase that refers to scholarly *research articles* (Castells 2000, cited in Cronin 2005: 18): 'Scientific research in our time is either global or ceases to be scientific', although collaboration and the notion of the 'lone author' have been found to be very much discipline-related (Cronin 2005, 2012). Our findings thus show that Castells' phrase does not apply to *research articles* only, but also to CRs.

Finally, it is interesting to observe that *local* collaboration characterizes today's CR-writing more than national and international collaboration. This clearly corroborates the results of recent research findings showing that physical location seems to influence to an appreciable extent those with whom one will work; as Sugimoto and Cronin (2012) note: 'Gender and geography continue to be influential in shaping the contours of a scholar's career in the digital age'. However, this does not mean that today's medical CR writers collaborate exclusively with researchers from their own institution or at the same geographical location. We may speculate as to the extent to which Sugimoto and Cronin's research conclusion would be corroborated in biomedical *research* and *review articles*, and further research should be conducted along those lines.

5. Conclusions

In the last three decades there has been a growing acknowledgement of the primary role of titles in scientific *research articles* in determining whether a text is considered to deserve further reading. Our research on another scientific genre, the medical CR, has shown that CR titles have evolved over the 160-year period studied here: they have increased in length, syntactic complexity, semantic richness and title-type diversity. Authorship patterns and collaboration practices – from the lone scholar of the mid-nineteenth century to today's multi-authored CRs – have changed too. Although internationalization of case reporting has increased over time, today's preferred practice is still *local* collaboration.

The following factors could account for the various shifts observed: (1) the progressive professionalization and specialization of medicine; (2) the need for multidisciplinary teams for conducting ever-increasingly complex research; (3) the rise of statistical methods and technologies; and (4) the growing complexity of medical science itself. This epistemic shift towards a more 'scientific' medicine reflects a larger evolutionary dynamic, the movement from a relatively non-professionalized, privately-based medicine to one which is highly professionalized and public (*cf.* Atkinson 1992). All this has been conducive to changes in medical case report titling.

The only variable that has remained constant over the years is the nominal nature of case report titles. In that sense, CR titles distinguish themselves from *research article* titles. The non-verbal (non-assertive) nature of CR titles can be ascribed to the fact that CR authors cannot generalize their findings to the whole population, precisely because their cases are based on single (or just a few) patients, which precludes them from making strong claims for their results and from presenting definite assertions.

It is speculative whether CR titles will change in the future. under the influence of titles in other medical genres. Richard Smith (2000: 915) suggests that practitioners want 'take home messages', and he adds: 'The trend is undoubtedly for journals to become more like newspapers and for newspapers to become more tabloid. It's about readability and trying to grab people's attention in an ever more crowded world'.

Acknowledgement

This paper forms part of wider research that is supported by Grant M-976-09-06A from the Scientific, Technological, Humanistic and Artistic Research Center (CDCHT) from the University of The Andes, Mérida, Venezuela.

Note

1. According to Maurice Hélin (cited in Nobert 1983: 380), etymologically, the title is a label (*titulus*) that is appended to the extremity of a stick (*umbilicus*) upon which was wrapped the papyrus that contained the text. That label allowed one to know, from the very start, the name of the work's author without having to unfold the papyrus.

References

Alley, M. (1996) *The Craft of Scientific Writing*. New York: Springer Verlag. http://dx.doi.org/10.1007/978-1-4757-2482-0

Anthony, L. (2001) Characteristic features of research article titles in computer science. *IEEE Transactions of Professional Communication* 44 (3): 187–194. http://dx.doi.org/10.1109/47.946464

Atkinson, D. (1992) The evolution of medical research writing from 1735 to 1985: The case of *The Edinburgh Medical Journal*. *Applied Linguistics* 13: 337–374. http://dx.doi.org/10.1093/applin/13.4.337

Berkenkotter, C. (2008) *Patient Tales: Case Histories and the Use of Narrative in Psychiatry*. Columbia: University of South Carolina Press.

Berkenkotter, C. and Huckin, T. (1995) *Genre Knowledge in Disciplinary Communication*. Hillsdale, NJ: Lawrence Erlbaum.

Biacchi, A. (2003) Relation complexity of titles and texts: A semiotic taxonomy. In L. Merlini Barbaresi (ed.) *Complexity in Language and Text*, 319–341. Pisa: PLUS.

Busch-Lauer, I. (2000) Titles in English and German research papers in medicine and linguistics. In A. Trosborg (ed.) *Analysing Professional Genres*, 77–97. Amsterdam: John Benjamins.

Buxton, A. B. and Meadows, A. J. (1977) The variation in the information content of titles of research papers with time and discipline. *Journal of Documentation* 33 (1): 46–52. http://dx.doi.org/10.1108/eb026633

Carey, J. C. (2010) The importance of case reports in advancing scientific knowledge of rare diseases. *Advanced Experimental Medical Biology* 686: 77–86. http://dx.doi.org/10.1007/978-90-481-9485-8_5

Castells, M. (2000) *The Rise of the Network Society*. Oxford: Blackwell.

Cohen, H. (2006) How to write a case report. *American Journal of Health-System Pharmacy* 63: 1888–1892. http://dx.doi.org/10.2146/ajhp060182

Cronin, B. (2002) Hyper-authorship: A postmodern perversion or evidence of a structural shift in scholarly communication practices? *Journal of the American Society for Information Science and Technology* 52 (7): 558–569. http://dx.doi.org/10.1002/asi.1097

Cronin, B. (2005) *The Hand of Science: Academic Writing and Its Rewards*. Lanham, MD: Scarecrow Press.

Cronin, B. (2012) Collaboration in art and in science: Approaches to attribution, authorship and acknowledgment. *Information and Culture* 47 (1): 18–37. http://dx.doi.org/10.1353/lac.2012.0005

Cronin, B., Shaw, D. and La Barre, K. (2003) A cast of thousands: Co-authorship and sub-authorship collaboration in the twentieth century as manifested in the scholarly literature of psychology and philosophy. *Journal of the American Society for Science and Technology* 54 (9): 855–871. http://dx.doi.org/10.1002/asi.10278

Day, R. A. (1995) *How to Write and Publish a Scientific Paper*. Cambridge: Cambridge University Press.

DeBakey, L. and DeBakey, S. (1983) The case report: Guidelines for preparation. *International Journal of Cardiology* 4: 357–364. http://dx.doi.org/10.1016/0167-5273(83)90097-9

Dietz, G. (2001) The pragmatics of scientific titles formulated as questions. *Metalinguistica* 9: 19–35.

Dillon, J. T. (1982) In pursuit of the colon: A century of scholarly progress: 1880–1980. *Journal of Higher Education* 53 (1): 93–99. http://dx.doi.org/10.2307/1981541

Fischer, B. A. and Zigmond, M. J. (2004) *Components of a Research Article* [http://www2.yk.psu.edu/sites/bee11/files/2011/03/Components-of-a-Research-Article.pdf]

Friedell, M. T. (1973) The case report. *International Surgery* 58: 225.

Gawrylewski, A. (2007) Case reports: essential or irrelevant? *The Scientist*. [http://classic.the-scientist.com/news/display/53192]

Goodman, N. W. (2000) Survey of active verbs in the titles of clinical trials reports. *British Medical Journal* 320: 914–915. http://dx.doi.org/10.1136/bmj.320.7239.914

Goodman, N. W. (2010) Novel tool constitutes a paradigm: How title words in medical journal articles have changed since 1970. *The Write Stuff* 19 (4): 269–271.

Goodman, N. W. (2011) Fashion in medicine and language: Inferences from titles and abstracts of articles listed in PubMed. *The Write Stuff* 20 (1): 39–42.

Goodman, R. A., Thacker, S. B. and Siegel, P. Z. (2001) What's in a title? A descriptive study of article titles in peer reviewed medical journals. *Science Editor* 24 (3): 75–78.

Gotti, M. (2001) The rise of the experimental essay. In F. Mayer (ed.) *Language for Specific Purposes: Perspectives for the New Millennium Volume 2: LSP in Academic Discourse and in the Fields of Law, Business and Medicine*, 459–466. Tübingen: Gunter Narr Verlag.

Gunnarsson, B. L. (1998) Academic discourse in changing context frames: The construction and development of a genre. In P. Evangelisti Allori (ed.) *Academic Discourse in Europe: Thought Processes and Linguistic Realisation*, 19–43. Rome: Bulzone Editore.

Haggan, M. (2004) Research paper titles in literature, linguistics and science: Dimensions of attraction. *Journal of Pragmatics* 36: 293–317. http://dx.doi.org/10.1016/S0378-2166(03)00090-0

Hartley, J. (2005) To attract or to inform: What are titles for? *Journal of Technical Writing and Communication* 35 (2): 203–213. http://dx.doi.org/10.2190/NV6E-FN3N-7NGN-TWQT

Hartley, J. (2007) Planning that title: Practices and preferences for titles with colons in academic articles. *Library and Information Science Research* 29: 553–568. http://dx.doi.org/10.1016/j.lisr.2007.05.002

Hartley, J. (2008) *Academic Writing and Publishing: A Practical Handbook*. Abingdon: Routledge.

Haynes, R. B., McKibbon, K. A., Walker, C. J., Fitzgerald, N. and Ramsden, M. F. (1990) Online access to MEDLINE in clinical settings. *Annals of Internal Medicine* 112: 78–84. http://dx.doi.org/10.7326/0003-4819-112-1-78

Hunter, K. M. (1991) *Doctors' Stories: The Narrative Structure of Medical Knowledge*. Princeton: Princeton University Press.

Huth, E. J. (1999) *Writing and Publishing in Medicine*. Baltimore: Williams and Wilkins.

Jaime-Sisó, M. (2009) Titles or headlines? Anticipating conclusions in biomedical research article titles as a persuasive journalistic strategy to attract busy readers. *Miscelánea: A Journal of English and American Studies* 39: 29–54.

Jamjoom, A. A. B.; Nikkar-Esfahani, A. and Fitzgerald, J. E. F. (2009) Writing a medical case report. *Student BMJ* 17: 5274.

Laband, D. N. and Tollison, R. D. (2000) Intellectual collaboration. *Journal of Political Economy* 108 (3): 632–662. http://dx.doi.org/10.1086/262132

Lewinson, G. and Hartley, J. (2005) What's in a title? Number of words and the presence of colons. *Scientometrics* 63 (2): 341–356. http://dx.doi.org/10.1007/s11192-005-0216-0

Maisonneuve, H., Lorette, G., Maruani, A. and Huguier, M. (2010) *La rédaction médicale*. Paris: Doin editeurs.

McCarthy, L. H. and Reilly, K. E. H. (2000) How to write a case report. *Family Medicine* 32 (3): 190–195.

McGowan, J. and Tugwell, P. (2005) Informative titles described article content. *Journal of the Canadian Health Libraries Association* 26: 83–84. http://dx.doi.org/10.5596/c05-029

Morgan, P. P. (1985) Why case reports? *Canadian Medical Association Journal* 133: 353.

Morris, B. A. (1989) The importance of case reports. *Canadian Medical Association Journal* 141: 875–876.

Mungra, P. and Canziani, T. (2013) Lexicographic studies in medicine: Academic word list for clinical case histories. *Ibérica* 25: 39–62.

Murawska, M. (2010) Impersonality in medical case reports. In R. Lorés-Sanz, P. Mur-Dueñas and E. Lafuente-Millán (eds) *Constructing Interpersonality: Multiple Perspectives on Written Academic Genres*, 311–325. Newcastle: Cambridge Scholars Press.

Nobert, M. (1983) Le titre comme séduction dans le roman Harlequin: une lecture sociosémiotique. *Études littéraires* 16 (3): 379–398.

O'Connor, M. (1991) *Writing Successfully in Science*. London: HarperCollins. http://dx.doi.org/10.4324/9780203478684

Pascal, R. R. (1985) Case reports – desideratum or rubbish? *Human Pathology* 16: 759. http://dx.doi.org/10.1016/S0046-8177(85)80244-6

Patsopoulos, N. A., Analatos, A. and Ioannidis, J. P. (2005) Relative citation impact of various study designs in the health sciences. *Journal of the American Medical Association* 293: 2362–2366. http://dx.doi.org/10.1001/jama.293.19.2362

Rose, J. C. and Corn, M. (1984) Dr. E. and other patients: New lessons from old case reports. *Journal of the History of Medicine and Allied Sciences* 39: 3–32. http://dx.doi.org/10.1093/jhmas/39.1.3

Rosner, J. (1990) Reflections on science as a product. *Nature* 345: 108. http://dx.doi.org/10.1038/345108a0

Roy, M. (2008) Du titre littéraire et de ses effets de lecture. *Protée* 36 (3): 47. http://dx.doi.org/10.7202/019633ar

Salager-Meyer, F. (1984) Compound nominal phrases in scientific technical writings: Proportion and rationale. In A. K. Pugh and J. M. Ulijn (eds) *Reading in a Foreign Language: Studies in Native and Foreign Languages*, 136–146. London: Heinemann.

Salager-Meyer, F. (2012) The importance of medical case reports. *European Science Editing* 38 (2): 38–42.

Simpson, R. J. and Griggs, T. R. (1985) Case reports and medical progress. *Perspectives in Biology and Medicine* 28: 402–406.

Smith, R. (2000) Informative titles in the *BMJ*. *British Medical Journal* 320: 915.

Smith, R. (2008) Why do we need *Cases Journal*? *Cases Journal* 1 (1) [http://www.casesjournal.com/content/1/1/1].

Soler, V. (2007) Writing titles in science: An exploratory study. *English for Specific Purposes* 26 (1): 90–102. http://dx.doi.org/10.1016/j.esp.2006.08.001

Soler, V. (2009) Títulos científicos en lengua española: Estudio exploratorio. *Lebende sprachen* 2: 50–58.

Soler, V. (2011) Comparative and contrastive observations on scientific titles in written English and Spanish. *English for Specific Purposes* 30 (2): 124–137. http://dx.doi.org/10.1016/j.esp.2010.09.002

Sugimoto, C. R. and Cronin, B. (2012) Bio-bibliometric profiling: An examination of multi-faceted approaches to scholarship. *Journal of the American Society for Information Science and Technology* 63 (3): 450–468. http://dx.doi.org/10.1002/asi.21695

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

Swales, J. and Feak, C. B. (1994) *Academic Writing for Graduate Students: A Course for Nonnative Speakers of English.* Ann Arbor: The University of Michigan Press.

Taavitsainen, I. and Pahta, P. (2000) Conventions of professional writing: The medical case report in a historical perspective. *Journal of English Linguistics* 28 (1): 60–76. http://dx.doi.org/10.1177/00754240022004875

Tomaszewski, C. (2006) The power of the case report. *Journal of Medical Toxicology* 2: 139–140. http://dx.doi.org/10.1007/BF03161180

Van der Wall, E. E. and Wilde, A. A. M. (2009) Case histories: Increasing role for major journals. *Netherlands Heart Journal* 17 (7/8): 272–273. http://dx.doi.org/10.1007/BF03086263

Vanderbroucke, J. P. (2001) In defense of case reports and case series. *Annals of Internal Medicine* 134: 330–334. http://dx.doi.org/10.7326/0003-4819-134-4-200102200-00017

Wang, Y. and Bai, Y. (2007) A corpus-based syntactic study of medical research article titles. *Syntax* 35 (3): 388–399.

Whissel, C. (1999) Linguistic complexity of abstracts and titles in highly cited journals. *Perceptual and Motor Skills* 88: 76–86. http://dx.doi.org/10.2466/pms.1999.88.1.76

White, A. and Hernández, N. R. (1991) Increasing field complexity revealed through article title analysis. *Journal of the American Society of Information Science* 42 (10): 731–734. http://dx.doi.org/10.1002/(SICI)1097-4571(199112)42:10<731::AID-ASI6>3.0.CO;2-W

Yadav, H. (2006) The philosophy of the medical case. *Student BMJ* 14: 133–176.

Yakhontova, T. (2002) Titles of conference presentation abstracts: A cross-cultural perspective, in E. Ventola, C. Shalom and S. Thompson (eds) *The Language of Conferencing*, 277–300. Frankfurt: Peter Lang.

Zeiger, M. (2000) *Essentials of Writing Biomedical Research Papers*. New York: McGraw-Hill. Second Edition.

Françoise Salager-Meyer was educated at the University of Lyons, France, and at the University of Texas at Austin. She is the author of numerous publications on written medical discourse, mostly from a diachronic, cross-linguistic and cross-generic perspective. In 1994 and 2004, she was awarded the Horowitz Prize for her works on the pragmatics of written scholarly communication. She was the editor of the 'Language and Medicine' section of the second edition of the *Encyclopedia of Language and Linguistics* (Elsevier, 2006), and for the past ten years she has coordinated the Multilingual and Multidisciplinary Research Group on Scientific Discourse Analysis (Graduate School of Medicine, University of the Andes, Venezuela). Address for correspondence: Universidad de Los Andes, Apartado postal 715, Mérida, 5101, Venezuela. Email: francoise.sm@gmail.com

María Ángeles Alcaraz Ariza received her PhD in Linguistics from the University of Alicante (Spain), where she is currently working as a tenured lecturer. Her research interests include the influence of English on medical Spanish and the discourse analysis of medical prose written in English, French and Spanish from a diachronic, cross-linguistic and cultural standpoint. Address for correspondence: Universidad de Alicante, Facultad de Filosofía y Letras, Departamento de Filología Inglesa, Campus de San Vicente del Raspeig, Ap. 99, E-03080, Alicante, Spain. Email: ariza@ua.es

Marianela Luzardo Briceño obtained her PhD in Statistics from the University of the Andes (Mérida, Venezuela), where she teaches statistics both at the undergraduate and the graduate levels. She is currently on sabbatical leave at the Universidad Pontificia Bolivariana (Bucaramanga, Colombia). Address for correspondence: Universidad Pontificia Bolivariana-Seccional, Bucaramanga, Colombia Universidad de Los Andes, Mérida, Venezuela. Email: nela@ula.ve