

Textual and language flaws: problems for Spanish doctors in producing abstracts in English

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Abstract

Scientific journals are the primary source of information for researchers. The number of articles currently indexed in databases is so large that it has become almost impossible to read every relevant article in a particular field. Thus, research paper abstracts (RPAs) have acquired increasing importance. Several studies have shown that they are the skipping point, particularly among non-native English speakers. To our knowledge, little research has been carried out on RPA writing by Spanish doctors. It is thus the objective of this article to analyse the way abstracts are structured and linguistically realized by these professionals. We selected 30 RPAs written in English by Spanish speaking doctors from three leading Spanish journals on internal medicine. We recorded their textual level flaws by measuring the degree of informativeness with regard to three main variables: move patterning, ordering and structuring, and their language use flaws under two broad categories: ortho-typographic and grammatical. Length, use of hedges and keywords were also identified. 86.6% of the abstracts were informative, 13.3% uninformative while none of them could be classified as highly informative. With regard to the authors' use of language, over 70% presented some kind of flaws: 21.55% of these mistakes were ortho-typographic while 78.44% were grammatical. Our results support the need of designing specific units geared on the one hand towards explicit teaching of structured abstracts and on the other, towards the difficulties found by doctors because they lack language competence. They would also benefit from clearer guidelines from journal editors.

Key-words: applied linguistics, discourse analysis, Language for Specific Purposes (LSP), English for Medical Purposes (EMP), abstract writing

Resumen

La redacción del abstract por médicos españoles: deficiencias estructurales y lingüísticas

Las revistas científicas son la fuente fundamental de información para los investigadores. El elevado número de artículos de investigación contenidos en las bases de datos hace

prácticamente imposible leer todos los que puedan resultar relevantes, de ahí que los resúmenes hayan adquirido mayor importancia. Sin embargo, varios trabajos han demostrado que particularmente los hablantes de inglés como segunda lengua suelen redactarlos de forma poco satisfactoria. Hay aún escasas publicaciones sobre cómo los científicos españoles lo hacen. El objetivo de este artículo es analizar la organización del contenido y el uso del inglés en dichos resúmenes. Seleccionamos 30 de éstos escritos en inglés por médicos españoles en tres importantes revistas nacionales sobre medicina interna. Por un lado, registramos su contenido informativo mediante la valoración de tres variables: inclusión de los apartados establecidos, orden de los mismos y estructura de la redacción y, por otro, clasificamos los errores en el uso de la lengua en dos grupos generales: orto-tipográficos y gramaticales. También se identificaron la extensión y utilización de moduladores del discurso y de palabras clave. El 86.6% de los resúmenes eran +informativos y el 13.3% -informativos; ninguno fue clasificado como muy informativo. Alrededor del 70% de los resúmenes analizados contenían algún error lingüístico, con una distribución por tipos muy diferente (21.55% orto-tipográficos y 78.44% gramaticales). De nuestros resultados se desprende la necesidad de diseñar cursos de redacción de resúmenes haciendo hincapié en su estructura y en la manera de paliar la escasa competencia lingüística de los autores. Asimismo, normas de estilo más claras contribuirían a resultados mejores.

Palabras clave: lingüística aplicada, análisis del discurso, lenguas para fines específicos, inglés médico, redacción de resúmenes

1. Introduction

Progress in science is based largely on the transfer of data which takes place through scientific and technical journals. These are the preferred source of information among medical researchers and practitioners all over the world, and this is where they keep abreast of the work being done in their areas of specialism (Webber, 1994). Particularly for clinicians they constitute the principal source of new knowledge (Ad Hoc Working Group for Critical Appraisal of the Medical Literature, 1987; from now on, Ad Hoc Group).

Richard Smith, former editor of *The British Medical Journal*, depicts a dark future for medical publishing and states that its major problem is information overload (Polderman, 2000). According to Gretton (2000), the number of journals indexed in *Index Medicus*, the greatest database in the medical field, was 3,900 in 1999. Medline, its on line version, lists over 10 million items of medical literature (Cooter, 1998). Because of this information explosion, it is nowadays becoming almost impossible for researchers and professionals to read every relevant article in a particular specialist field. Abstracts which convey the maximum of useful information in the minimum

of words are acquiring increasing importance in the current electronic era of information retrieval (Salager-Meyer, 1990; Posteguillo, 1999; Huckin, 2001; Palmer, 2001; Chan & Foo, 2004).

Research paper abstracts (RPAs) did not receive great attention until the 1990s (Swales, 1990; Bhatia, 1993). Numerous studies have been conducted since then and have focused mainly either on their rhetorical structure and function (Gibson, 1993; Kaplan et al., 1994; Santos, 1996) or on abstract writing (Cremmins, 1982; Gartland, 1993; Posteguillo, 1996; Palmer, 2001). Particularly in recent years, they have also been studied from a cross-linguistic and cultural perspective (Johns, 1992; Ventola, 1994; Melander et al., 1997; Martín Martín, 2003) and across disciplines (Hyland, 2000; Samraj, 2002) or from both a cross-cultural and disciplinary point of view (Melander et al. 1997).

A number of papers in academic journals have been devoted to abstracts from one discipline, medicine (Nwogu, 1990; Salager-Meyer, 1990, 1991a, 1991b, 1992; Anderson & Maclean, 1997; Huckin, 2001; López-Arroyo, 2001; Méndez-Cendón & López-Arroyo, 2003). They have also appeared in the medical literature (Ad Hoc Group, 1987; Lock, 1988; Hartley, 1997, 1998; Hartley & Garnier, 2000; McIntosh et al., 1999; Kirkman, 2001b). These works have aimed at identifying language conventions and rhetorical organization of medical abstracts in English.

English is at present well-established as the world language of research and publication for the academic community (Flowerdew, 2002a; Fløttum & Breivega, 2002; Hyland, 2002). It is also the predominant one in the medical field (Maher, 1992; Gartland, 1993; Duszak, 1997a). Several articles on needs analysis of Spanish health science professionals (Piqué & Estévez, 1991; Ostbye, 1997; Cumbreño Espada & Rico García, 2001) have shown the need of a good command of English to compete with their international colleagues. It should be borne in mind that the main criterion for inclusion in Medline is the scientific merit of a journal, and the same holds true for journals written in languages other than English: “other things being equal, additional consideration is given to the availability of adequate English-language abstracts which extend accessibility of the journal’s content” (Cooter, 1998: 39). Moreover, “[...] fully descriptive [...] English language article titles, abstracts and keywords” are some of the requirements of the selection process of journals by the Institute for Scientific Information (ISI) in Philadelphia that compiles the Science Citation Index based on the rating of impact factors (Cooter, 1998: 38). Unfortunately, both native and in particular non-native English speakers (NNES hereafter) fail to pay enough attention to the abstracts they write in English, and thus, many abstracts are uninformative, lack the systematic structure that facilitates the accurate searching of appropriate information or present other flaws (Salager-Meyer 1990).

Academic discourse written in English by NNES has been a matter of concern since the early 1990s (Ventola & Mauranen, 1991; Ventola, 1994; Mauranen, 1996; Connor, 1996; Kaplan, 1996). Nevertheless, the difficulty faced by Spanish researchers who attempt to write in English in a non-English speaking country, has been neglected by experts (Estévez & Piqué, 1997; Chan & Foo, 2004). To our knowledge, few studies, apart from that of St. John (1987) have addressed this issue and no genre-based study has been found in the literature on the writing of RPAs by Spanish professionals. It is, thus, the purpose of the present research to analyze the way abstracts written in English by Spanish-speaking doctors are structured and linguistically realized with the aim of identifying their main structural and linguistic flaws.

In the medical field, an abstract has been defined as “the window of work available for easy evaluation” (McKintosh, 1997: 3). It should fulfill three major aims: improve literature searching, inform researchers and facilitate peer review (Ad Hoc Group, 1987). There are two main types of abstracts: indicative abstracts describe the content of the article in detail, and informative ones summarize the objective(s), methods and results in a concise way (Van Loon, 2003).

The above mentioned Ad Hoc Group (1987) published “A Proposal for More Informative Abstracts of Clinical Articles” (i.e. with direct clinical implications), where it recommended authors to write their RPAs in such a way that key aspects of Purpose, Method and Results were explicitly marked. Salager-Meyer (1990) states that structured abstracts should also be required in other types of research (epidemiological, basic and operative). The recommended guidelines also implied changes in the format of abstracts: the traditional single paragraph model was replaced by a structured form with sub-headings as seen in medical journals of greater impact (e.g. *The British Medical Journal*, *Annals of Internal Medicine*, *The New England Journal of Medicine*). The proposed pattern for highly structured RPAs includes the following headings: Objective, Design, Setting, Patients or Other Participants, Intervention(s), Measurements and Main Results and Conclusions. There seems to have been very few problems with regard to the structured model suggested by the Ad Hoc Group and discrepancies appear to have been minor (Heller, 1991).

In line with a number of studies on abstracts published in prestigious medical journals in the 80s, more recent research has shown that structured abstracts with headings are clearer and easier to read than traditional ones (Narine et al., 1991; Salager-Meyer, 1990, 1991a; Hartley, 1997, 1998). They are also more informative (Rennie & Glass, 1991; McIntosh, 1997; Burrough-Boenisch, 1998; McIntosh et al., 1999). This is particularly important if we bear in mind the influence that abstracts alone, especially those of research papers reporting new investigations and clinical

experience, have in the clinical decision-making process. Hartley & Garnier (2000: 7) list the three reasons why readers prefer structured abstracts: “the sequence of information is the same in all abstracts, no key information is omitted, and the spatial display of the abstract makes the content easier to grasp.”

2. Corpus and Method

Three leading Spanish journals on internal medicine were selected with the help of a specialist informant from our Institution: *Anales de Medicina Interna* (hereafter *An Med Interna*), *Medicina Clínica* (*Med Clin*) and *Revista Clínica Española* (*Rev Clin Esp*). The corpus for the present study was made up of 30 randomly chosen RPAs, written in English by Spanish-speaking scientists (hereafter SSSs) and published between 1999 and 2000. There were ten RPAs representing each of the mentioned periodicals, and they all totaled 5,441 running words (see Appendix 1).

Since differences in move pattern related to the four main research types are minor (Salager-Meyer 1990), they have not been taken into consideration. We thoroughly analyzed each abstract and recorded their textual and linguistic flaws. In order to facilitate the recording of the textual flaws, we used a textual level classification form (see Appendix 2). To decrease the subjectivity factor, each one of us analyzed a sample of ten abstracts and compared the results obtained. The inter-rater reliability was .85.

1. *Textual level flaws* were identified by measuring the degree of informativeness with regard to three main variables of textual organization: move patterning, ordering and structuring. This classification closely resembles that of Salager-Meyer (1990) in her genre-based analysis on medical English abstracts:

1.1. *Move patterning*: defined by the number of moves in each abstract. Abstracts can then be:

- *Fully patterned*: if they consider the eight-move model (Objective, Design, Setting, Patients, Interventions, Measurements, Results and Conclusions),
- *Semi-patterned*: if they follow the traditional three or four-move scheme (Purpose, Method, Results and Conclusion), or
- *Non-patterned*: if they do not follow any of the above mentioned models.

1.2. *Move ordering*: defined by the chronological presentation of the research process in the abstract. Abstracts can then be:

- *Totally organized*: if they present all the moves following a chronological order,

- *Partially organized*: if only some of the moves are presented in an organized, chronological fashion, or
- *Disorganized*: if the moves included are disordered.

1.3. *Move structuring*: defined by three (two formal, one functional) different criteria:

- the use of explicitly marked headings,
- the physical paragraph division,
- the univocal move-content correspondence or its absence, also called conceptual overlapping (Salager-Meyer, 1990).

Abstracts can then be:

- *Wholly structured*: if headings are explicitly marked, if all the paragraphs are formally separated and if there is a complete correspondence between moves and their proper content,
- *Semi-structured*: if only some of the above conditions are fulfilled , or
- *Unstructured*: if none of the above conditions are fulfilled.
- Accordingly, every abstract was classified with regard to its degree of informativeness (see Appendix 3), as:
- *Highly informative*, where A, which corresponds to one of the following: ‘fully patterned’, ‘totally organized’, or ‘wholly structured’, is the prevailing category.
- *Informative*: where B, which corresponds to ‘semi-patterned’, ‘partially organized’, or ‘semi-structured’, is the prevailing category.
- *Uninformative*: where C, which corresponds to ‘non-patterned’, ‘disorganized’, or ‘unstructured’, is the prevailing category.

2. *Language use flaws* were identified and classified under the following two broad types:

2.1. *Ortho-typographic*: mostly typing or spelling mistakes, inconsistent or inadequate use of capitalization or symbols, etc.

2.2. *Grammatical*: deviations from standard rules of English grammar.

2.2.1. *Morphological*: inaccurate use, overuse or omission of different morphological categories (word classes, number, person, voice, etc.).

2.2.2. *Lexical*: inappropriate use of lexical items (unsuitable terms in given contexts or instances of Spanish borrowings).

2.2.3. *Syntactic*: non-standard constructions (incorrect or incomplete sentence or phrase structure, wrong word order, subject-verb disagreement, Spanish transfers, etc.).

2.2.4. *Rhetorico-pragmatic*: basically the lack of hedging devices and inadequate use of certain coherence and cohesion devices, the use of abbreviations without being fully explained, etc.

3. Results and Discussion

In terms of their degree of informativeness, the study of the 30 abstracts shows noticeable variations. To begin with, none of the abstracts could be classified as highly informative, 86.6% were informative and only 13.3% were uninformative.

Table 1 displays the distribution of abstracts in relation to move patterning:

JOURNALS	NON-PATTERNED	SEMI-PATTERNED	FULLY PATTERNED
<i>An Med Interna</i>	40	60	-
<i>Med Clin</i>	-	100	-
<i>Rev Clin Esp</i>	-	100	-
TOTAL	13.3	86.6	-

Table 1. Abstract Move Patterning in percentages.

As shown in Table 1, most of the authors, 86.6%, used the traditional three or four-move pattern (Purpose, Method, Results and Conclusions), while only 13.3% did not follow this structure. None of the abstracts in the corpus adopted the eight-move model suggested by the Ad Hoc Group (1987).

Data on move ordering can be seen in Table 2, which shows variations in the distribution of abstracts according to this variable. Up to 13.3% were classified as disorganized, 26.6% as partially organized, while 60% were totally organized abstracts, i.e. presenting all fundamental moves in a logical order:

JOURNALS	DISORGANIZED	PARTIALLY ORGANIZED	TOTALLY ORGANIZED
<i>An Med Interna</i>	40	40	20
<i>Med Clin</i>	-	20	80
<i>Rev Clin Esp</i>	-	20	80
TOTAL	13.3	26.6	60

Table 2. Abstract Move Ordering in percentages.

Our results regarding move ordering are consistent with those of St. John (1987), which show that Spanish scientists are aware of information arrangement and know how to construct each section of the article and abstract. Also salient were the differences in the structuring of the abstracts: 70% semi-structured, 30% unstructured and none wholly structured. This is shown in Table 3:

JOURNALS	UNSTRUCTURED	SEMI-STRUCTURED	WHOLLY STRUCTURED
<i>An Med Interna</i>	70	30	-
<i>Med Clin</i>	-	100	-
<i>Rev Clin Esp</i>	20	80	-
TOTAL	30	70	-

Table 3. Abstract Move Structuring in percentages.

Three different factors of move structuring were studied in the 30 abstracts, viz., use of explicitly marked headings, formal paragraph division and move-content correspondence. See Table 3a:

JOURNALS	EXPLICITLY MARKED HEADINGS			FORMAL PARAGRAPH DIVISION		UNIVOCAL MOVE-CONTENT CORRESPONDENCE	
	YES	NO		YES	NO	YES	NO
		FULLY CAPITALIZED			BLOCK PARAGRAPH		
<i>An Med Interna</i>	20	100	80	-	100	30	70
<i>Med Clin</i>	100	90	-	-	100	10	90
<i>Rev Clin Esp</i>	70	28.6	30	-	100	30	70
TOTAL	31.5	68.4	36.6	-	100	23.3	76.6
	63.3						

Table 3a. Abstract Move Structuring (detailed data in percentages).

Firstly, we did not find a predominant use of explicitly marked headings (63.3%). This seems to indicate that SSSs are not yet fully aware of the importance of this textual device for enhancing the readability of their abstracts. Secondly, all the abstracts in the corpus were written in block paragraph, i.e. in a single chunk of prose. Thirdly, we observed a number of instances of conceptual overlapping among two or more moves (76.6% compared to 23.3% of the abstracts without overlapping). These figures lead us to claim that physical division among paragraphs and correspondence between moves and their proper content are essential prerequisites for writing wholly structured abstracts. These are quite frequently overlooked.

Omission of moves has often been cited as one of the most salient handicaps in low quality abstracts (Salager-Meyer 1990). In this respect it should be considered that the proportion of abstracts lacking two or more fundamental moves (20%) compared with those including all of them (50%) is low. This suggests that the main faults of SSSs when writing their abstracts in English do not lie in the omission of some fundamental moves but in their incorrect use of paragraph division and conceptual overlapping among the moves. See Table 4:

JOURNALS	ALL FUNDAMENTAL MOVES MENTIONED	ONE FUNDAMENTAL MOVE MISSING	2 OR MORE FUNDAMENTAL MOVES MISSING
<i>An Med Interna</i>	10	30	60
<i>Med Clin</i>	90	10	-
<i>Rev Clin Esp</i>	50	50	-
TOTAL	50	30	20

Table 4. Abstract Including/lacking Fundamental Moves (in percentages) (Objective, Method, Results and Conclusions).

The length of the abstracts in the corpus (mean: 181.3 words) ranged from 49 to 322 running words. Up to 36.6% of them were below average and only 13.3% outnumbered the 150-250 word-limit suggested by the 3 journals in which the abstracts were published, whereas 50% followed the suggested length. See Table 5:

DEFICIENT (less than 150)	EXCESSIVE (more than 250)	JOURNALS	RANGE	AVERAGE
70%	-	<i>An Med Interna</i>	49 240	125.9
20%	10%	<i>Med Clin</i>	114 263	197.5
20%	30%	<i>Rev Clin Esp</i>	83 322	220.7
36.6%	13.3%	TOTAL DEFICIENT/EXCESSIVE/ AVERAGE LENGTH	49 322	181.3

Table 5. Abstract Length (no. of running words).

In relation to the recommended guidelines for authors, the use of what is called point (i.e. a very concise style) rather than narrative form should be noted. In the 30 abstracts studied, only 36.6% followed such a recommendation, whereas 63.3 % used the traditional narrative style, but this difference was not prominent. Thus, we cannot conclude that this criterion has been disregarded by the authors. See Table 6:

JOURNALS	POINT FORM	NARRATIVE FORM
<i>An Med Interna</i>	10	90
<i>Med Clin</i>	50	50
<i>Rev Clin Esp</i>	50	50
TOTAL	36.6	63.3

Table 6. Use of Point / Narrative form (in percentages).

Finally, only 5 abstracts (16.6%) included key-words. Table 7 displays this information:

JOURNALS	PRESENCE OF KEYWORDS	ABSENCE OF KEYWORDS
<i>An Med Interna</i>	-	100
<i>Med Clin</i>	-	100
<i>Rev Clin Esp</i>	50	50
TOTAL	16.6	83.3

Table 7. Use of Keywords (in percentages).

After carefully reading the abstracts, we identified numerous flaws in the authors’ use of language. Up to 70% of the abstracts in the corpus presented some kind of ortho-typographic flaws, with a total number of 36 instances. These mistakes account for 21.55% of what we called language use flaws, which play an important part in the overall quality of the abstract. Meanwhile, 73.3% of the abstracts showed 131 instances of grammatical errors, either morphological, lexical, syntactic or rhetorical (78.44% of the total number in the category of language use flaws). See Table 8 (simplified):

ABSTRACTS / FLAWS	ORTHO-TYPOGRAPHIC	GRAMMATICAL
NUMBER IF ABSTRACTS (n = 30)	21 (70%)	22 (73.33%)
NUMBER OF INSTANCES (n = 167)	36 (21.55)	131 (78.44%)

Table 8. Language use flaws (simplified).

If we compare the proportion of ortho-typographic errors with that of grammatical ones, we find a clear-cut difference in the distribution of all language use flaws. See Table 9:

		PERCENTAGE OF ABSTRACTS	PERCENTAGE OF INSTANCES
A. ORTHO-TYPOGRAPHIC		70%	21.55%
1.	Punctuation mistakes	38.09%	47.22%
2.	Typing mistakes	33.33%	19.44%
3.	Inconsistent use of capital letters	9.52%	19.44%
4.	Wrong spelling	9.52%	5.55%
5.	Omission of capital letters	4.76%	5.55%
6.	Inconsistent use of numbers / letters	4.76%	2.77%
B. GRAMMATICAL		73.33%	78.44%
B.1. MORPHOLOGICAL			
8.	Omission of definite article	40.90%	10.68%
9.	Wrong preposition	40.90%	7.63%
10.	Overuse of definite article	36.36%	8.39%
11.	Wrong use of number	31.81%	5.34%
12.	Wrong use of verbal tense	18.18%	5.34%
13.	Omission of possessive article	13.63%	2.29%
14.	Wrong use of verbal person	9.09%	3.05%
15.	Wrong linking word	9.09%	1.52%
16.	Omission of preposition	9.09%	1.52%
17.	Wrong determiner	4.54%	0.76%
18.	Wrong demonstrative article	4.54%	0.76%
19.	Wrong pronoun	4.54%	0.76%
20.	Wrong use of verbal voice	4.54%	0.76%
21.	Omission of conjunction	4.54%	0.76%
22.	Omission of indefinite article	4.54%	0.76%
23.	Omission of Saxon genitive	4.54%	0.76%
24.	Overuse of preposition	4.54%	0.76%
25.	Use of adverb instead of adjective	4.54%	0.76%
26.	Use of adverb instead of negative particle	4.54%	0.76%
27.	Use of noun instead of adjective	4.54%	0.76%
B.2. LEXICAL			
28.	Wrong use of term	31.81%	8.39%
29.	Spanish borrowing	13.63%	4.58%
30.	Omission of term	4.54%	0.76%
B.3. SYNTACTIC			
31.	Non-standard construction	59.09%	16.03%
32.	Wrong word-order	13.63%	2.29%
33.	Spanish transfer	9.09%	1.52%
34.	Adverb misplacement	4.54%	0.76%
35.	Subject omission	4.54%	0.76%
B.4. RHETORICO-PRAGMATIC			
36.	Absence of name in full before abbreviation	36.36%	12.21%
37.	Absence of tense concordance	9.09%	1.52%
		ABSTRACTS USING SOME KIND OF HEDGE	INSTANCES OF HEDGING (verbs)
38.	Scarce use of hedging devices	13.3%	-

• See the most frequent ones highlighted.

Table 9. Language use flaws.

These findings are in agreement with those of St. John (1987) that most of the mistakes she detected were morphological, syntactic and lexical.

Also worth mentioning is the scarce use of hedging devices. Only 4 abstracts (13.3%) in the whole corpus used some kind of hedge. This indicates that SSSs still lack the necessary socio-pragmatic competence regarding their use.

4. Conclusions

The results of our study lead us to believe that, despite the visible progress accomplished over the last two decades, according to our experience, at least with regard to the

production of abstracts, writing academic prose still presents serious problems for SSSs. We can then conclude that in a medical English abstract writing course emphasis should be made on teaching the move patterns, and the use of headings –explicitly marked–, paragraphing and move content information, particularly for papers reporting clinical trials (Ad Hoc Group, 1987; *The Chicago Manual of Style*, 1982; International Committee of Medical Journal Editors, 1988; *Science Editors' Handbook* [Maisonneuve et al., 2003]). On the other hand, writing in point form is also to be stressed (Salager-Meyer, 1990). More importance should also be given to the inclusion of adequate key-words and their synonyms (Stephen, 1987), indispensable tools in the searching and matching of information. For their selection authors would need a thorough knowledge of the semantic web or the thesaurus of the discipline (Keng & Foo, 2004).

Regarding orthographic, typing and grammar mistakes, the results in this study support our assumption about the need of dealing with these sources of error, whose neglect may considerably downgrade the linguistic quality of the abstract. Hedging should also be a priority in the teaching of medical writing. The omission of these devices may yield both a text sounding too arrogant to the ever-competing scientific community and the authors' findings appearing as facts (Salager-Meyer, 1998). Spanish scientists need also to be encouraged to lessen the use of Latinate words.

Several authors have pointed to different ways to improve the present state of affairs. For instance, *Instructions for Authors* could be improved by developing a standard set of basic rules easy to follow and comply (Shashok, 1997). In this respect, Kirkman (2001b) warns about the available guidelines for many journals, because they often give differing advices, thereby confusing prospective authors and university teachers. With regard to text organization, although structured abstracts (by definition) are to be written in several paragraphs, only a few guidelines to authors, 18% out of the 500 selected at random by Kirkman (2001b) from English language journals in the medical and life sciences refer to this recommendation. On the other hand, just only half of the journals offer advice on content or style for the abstracts. Kirkman (2001a) also suggests that instructions should at least direct writers attention to sound authoritative manuals on accurate and readable scientific English writing, such as the American Medical Association's *Manual of Style* (1998), the Council of Biology Editors' *Style Manual* (1994), or Hall's *How to Write a Paper* (1998), to name only three of the books mentioned by Kirkman, that far from imposing straight jackets on writers give general advices and clear indications of the style of writing editors would like authors to follow. Apart from these reference books and style manuals that can be provided for self-instruction, there are computer- assisted learning programs based on exercises, grammar, vocabulary and style with interactive features which

may enable researchers to practice on their own as the one designed by Ann Van Rooijen from Rotterdam (Meleros, 2000).

As previously stated, we should endeavor to improve scientific communication among NNES researchers by favoring the existence of training both in undergraduate curricula and postgraduate courses, on how to write scientific English. Editors, as well, should make greater efforts to guide prospective authors towards writing accurately and readably and, with regard to abstracts, specify the criteria they will use in judging them (Kirkman, 2001b). It also seems important to stress that the more abstracts can convey exact and concise information about what the author did, how it was done, and what was found and concluded, the more they will meet the “well-defined and mutually-understood communicative purpose” that they are conventionally meant to have as a recognized (academic) genre, regardless the discipline they serve (Bhatia, 1993: 77). In the light of our findings, we believe that a better patterning, ordering and structuring -apart from a careful linguistic realization- of abstracts would enhance clarity, and surely have a positive impact on their readability and degree of informativeness. Nevertheless it would be necessary to carry out similar analyses in larger corpora, and across different medical specialties, in order to corroborate further the results of this study. Only then, could they be considered representative of the production of RPAs by Spanish doctors.

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Over the last twenty years, **Lourdes Divasson Cilveti** (Ph.D., assistant professor) and more recently **Isabel K. León Pérez** (Ph.D., lecturer in English) have been teaching Medical English to undergraduates and postgraduates at the Faculty of Medicine (University of La Laguna, Tenerife, Spain). Their research interests are in the field of applied linguistics and both have published some works on professional discourse analysis and ESP teaching.

Appendix 1

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Appendix 2

TEXTUAL LEVEL CLASSIFICATION FORM		
ABSTRACT TITLE / NUMBER:		DEGREE OF INFORMATIVENESS description (HIGHLY INFORMATIVE, INFORMATIVE or UNINFORMATIVE):
JOURNAL:		
1. MOVE PATTERNING description: _____		
1A. FULLY PATTERNED 1 2 3 4 5 6 7 8 _ _ _ _ _ 	1B. SEMI-PATTERNED 1 2 3 4 _ _ _ _ 	1C. NON-PATTERNED _ _
2. MOVE ORDERING description: _____		
2A. TOTALLY ORGANIZED (All moves ordered) 	2B. PARTIALLY ORGANIZED (Some moves ordered) 	2C. DISORGANIZED (All moves disordered)
MOVE STRUCTURING description: _____		
3A. WHOLLY STRUCTURED (All answers are YES)	3B. SEMI-STRUCTURED (Some answers are YES/NO)	3C. UNSTRUCTURED (All answers are NO)
I. USE OF EXPLICITLY MARKED HEADINGS I (a). YES I (b). NO	II. FORMAL PARAGRAPH DIVISION II (a). YES II (b). NO	III. UNIVOCAL MOVE - CONTENT CORRESPONDENCE III (a). YES (Always) III (b). NO (Sometimes, Never)
POINT / NARRATIVE FORM (moves affected):	KEYWORDS: YES / NO	RUNNING WORDS:

Appendix 3

DEGREE OF INFORMATIVENESS CLASSIFICATION (according to the range of possible variable combinations in MOVE PATTERNING, MOVE ORDERING and MOVE STRUCTURING)	
CATEGORIES	VARIABLE COMBINATIONS
HIGHLY INFORMATIVE	3 A (A+A+A) 2 A + 1B (A+A+B)* 2 A + 1C (A+A+C)*
INFORMATIVE	2 B + 1A (B+B+A)* 3 B (B+B+B) 2 B + 1C (B+B+C)*
UNINFORMATIVE	2 C + 1A (C+C+A)* 2 C + 1B (C+C+B)* 3 C (C+C+C)

*For this purpose, combinations in variable order are all valid (e.g. A+A+B is equivalent to A+B+A and to B+A+A).

- 'A' stands either for FULLY PATTERNED, TOTALLY ORGANIZED or WHOLLY STRUCTURED.
- 'B' stands either for SEMI-PATTERNED, PARTIALLY ORGANIZED or SEMI-STRUCTURED.
- 'C' stands either for NON-PATTERNED, DISORGANIZED or UNSTRUCTURED.