Abstracts: problems classified from the user perspective

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Received 3 March 2005
Revised 20 April 2005

Abstract.

Background: most of the recent research into abstracts conducted by the information science (IS) community has had little practical implication in terms of improvement and quality. A possible explanation of this is the lack of connection with the real problems that the poor quality of abstracts may pose in the ‘real’ context of researchers accessing information.

Purpose: the types of problem abstracts may pose for potential users have been studied, and then classified and compared with current IS research into the quality of abstracts.

Method: 62 interviews were held with researchers from six European universities to ascertain the opinions of potential users. These participants commented on a set of database abstracts in the areas of Education and Agriculture.

Results: the participants pointed out different types of problem which were classified under the following headings: terminology, over-condensation, lack and excess of information, expectations and coherence, structure, register and layout.

Conclusion: the problems described were at variance with those commonly dealt with in the literature on the subject, thus suggesting new areas of research.

Keywords: abstract quality; abstract comprehensibility; terminology; agriculture databases; education databases; user evaluation

1. Introduction

Recent research into the quality of abstracts conducted in the area of information science (IS) can be classified into two major groupings. Firstly, there are theoretical approaches to quality, which describe all the desirable properties of an abstract, as well as the elements that come into play when its suitability in a given context has to be established [1, 2]. Secondly, a considerable amount of effort has been made to assess readability and comprehensibility, using both readability formulae, like the Flesch Reading Ease Score, the Gunning Fog Index, or the Flesh-Kincaid Grade Level [3, 4], and some expert-focused [5] and user-focused approaches [6–9]. The readability formulae are based on formal criteria, such as the number of syllables per word and sentence length, as a result of which their suitability for effectively measuring text difficulty has been repeatedly questioned since the 1970s [10, 11], not to mention that, on certain occasions, the results obtained following their application to abstracts have been contradictory [4]. Possibly due to the scant significance of the results attainable using readability formulae, and as a continuation of the research carried out to assess the readability of abstracts, there has been a shift to clarity as perceived by readers [12] and an increase in the use of combined measures [5].

When users have participated, their intervention has often been to confirm a previous hypothesis, such as: ‘Structured abstracts are more/less readable/
comprehensible than traditional ones’, or ‘Users prefer the structured/the traditional format’, and so on. However, user intervention has rarely implied the understanding of possible information problems. A considerable exception has been Tibbo’s research work [13]. She asked users to describe how they search for information and, in general, to explain their information needs. These data, together with bibliometric measures, allowed her to define important content elements for abstracts in the field of history. Unfortunately, Tibbo’s experience has neither been repeated nor corroborated by further research in other scientific domains. In general, whatever approach may have been used, the latest IS research into different aspects of abstracts has not had significant practical repercussions in terms of quality and improvement.

Effective advances can only be talked about in terms of the structured type of abstract, i.e. that whose content is presented under several headings (normally, from three to eight). With the exception of the work carried out by Hartley [12, 14–17, among the most recent], the bulk of research leading to a significant improvement of structured abstracts has been conducted in medicine, and unfortunately not in IS. Structured abstracts were first introduced in 1987 by an international medical journals committee, the Ad Hoc Working Group on Critical Appraisal of the Medical Literature [18], and have been gaining the approval of a growing sector of medical publications all over the world. Since its introduction, the supposed improvement brought about by the structured format has been questioned [19, 20], thus fuelling the need for clear evidence. Consequently, several studies have been carried out into this type of abstract in order to test different quality parameters, such as their informativeness and completeness [21–23], or their accuracy [24, 25]. No categorical conclusions have been drawn on the advantages of the structured format; however, the increasing number of medical journals that have chosen to follow the guidelines of the Ad Hoc Working Group on Critical Appraisal of the Medical Literature is evidence that this format represents an improvement [12, 14, 26]. Most studies referred to have been performed by researchers involved in the publication of medical journals, well aware, as editors and publishers, of their own problems and of those of their users. Therefore, their research has always settled on real and practical needs. Since the first appearance of the structured abstract, all studies have preliminarily set forth the problems to be resolved and the correlative objectives to be attained. The same cannot be said about research in IS. In other words, research in our field has rarely been based on the real needs of those involved in the writing and reading of such abstracts, particularly including: authors, editors, peer reviewers and users. Neither has it been motivated by any practical urgency. In our opinion, the abstraction of a significant part of research in IS explains why it has had little influence on the quality of abstracts.

If we accept the premise that much of the latest IS research into abstracts has had scant implications in terms of improvement due to its lack of grounding, then a reasonable approach would be to take into account the problems an abstract can pose in a real-world information situation. In these terms, awareness of the type of problems abstracts may pose is to be considered the first step to effectively improving them. Abstracts may be problematic in several different ways, depending on the perspective or the stage of the documentary chain one chooses; for instance, the difficulties a professional abstractor may find writing an abstract will be different from those of an author, and both the abstractor and the author will have different needs from a user. Of all the possible angles, we decided to focus on the potential user’s point of view and, on a practical level, we carried out a series of interviews, whose purpose was to find out as many problems as possible that abstracts may cause to potential users.

With the defined purpose, we randomly selected a set of 60 traditional non-structured abstracts from six different internet bibliographic databases (10 each), disseminated in three different languages (English, Italian and Spanish), and specialized in two different areas: education for the humanities (BIBL, ERIC, ISOC de Educación) and agriculture for the natural sciences (AGRICOLA, BAE, SIDA). Considering the explorative nature of the research, we decided to diversify as far as possible the characteristics of the abstracts studied, in terms of their language and culture, for each discipline. Education and agriculture databases were chosen because they were the only two fields that offered freely accessible and free of charge databases on the internet in the three languages familiar to the authors of this paper.

Database abstracts were chosen instead of journal abstracts for two main reasons. Firstly, when an abstract is distributed via a database, its role as an information retrieval tool is even more important than in a journal, since it becomes a searchable field. Secondly, in this context it may be separated from its original document: with no immediate access to the original document, more emphasis is placed on the quality of abstracts in terms of clarity and precision.

In only two of these databases (ERIC and BIBL) have
the abstracts been written by their own abstractors; the
others use the authors’ abstracts when they are avail-
able.

2. Methodology

It occurred to us that an effective way of defining a wide
range of problems was simply to ask potential users
what they think of the abstracts, what they would
change about them and how they would change them.
After all, it is widely recognized that the elusive concept
of abstract quality can be judged by the satisfaction of its
intended users [1, 27, p. 117]. Consequently, a potential
audience was defined, either by following the indica-
tions in each database’s associated web page, or by
deducing it from other relevant contents available. In
general, both agriculture and education databases
address highly specialized domestic audiences in the
respective fields: university students, PhD students,
researchers, university professors, while the education
databases also address primary and secondary school
teachers. We assumed that the American databases
would be accessed by a much wider audience than their
European equivalents, considering the leading role of
the United States in research.

The ‘plus and minus’ technique was chosen for the
interviews. With this technique, the users read the text
on their own, marking it with pluses or minuses in the
margin each time they identify a positive or negative
point in the text; next, they explain the reasons for their
evaluations to the interviewer [28]. Users are allowed
to highlight any aspects of the abstracts, whilst the
researcher’s interventions are reduced to a minimum.
Since they are based on the text, the evaluations can be
grouped together according to the textual data they rely
on, and analysed with a certain degree of consistency.

The interviews were conducted in six European uni-
versities: the Vrije Universiteit and the Wageningen
Universiteit in the Netherlands; the Università degli
Studi di Firenze and the Università degli Studi di Pisa
in Italy; the Universidad Complutense de Madrid and
the Universidad Politécnica de Madrid in Spain. Par-
ticipants from the Dutch universities were interviewed
on the set of abstracts in English, participants from the
Italian universities on those in Italian, and participants
from the Spanish universities on those in Spanish. In
total, 62 interviews were given, between 30 September
2003 and 5 March 2004. A pilot interview was held to
explore possible reactions of users, the capability of the
interviewer to follow and encourage the conversation
while taking notes on the comments, and the time each
interview could take. Tables 1 and 2 contain details of
the sample of users interviewed.

The 60 abstracts were each printed on a single sheet,
with no title or bibliographic references; however, as

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<td>Number and type of participants per group</td>
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<sup>a</sup> The category ‘researchers’ has been introduced for a group of Italian participants, who accomplish effective teaching tasks, even if
administratively they are considered as ‘ricercatore’ (researcher). A Dutch participant is also in this category.

<sup>b</sup> The pilot interview is part of this group. Data achieved in this first interview were not excluded.
we explain later, users were allowed to see the bibliographic references when it came to choosing from among the abstracts available, or whenever they asked for them or, in particular, for the title. Specific aspects related to the graphical appearance of the abstracts were excluded, since this would have meant conducting the interview in front of a computer screen. As a matter of fact, each database publishes its abstracts in different ways; the type and the dimension of fonts, the length of lines, or the position of the abstract in the record, for example, are always different, and it cannot be ruled out that these factors influence user perception [29, pp. 506–17]. However, for the practical reason cited, we decided not to take them into consideration.

The majority of potential users were contacted directly at their universities through administrative staff, personnel managers or department directors, who helped us to find those more likely to be interested in the abstract topics. In other cases, interviewees were contacted by e-mail or by simply calling on them directly. The interviewees were left to choose their abstract either on the basis of a separate list of bibliographic references, which included the name(s) of the author(s), the title, and the volume and issue of the journal, or by flicking through the abstract sheets. The assumption was that the greater the interest a user demonstrated for an abstract, the greater the probability that (s)he would find it in a real search. As a consequence, some people refused to give the interview, since they did not consider themselves qualified enough in any topic dealt with in the abstracts. For the same reason, some abstracts were commented on by two or rarely more interviewees, while others were not evaluated at all. The interviews lasted between 10 and 40 min, depending on individual attitudes, the time available and the language in which the interviews were conducted (users from Dutch universities never spoke their native language and, accordingly, tended to be briefer).

The data obtained were diverse and, mostly, of a problematic nature – i.e. the negative evaluations outweighed in number the positive (approximately 204 vs. 144). Negative evaluations were first classified using a typology of detectable problems defined by De Jong and Schellens for all manner of texts [30]. The types of problems defined by De Jong and Schellens (comprehension, acceptance, appreciation, structure, relevance, completeness, graphic design, and correctness) were further adapted to the specific problems described in relation to the abstracts. In addition to this first classification, positive evaluations were also classified, their main role being to corroborate certain results classifiable as negative evaluations. As a matter of fact, positive evaluations were not as diverse in nature or as specific as the negative; they can be summarized as appreciations for the information given, as acknowledgements of the importance of certain scientific topics or as interest in certain other topics.

3. Results

As we mentioned, after all the problems were systematized, we elaborated them further so that those aspects considered of major significance for the purpose of the research were highlighted. Accordingly, problems are described under the following titles: (1) terminology-related problems; (2) over-condensation; (3) lack and excess of information; (4) expectations and coherence; (5) structure; (6) register; and (7) layout. As a general remark, it must be said that significant differences could be appreciated between the two scientific communities, which are indeed greater than other differences attributable to language or culture. When users judged the abstracts, they seemed to be guided more by the conventions of their discipline than by those of their language or culture. Such differences are set forth in the remainder of the article.

3.1. Terminology-related problems

The problems posed by terminology were numerous and arose when the terminology employed in the abstracts was considered to be:
(1) inaccurate and imprecise
(2) non-comprehensible or difficult
(3) ambiguous
(4) questionable

3.1.1. Inaccurate and imprecise terminology. Many terms in the abstracts have vague general definitions
and are not specific enough to be considered scientific. When agriculture interviewees made this type of remark, at the same time they were revealing an interest in knowing more about the ‘quality’ and the ‘quantity’ of the concepts alluded to. In those cases in which there was a want of a qualitative nature, it may have been the case that some terms referred to entities that were too general: *prodotti ortofrutticoli* (‘fruit and vegetable products’), for instance, is general, because it puts together two concepts, vegetables and fruits, whose origin, handling, time and temperature of preservation are different. In another case, *las propiedades físicas, químicas y biológicas del lycopeno* (‘the physical, chemical and biological properties of lycopene’) are mentioned, but no more details of the properties studied, which could be several, are provided. In other circumstances, terms are considered vague because they are not quantitatively specified in the context. According to the interviewees, adjectives like *vários* in *vários trabalhos* (‘several works’) should be replaced with an exact number, and nouns like *miscela* (‘mixture’) should be followed by the precise composition of the mixture referred to, etc.

Among the interviewees of the education group, the impact of these problems is less significant and mainly of a qualitative nature. A special case of this problem typology is related to the use of inverted commas: two users claimed that it was not clear in which sense some terms in inverted commas should be understood, and that they lacked further explanations. As can be observed in the example, these terms do not present any technical difficulty for the reader, but the meaning that the author wants to give them is not clear from the abstract:

Preliminary themes were the perception of a “policy void” in regard to literacy and numeracy skills; professional development’s tie to workplace practice and understanding of and compliance with reporting mechanisms; and problems when literacy and numeracy are collapsed as one. The project called “Women at Play” explored whether teaching women to write dramatic monologue helps them develop multiliteracies and cope with life transitions. Women developed confidence and skills to develop monologues and literacy skills through collaborative criticism of each other’s work. In the project called “Curricular Practices of Adult Community Education, Language, Literacy, and Numeracy Providers in South Australia,” community-based literacy practitioners investigated ways they make decisions about their practice to examine the “hidden” curriculum of their programs. […]

(Example 1. Emphases added.)

### 3.1.2. Non-comprehensible/difficult terminology.

Expert as well as less experienced users, mostly from the agriculture groups, sometimes found terminology not easy to comprehend. The occurrence of this problem was mostly related to abstracts either involving a discussion of an interdisciplinary topic, or performing an in-depth analysis of a single topic. In the first case, the interdisciplinary approach entails a terminology not wholly familiar to the user, since it comes from another (other) discipline(s). In an agriculture abstract, for instance, agricultural issues were dealt with in relation to political and electoral questions. The second type of difficulty is often related to the genre of the review, that is to say, it arises when the abstract summarizes a review article. When education interviewees observed a problem of comprehension, it was mostly due to the fact that they were reading in a foreign language (English) and were not familiar with the culture of the country alluded to. In the remaining cases, education users rarely complained about comprehensibility.

### 3.1.3. Ambiguous terminology.

In some Italian abstracts certain adjectives are used in such a way that it is impossible to ascertain whether their meaning is positive or negative, or whether they refer to one concept or another. In *nebulosa creatività* (‘nebulous creativity’), for instance, users were unable to tell whether the author of the abstract had made a positive or a negative statement.

### 3.1.4. Questionable terminology.

This problem affects both education and agriculture abstracts, but in a different manner and with a higher incidence rate in the former.

Firstly, the use of certain adjectives was rejected by the users. Agriculture interviewees found some terms inappropriate in a scientific discourse, such as the adjectives *intimos* in *mecanismos intimos* (‘intimate mechanisms’) and *innata* in *innata desconfianza* (‘innate mistrust’). In education, this type of problem has a more subjective connotation, sometimes even ideological. For instance, in a Spanish abstract, references to schools of thought or abstract concepts, such as *cognitivo* (‘cognitive’) or *constructivismo* (‘constructivism’), were defined as being not only ideological but also inconsistent with the type of research carried out which, in that particular case, was a case study. Similarly, claims about the novelty of the reported research are criticized and disapproved of, both when they are explicit, as in the case of *una propuesta innovadora* (‘an innovating proposal’) and when they are implicit. Implicit suggestions of novelty are introduced, for
instance, by the use of the prefix re-, as in the case of reinterpretar (‘reinterpret’).

Secondly, certain users, both in the area of agriculture and that of education, found that the terminology conflicted with their previous knowledge of the world. In the phrase ‘time-neutral change’, for instance, the user could not understand how changes can take place without the passage of time; whilst, in the sentence existe un alto porcentaje de alumnado de esta tipología no detectado (‘there exists a high percentage of pupils of this kind not yet detected’), the interviewee could not accept the claim that something not yet detected might exist.

Lastly, certain members of the two Spanish groups deemed the language used unacceptable, since it was not scientifically mature or accurate – in general or in specific parts of the abstract.

3.2. Over-condensation

Certain users also complained about the fact that the information furnished in the abstracts was extremely condensed. In agriculture abstracts, such over-condensation takes place at a lexical level and is usually due to the presence of numerous technical terms in short fragments of text, as in the following example:

This paper presents a model for examining the economic value of biotechnological research given time-dependent changes in biotechnology. Previous papers examined this issue assuming a time-neutral change in biotechnology. However, when analyzing the genetic improvements of increasing a tree’s resistance to a pathogen, this assumption is untenable. We derive analytical expressions for the optimal rotation age given non-constant changes in biotechnology. Our model is then implemented using (1) growth and yield simulations, (2) optimal rotation calculations, and (3) survey data on genetic resistance of slash pine (Pinus elliottii) to fusiform rust. Non-parametric regression models are used to estimate the economic gain functions which, for the cases considered, averaged about 1% of forestland value per year.

(Example 2)

Conversely, in education abstracts over-condensation is of a syntactical nature and is sometimes related to the use of symbols such as parentheses or dashes. Syntactical over-condensation is often characterized by an excess of parataxis: sentences are tied together by the mere use of and or punctuation marks, but the logical connections among them remain implicit and must be supplied entirely by the reader. Since there is neither a clear structure nor a logical sentence order, users are made to feel that all the sentences have the same importance (see Example 1 above).

As mentioned earlier, symbols such as dashes and parentheses may increase the degree of condensation, especially when authors or abstractors use them to compress information, as in the following example:

Este artículo interpreta el avance de la educación indígena boliviana (1900–1950) a partir de la noción de que fueron las comunidades indígenas que impulsaron la rápida expansión de la educación indígena durante las primeras décadas del siglo XX, y de que hasta las reformas educativas que tuvieron lugar a partir del año 1931 – la fundación de la famosa ‘escuela-ayllu’ de Warisata – se puede considerar la educación indígena como asunto netamente indígena, en el cual el estado central juega un papel muy superficial y limitado. Además, este artículo interpreta el papel de dicha escuela-ayllu de Warisata dentro de las reformas educativas de las décadas de los 1930 y 1940, sugiriendo que justamente esta ‘casa de los explotados’ fue el instrumento primordial a través del cual el estado central supo reintegrar las diferentes escuelas indígenas que hasta entonces existían en un estado de casi completa independencia del mismo estado.

(Example 3. Emphases added.)

The over-condensation of information culminates in a lack of clarity in all the cases described. The problem arose frequently in abstracts originating from the ERIC database, whilst, in agriculture, it occurred with abstracts originating from the AGRICOLA database, and significantly with an abstract translated from English into Spanish – in this case, from the BAE database. This seems to support the idea that the over-condensation of information may be greater in the American abstracts, or, at least, in those written in English.

3.3. Lack or excess of information

Users demonstrated that they had clear expectations regarding the basic contents of the abstract. On the basis of such expectations, they criticized certain abstracts, either since they lacked data considered important or, conversely, since they included information considered to be unimportant. The lack and the excess of information tended to arise together, highlighting that both represent the two sides of the same coin, namely the absence of a general information balance. In other words, users appeared to be unsatisfied with the way information was selected from the original document. In general, there were more complaints regarding a lack of information than an excess, since users could always skip redundant or uninteresting passages. Such a lack of balance in the information supplied was detected in all types of abstracts, with no
differences being detected between abstracts written by professional abstractors and author abstracts.

On several occasion, users observed that certain data they expected to encounter, on the purpose, the methodology, the results, or the conclusions of the research, were missing or incomplete. For example, in certain cases, the information on the purpose and the topic of the research was considered insufficient, because it only described a problem without setting forth a purpose to accomplish, or because it did not focus on a single aspect. In other circumstances, the user could not find any reference to the method applied, etc. Such a lack of information can jeopardize a true comprehension of the text, especially when the type of research carried out is neither specified nor deductible. When the type of research is known, on the other hand, users can draw on their previous knowledge to fill possible gaps.

The users’ complaints about the lack of such content elements were confirmed by their appreciation of the presence, clarity, or exhaustivity of the same content elements in other abstracts. In a word, the two groups manifested general content expectations and, without underestimating the importance of any piece of information, they still expressed clear preferences. The three agriculture groups all showed a great concern for, or an interest in, the results section, whilst the members of the three education groups seemed more concerned with, or interested in, a statement of the objective and, occasionally, in the definition of the object of the research, as well as in the conclusions reached by the author. Both scientific communities insisted on the importance of the methodology, which they often found had been explained in too superficial a manner. All the same, they mentioned different aspects, in accordance with the methodological conventions of their disciplines.

Users claimed the importance of certain other content elements distinctive of their disciplines. Agriculture users stated that they needed exact data and figures in relation to: (a) economic, commercial and productive aspects; (b) physical magnitudes, such as temperature; and (c) statistical data referred to in the abstracts. In certain cases, for instance, results were judged scarcely reliable because of the absence of any numerical data. Agriculture users also felt the need for accurate botanical references and for a full explanation of the abbreviations used in the abstract. On the other hand, education users expressed their wish that the abstractor or the author give them some motivation for reading the original document and, in general, they found that the abstract lacked sufficient arguments and ideas.

Irrelevant or unnecessary passages were considered in different and, on occasions, subjective terms. When the abstract commenced with a long introduction containing commonplace background information, users either showed annoyance and boredom, or an unenthusiastic appreciation of its role in justifying and/or contextualizing the research. On other occasions, excess information impaired the users’ ability to judge which data were important. These users tended to consider the latter case to be a graver offence because it did not allow them to distinguish between relevant and irrelevant information. This second problem was related to the over-condensation of information due to an excess of parataxis, as discussed earlier.

3.4. Expectations and coherence

Interviews with potential users highlighted that whenever they started to read or to scan an abstract their reactions were guided by expectations. Certain of these arose even before the user began to read the abstract and, in this study, they were triggered by the title, the author’s name, the journal’s reputation and individual past experience. The interviewee who commented on the abstract below, for example, complained that its introductory sentences did not provide the motive she expected for undertaking the research, and that they were not consistent with the title (‘Privatization of agricultural extension in New Zealand: implications for the environment and sustainable agriculture’) that she had previously read:

Government intervention has been an integral part of agricultural policy in most industrialized countries throughout the last half of the twentieth century. Unfortunately, many of the agricultural problems (e.g., market-instability, low returns on capital, falling farm incomes, farm failures) that government interventions were intended to correct are still problems today. The combined effects of these policy failures of the past and the General Agreement on Tariffs and Trade (GATT) are stimulating countries around the world to begin dismantling their agricultural intervention programs. Movement toward more market economies also frequently includes eliminating or reducing governmental educational and incentive programs including those designed to encourage the adoption of sustainable environmental practices by farmers. Our objectives, therefore, . . . (Example 4)

It cannot be excluded that the range of factors creating expectations may be wider if a global approach is adopted and extended to the entire context for which the abstract is intended.

On the other hand, further expectations may arise
after the user has begun to read the abstract. In the case of our research work, such expectations related to the terminology employed and the topics alluded to; in other words, they were mostly of a semantic nature. The phrase ‘significant differences’, for instance, led one user to expect its exact numerical value expressed with ‘<p’

Certain terms were judged highly ‘promising’ in a scientific context, but were not accurately determined in a way that would enable their relevance to be assessed: the term prototipo (‘prototype’), for example, provided a glimpse of important findings, but it was then left undetermined and generic. Similarly, education users were sometimes unable to interpret the special meaning meant by the use of parentheses and inverted commas, because the context did not provide them with sufficient hints. (These problems can be considered the same as the ones commented on under ‘Inaccurate and imprecise terminology’, except for the fact that in this case users spoke of terms that fell short of their expectations.) Lastly, if some initially mentioned topics were not correctly covered in the remainder of the abstract, the user’s expectation remained unsatisfied, evidencing a flaw in the global coherence of the abstract. In fact, whatever factor might create an expectation, any failure to satisfy it affects coherence, since the user lacks the elements (s)he considers necessary to build a comprehensive representation of the research, or ascertain the relevance of the research in its entirety or in part.

Lack of coherence was explicitly cited in relation to certain concepts, words, or phrases included in the final segments of the abstract. In these situations, users looked back seeking a referent or referents that could explain such concepts, words, or phrases, but they were then unable to find them. Usually this problem occurs at the end of the abstract, when something unexpected appears, and not even sound knowledge of the subject can help to decipher meaning. An example of this incoherence is common to three agriculture abstracts. In these abstracts, results or conclusions are dependent upon a numerical threshold or value that remains unexplained – i.e. the author does not justify such a numerical threshold, as in the following example:

A N management strategy is proposed whereby 40 to 50% of the N calculated for the yield goal is applied at planting and a fully fertilized reference strip is included for each variety or soil type.

(Example 5. Emphasis added.)

Since the reason why such a value has been chosen is not mentioned, users do not know how it has to be interpreted; as a consequence, they can neither make a final decision nor assess the relevance of the results/conclusions of the research.

In other cases, the absence of a previous referent causes certain of the terms used to seem meaningless. For example, with no indication of the place in which the research took place, vaguely referred to as nuestra región (‘our region’), it is impossible to know what ‘the appropriate sowing conditions’ (las condiciones apropiadas de siembra), or ‘the conventional sowing and farming systems’ (sistemas de labranza y siembra convencionales) may be.

3.5 Structure

Remarks about the structure were made both at a global level, when the abstract lacked a general framework, and at a local level, when some sequences of the abstract were considered to be in the wrong place. Comprehension was affected in the former case, whilst in the latter users expressed surprise and only momentary confusion.

3.5.1 At global level. When structural problems occur at a global level, users literally become lost, finding it difficult to grasp the central theme of the abstract. This phenomenon is often related to the problem, as commented earlier, of over-condensation due to the excess of paratactic connections. In some cases, users from both scientific communities complained about the omission of any references to the type of research the abstract was reporting. In their opinion, it would have been much easier to assign a meaning to each segment of information if they had been aware of the kind of research carried out by the author.

3.5.2 At local level. In other situations users noticed that a segment of the abstract was ‘improperly placed’, and that the author did not present the content of the research in the order they expected. The most frequent case was that they encountered information at the end of the abstract that they would have expected to read at the beginning (generally the objective or the purpose of the research). Shifting the objective or the purpose of the study to the middle or the end of the abstract often meant that users found all the previous information irrelevant. On other occasions, a topic, apparently already closed, is taken up again but out of context, weakening the logical connections between the initial and the final part of the abstract.
3.6. Register

Negative remarks, corroborated by positive appreciations, revealed that all users expected the abstract to conform to a certain register, like any other scientific genre. The users of education abstracts insisted, in particular, on the clarity and formality of the register; and the users of agriculture abstracts on its objectivity. When a demand for a clear and formal register was put forward, users criticized, for example, the absence of a grammatical subject at the beginning of the abstract, the repetition of the same word in the space of few lines, the improper use of punctuation, and generally a style which was overly colloquial. Lack of objectivity was claimed when scientific symbols were not properly used, when figures were omitted where they could and should have been supplied, and when verbs were used in the conditional mood and in the future tense. The future and the conditional, as in the examples below, seemed to leave many factors undetermined, giving the abstract a less assertive tone than the users expected:

En el presente estudio se revisarán las propiedades físicas, químicas y biológicas del licopeno. Además se hará una muy sintética revisión

(In the present study, the physical, chemical and biological properties of lycopene will be reviewed. In addition, a very brief review will be conducted)

Il lavoro potrebbe concludersi con la lettura di “Se una notte d’inverno un viaggiatore.”

(The work could be concluded with the reading of ‘Se una notte d’inverno un viaggiatore’)

(Example 6. Emphases added. All the translations are ours.)

3.7. Layout

It is significant that users made remarks on aspects of layout, even though we had excluded it from the scope of the research. Among other things, users requested that the logical units of the abstract were visually isolated through a full stop or a new paragraph, especially when they occurred in conjunction with structural problems at a general level, so that the typographic arrangement of the text might help them in their understanding. Another problem was pointed out in relation to the excessive use of bold cases, which proved to be a source of distraction during the reading process, as in the following example:

An instructor and her students used questions to plan, teach, and assess a lesson in a Family Literacy/General Educational Development (GED) program. The class identified that their families should lose weight and exercise more to have healthier hearts. They focused on the area of responsibility, called Promote Family Members’ Growth and Development on the Family Member Role Map and then chose the key activity called Make and Pursue Plans for Self-Improvement. Students brainstormed what they knew; generated, divided up, and researched questions about heart disease; incorporated all input into a class report; identified the Equipped for the Future (EFF) Standard called Plan as most helpful; discussed and created individual exercise plans; created charts to monitor exercise regimens and time spent exercising; and agreed they were using the EFF Common Activity called Manage Resources.

(Example 7. Emphases added.)

All these points indicate the importance of layout, especially for comprehensibility, converting it into an important research subject, as has already been pointed out by Hartley [6, 31] and Hartley and Sydes [32].

4. Discussion and conclusions

The results obtained from the interviewees about the abstracts which, in theory, are aimed at them as users, are interesting simply as specific examples of the types of problem users may encounter in their search for information. Similarly, they may be useful for abstractors who want to improve their work in tune with user needs. In fact, the prescriptions for writing abstracts, either when they are based on the guidelines for specific indexing and abstracting services [33], or when they are summarized in literature on the topic [27, 34–36], often lack an extensive exemplification, especially of what should be avoided, or may be difficult to be put into practice. The description of the problems identified by agriculture and education users may help to adjust the aim and improve the actual writing of abstracts, at least in these two fields. However, this study also permits certain conclusions to be drawn in terms of research trends.

Firstly, as regards the comprehensibility of abstracts, this research work demonstrates that this may depend upon several factors, namely, difficult/non-comprehensible terminology, lexical or syntactical over-condensation, lack or excess of information, as well as lack of coherence. None of these factors have been previously taken into account when abstract comprehensibility has been measured, at least not in the terms in which we have described them. When readability formulae [3, 4, 16, 37, 38] and other methods, such as the cloze test [6, 10] and other comprehension tests [7, 8], have been
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used to assess the comprehensibility of abstracts, only comprehensibility scores have been produced, but no reasons for poor scores have been provided. The aspects that cause an abstract to be poorly comprehensible or poorly readable have not been brought to light. This research suggests that an improvement in abstract comprehensibility may be achieved by working on the problems described in the previous paragraphs.

Specific studies on the terminology used in abstracts have focused mainly on its role in information retrieval, the major question being whether to use controlled vocabulary or the author’s own words [39–41]. This study has indicated that the range of problems posed by terminology is much wider, since it implies accuracy and precision, comprehensibility and acceptance – some users did not agree with the way certain terms were employed, not to mention that terminology appears to play an important role in awakening user expectations. All these problems were detected, supposedly, after the document had been retrieved, but it cannot be ruled out that they have a role in information retrieval. If users find certain terminology inadequate, it is highly unlikely that they will use it in a search question in natural language. It seems, therefore, necessary to devote more attention to terminology in future research.

To our knowledge, the quality of abstracts has never been linked to user expectations, at least in practical terms. In this study, users claimed that their expectations were created on the basis of:

1. other items in the bibliographic reference (title, author’s name, etc.);
2. their previous experience as researchers and as readers/writers of abstracts; and
3. the abstract itself, its content and the terminology used.

Other factors may develop user expectations; further research must discover such expectations and their related consequences in terms of information retrieval and selection.

Exhaustivity is cited with reasonable frequency in relation to abstracts, usually in theoretical terms, as a further desirable attribute of the genre [1]. This study suggests not only that exhaustivity is a desirable attribute of abstracts, but that it depends on the epistemological foundations of each discipline. In fact, agriculture and education users expressed different content requirements and clear preferences regarding different aspects of the abstract and the underlying research. This and the experience of the structured abstract in the field of medicine seem to demonstrate that an ideal single form of abstract for all disciplines may not exist, but that different scientific communities may require abstracts tailored to their special needs, especially in terms of content. In a previous study, Tibbo demonstrated how the recommendations of the international standards for writing abstracts can assist with writing abstracts for scientific disciplines but not for humanities [42].

Register, i.e. the style of language, the grammar and the words used for writing abstracts, also seems to be highly dependent on the way the members of the different scientific communities are accustomed to communicating with each other. In this study, agriculture users expressed their need for an objective register, and education users their concern for the formality and the clarity of register. So far, standards on abstract writing, such as ISO 214–1976 [43] and ANSI/NISO Z.39.14–1997 [44] and the literature have provided abstractors with a few loose recommendations regarding style. Such recommendations have never been considered as dependent on the general requirements in terms of register of each scientific community, nor have they been seen as devices through which certain communicative goals may be attained.

Finally, from a cultural perspective, mention should be made of the fact that a specific problem, that of excess information, seems to be a peculiarity of the abstracts originating from the American databases. It is necessary to understand whether such a richness of information can be explained solely by the traditional conflict between ‘abstracts for reading’ and ‘abstracts for searching’ [34, pp. 129–30] or whether it is an aspect potentially detrimental for information retrieval. In fact, highly condensed information in an abstract may increase the number of access points available for the system to retrieve it, but it could also have consequences in terms of low precision of the information retrieval process. One has to bear in mind, as well, that authors are required to write highly informative abstracts, on occasions, in a maximum of 150 words, which can explain why they tend to write such extremely condensed abstracts. ERIC abstractors are recommended to be even shorter, since for each journal article they can write an ‘annotation’ of no more than 50 words [33].

Acknowledgements

This research was financed with a grant from the Spanish Ministry of Education and Culture.
References

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