

Evaluative Clues in Academic English

Amelia Maria Cava

Faculty of Medicine, Università di Napoli 'Federico II'
Italy

Abstract

The centrality of evaluation has been investigated mainly in genre studies, pragmatics, discourse analysis, and text linguistics as, for example, in: Aijmer (2005), Mauranen (2004), Stubbs (2001), and Swales (2004). The present study focuses on *evaluation*, in particular *Research-Oriented Evaluation* as defined by Thetela (1997). The methodology is primarily a corpus-based approach. Data for the present investigation are drawn from a corpus of 1,035 research article abstracts (about 200,000 words) from two disciplines in two scientific international journals: *The International Journal of Primatology* (hereafter IJP) and *Mathematics and Computers in Simulation* (hereafter MCS). The present paper has attempted through a collocational analysis to investigate the linguistic resources of a precise type of evaluation which occurs with specific words, defined in this study as 'research process words'. Results of the present analysis support the hypothesis that evaluation is genre specific and embodies interactions between writers and readers, regardless of the discipline. Precise lexical choices and words appear to be more frequent than others. However, textual analysis and identification of evaluation pose serious problems to the methodological approach, especially with the application of computer-assisted analytic techniques in academic arguments.

Keywords: Corpus-based studies, Text analysis, Corpus Assisted discourse studies, Evaluation, Genre analysis.

Introduction

Evaluative lexis studies

The rhetorical phenomenon of evaluation has been defined in various ways, simply *Evaluation* (Hunston and Thompson 2000), *Appraisal* (Martin 2000), *Stance* (Biber and Finegan 1989, Hyland 1999) and *Interpersonal Metadiscourse* (Crismore 1989, Hyland 2000).

The present research paper aims at providing an account of evaluation in research article abstracts, following Hunston and Thompson terminology, combining corpus analysis with discourse analysis, trying to integrate a corpus-based research with a manual text analysis. It, therefore, includes quantitative calculations of the distribution of evaluation, and qualitative comments on their discourse functions.

The starting point for this study is a simple consideration about genre, that is, research article abstract is an evaluative genre per definition (cf. Bhatia 1993 and Swales 1990). As Mauranen (2004, p. 207) quoting Hyland suggests: “[...] evaluation is an interesting phenomenon, being a central aspect of what academics do. We do not get published if we only present results, we also have to evaluate”. Nevertheless, not all disciplines are evaluative in the same way; science is claimed to be objective and especially mathematics is the most objective subject according to Bazerman (1988). However, Hunston (1993, 1994) has demonstrated how experimental research papers are fully evaluative. She claims that academic and scientific writing work in the value system of ‘good research’, which means that even if the markers of attitudinal lexis (attributes such as *good* and *successful*) are missing, the writers’ attitudes to the value of their research are clear, the intent is to present something positive and successful to their discourse community.

In academic writing, particularly in science, knowledge claims are built; in such context the central function of evaluation is to assess the degree of certainty that can be attached to each part of the knowledge claims. Researchers as well as scientists are expected to convey their findings with an high degree of certainty. In experimental research article the phenomenon of evaluation, as suggested by Hunston, is quite predictable because only specific features (e.g. experimental method, the author’s results and conclusions) can be evaluated and only in a certain way in terms of goal achievement or non-achievement. Something that is *good* helps to achieve a goal, while something that is *bad* prevents the achievement of a precise goal. Generally, evaluation is triggered by a term but it does refer to another one. There is a distinction between the evaluated entity and the ascribed value that is, as suggested by Tethela (1997), between *Research-Oriented Evaluation* (ROE) and *Topic-Oriented Evaluation* (TOE). In detail, when we encounter the pattern: ‘X [the research] is seen [by the writer/s] as Y’ this is ROE. The difference between TOE and ROE can be sketched out as ‘the writer observing the world’ versus ‘the writer observing the research’. In the latter, the writer interacts with his/her discourse community by reporting his/her research or experiment. On the contrary, in the former the researcher observes the real world, and his/her point of view, even if evaluative, cannot affect the real world. This feature implies that ROE engages the writer and the reader on an exchange and negotiation of perspectives, while in TOE the writer reports the ‘real word’ without building up justifications or interpretations. This distinction can be noticed in the following two excerpts from the *International Journal of Primatology*:

1. I provide the first comprehensive data on the composition and mineral content. (5_IJP)
2. Adaptive advantages of killing plausibly include eliminating resource competitors of females, and sexual selection on males. (2_IJP).

In the former excerpt an aspect of the research process is evaluated, an example of ROE, while, in the latter the 'static' aspect (the topic) is evaluated, a clear example of TOE.

In the present investigation, the focus is on ROE rather than on TOE. Hunston, (1993, p. 58) defines evaluation "as anything which indicates the writer's attitude to the value of an entity in the text". This assessment does not refer to a 'personal' value system but rather to an established or institutional value system. In particular, in scientific writing what counts is the 'evaluation of *value*' which denotes quality on the *good/bad* scale (Hunston 1993, p. 60). "Research articles often posit hypotheses whose value is then evaluated according to whether the hypotheses are supported or not" (Hunston 1993, p. 63). The evaluation of *value* usually takes place through lexis expressing *accuracy, consistency, verity, simplicity, usefulness, reliability* or *importance*, which renders the other language items traditionally regarded as evaluative redundant. In scientific writing the expression of value is often inexplicit however we can perceive the *good* or *bad* as depending on the goal of the activity. As already mentioned, something that helps the researcher to achieve a goal is *good*, while something that prevents or hinders the achievement of a precise goal is *bad*.

In the present investigation, the focus is on evaluative lexis related to aspects of the research process and emphasis is on evaluation of value.

Corpus Linguistics studies

In the present investigation, corpus methodology is used to analyse the data, concordances and collocational tools are used to provide semantic profiles of specific words highlighting connotational differences, and textual analysis is used to identify how evaluation is introduced in the vicinity of specific words. Hence, the hypothesis to test is whether evaluated entities in research article abstracts collocate with precise terms or group of terms.

With regard to the methodology is concerned, the present study can be defined as a corpus-based study with the purposes of verifying some discourse characteristic of evaluation in a specific genre. Corpus Linguistics investigations, as Tognini-Bonelli (2001) suggests, can be performed according to a corpus-based or a corpus-driven approach. In a corpus-driven approach specific evidence is provided by the corpus itself, the methodological path can be described as 'observation leads to hypothesis leads to generalisation leads to unification in theoretical statement' (Tognini-Bonelli 2001, p. 85).

On the other hand, features of a corpus-based approach are concerned with the researcher testing a theory or having compiled corpora for the purposes of verifying some discourse characteristic in a body of data that allows quantitative generalizations to be made.

However, to conduct a significant corpus-based analysis of a discourse strategy, such as evaluation, it is necessary that the corpus takes into account not only frequent occurrences but the entire texts or longer stretches of texts, because evaluation shows 'context-dependent polysemous functionality' (cf. White 2001, p. 18). To perform a correct evaluative analysis, a wider context must consequently be included. The context in which words are inevitably attested, represents examples of a particular linguistic phenomenon and suggests discourse-linguistic perspectives.

Starting elements in the present analysis are words or as Sinclair (2004) suggests *lexical items*. It is not always possible to tell whether a lexical item is evaluated as 'positive' or 'negative' without going back to the original text. Thus collecting instances of the same word,

phrase or construction for the purposes of quantifying its frequency can cause a misinterpretation of the data and the risk of treating as equivalent instances lexical items that, in fact, have quite different and perhaps opposite evaluative values in different discourse contexts. For instance, in mathematics, the term *optimization* refers to the study of problems in which one seeks to minimize or maximize a real function by precise operations. There is no evaluative meaning implied. On the contrary, in a general context, *optimization* is semantically similar to *improvement*.

Thus, it is often necessary to refer to the text itself to see how the citations fit into the writer's wider rhetorical purposes (Hunston and Thompson 2000). Evaluation is not only a lexical phenomenon but it is built in the text and builds the text as a means of cohesion, it is a multifunctional phenomenon because it can be used simultaneously to express the writer's opinion, to construct relations between the writer and the reader, and to organize the text (Hunston and Thompson 2000 and Thompson and Ye 1991). Amongst several corpus-based investigations of evaluation, the analysis performed by Hunston (2004) appears to be particularly suitable for the present study. She has investigated evaluation in texts from two perspectives: the text and the corpus. She aims at exploring the possibilities and limits of corpus studies stressing that findings from lexically oriented studies of text cannot be readily processed automatically in a corpus analysis of language use. She starts from the main assumption concerning some explicit form of evaluation, derived from corpus-based dictionaries, grammars and books of information about particular corpora, and then she proceeds to the description and interpretation of corpus evidence. Her conclusion is that "reliable automatic identification and quantification can be carried out on only a limited set of realizations of evaluation" (Hunston 2004, p. 186). Methods that are common to corpus-based studies are the comparison of frequencies, and the analysis of the syntagmatic environment of key words. The basic software tool used to highlight typical collocational and syntactic patterns is the concordance programmes.

In the present investigation, the corpus-based approach is integrated with a discourse analysis perspective, however the qualitative methods of discourse analysis or textual analysis for investigating the rhetorical phenomenon of evaluation are obviously at odds with the quantitative methodology of Corpus Linguistics, which is best suited to describing the collocational and syntactic patterns of a given lexical item. If corpus methods are to be employed in textual study, first it is necessary to decide which aspects of the discourse analysis approach can be best served by corpus analysis, and secondly to find a point or points of entry into the data.

In a few words, in the present research paper, the rhetorical aspect under investigation is evaluation and specific words are the point of entry. The corpus has been collected with a preliminary purpose in mind and it represents a specific snapshot of language through time. Data are concerned with scientific language in the genre of research article abstracts.

Data

The corpus is made up of 1,035 research article abstracts from two international scientific journals: 360 texts from *The International Journal of Primatology* (IJP) and 675 from *Mathematics and Computers in Simulation* (MCS). The time span taken into consideration is from 2000 to 2005 and there are about 200,000 words.

The two journals are from scientific fields rather different. IJP brings together laboratory and field studies related to anatomy, ethology, cognition, ecology, conservation, genetics, evolution, and physiology in primates. MCS publishes articles on specific applications of modelling and simulation in science and engineering, with relevant applied mathematics, the

general philosophy of systems simulation, and their impact on disciplinary and interdisciplinary research

As the American National Standard for Writing Abstracts - ANSI Z239.14-1997 - suggests: “an abstract is an abbreviated, accurate representation of the contents of a document, preferably prepared by its author(s) for publication with it”. In the present investigation, an abstract consists of:

- Title;
- Text of the research article abstract;
- Keywords.

Information about authors and their institutions have been deleted because not considered relevant for the purpose of the present study.

Abstracts and Move structure

Every abstract is organised in moves as suggested by Swales (1990). “A move is evidence of a peculiarity in a precise part of the text”. (Author 2008, p. 19). In investigating the textual structure of research articles, Swales came up with the *Introduction, Method, Research and Discussion* – IMRD – structure. He claims that all the research papers are organized to this well-defined scheme. However, theory is often quite distant from reality.

In the *International Journal of Primatology* it is specified that length of abstracts has to be less or equal to 250-words with 4-5 keywordsⁱ. On the other hand, no specific details and quite vague suggestions are provided about the abstracts’ structure in the journal *Mathematics and Computers in Simulation*ⁱⁱ. However, in both cases these norms do not provide sufficient help for writing abstracts, as a result, most of the time, abstracts are not well structured.

Dos Santos integrates Swales’ IMRD structure with further details; the *move* is still the unit of analysis “a move has to be considered as a genre stage which has a particular, minor communicative purpose to fulfil, which in turn serves the major communicative purpose of the genre”. (Dos Santos 1996, p. 485). Dos Santos, in his analysis, came up with five moves:

- Move 1– *situating the research*;
- Move 2 – *presenting the research*;
- Move 3 – *describing the methodology*;
- Move 4 – *summarizing the results*;
- Move 5 – *discussing the results*.

Each move, usually, has some submoves (dos Santos 1996: 485). Important submoves within the Move 1 are: *Stating current knowledge* and *Citing previous research* and/or *Extended previous research* and/or *Stating a problem*. On the other hand, in Move 2 there are submoves such as *Indicating main features* and/or *Indicating main purpose* and/or *Hypothesis raising*. Last in Move 5 there are two submoves *Drawing conclusions* and/or *Giving recommendations*.

Reading a sample of abstracts from the two disciplines suggests that IJP focuses on the topic and on the actor of the research study considering them as relevant for filling the gap in knowledge, while MCS papers are structured quite evenly according to the IMRD structure of the research study. In the IJP corpus, the average length in words is between 200 and 250 words but there are extreme cases like abstract number 47_IJP that has 377 words and abstract number 3_IJP that has 88 words. These two borderline cases show that even though norms about layout exist these are not observed verbatim. In the MCS corpus average length is lower, about 150 words with a minimum of 49 words in 520_MCS and a maximum length of 266 words in

123_MCS. Both abstracts in IJP and in MCS can be defined as informative abstracts. Informative abstracts provide information about the body of the study, the key facts and the conclusions.

MCS abstracts focus, due to the topic itself, more on the methodology, for instance, on how precise algorithms are applied to different mathematical analysis. Sometimes results are not mentioned because a precise methodology in use is the result of the research study itself. On the other hand, IJP abstracts cover up various topics, in a certain way, IJP is similar to the soft science of the humanities. Mayr (2004) distinguishes two aspects of biology: functional biology that relies on experimental approaches of the hard science and asks how something happens, and evolutionary biology that is driven by asking why and uses methodologies familiar to the humanities like historical narratives and comparison, for instance in anatomy and genomics (studying similarities). The International Journal of Primatology shifts focus from the methodology, in social learning studies, to relevant results in molecular biology studies. Social learning findings deal more with animal behaviour rather than with number or other more 'numerical' results. On the other hand, molecular biology studies provides more countable results dealing with numbers and DNA distribution.

Methodology

The methodology used for the present analysis consists of two phases: collocational and evaluation analysis. The main aim is to investigate the collocational behaviour, words which typically co-occur with some other particular words, defined later in this section, as 'research process words', *analysis/es*, *data*, *evidence/s*, *finding/s*, *investigation/s*, *method/s*, *methodology/ies*, *paper/s*, *procedure/s*, *research/es*, *result/s*, *study/ies*, and *theory/ies*. The analysis of collocational patterns in both corpora is performed in the present study by means of *WordsmithTools 4* (Scott, 2004).

However, before running concordances on these words, it is necessary to define how research process words have been chosen. The crucial issue we have to face is to find a different way to select those stretches of text that, in research article abstracts, represent different aspects of the research process. Abstracts are usually organised according to the IMRD structure, where terms like *data*, *finding/s*, *method/s*, *etc.* appear to be quite recurrent because of the nature of the text itself. These words belong to the concept of *process* in Hallidayan terms (cf. Halliday 1994, p. 109) especially the material 'process of doing', although the logical elements: *actor*, *process* and *goal* are, in a certain way, present altogether just in the words themselves. To be more precise, in the Hallidayan example *the lion caught the tourist*, the *lion* is the actor, *caught* is the process and the *tourist* is the goal. Words like *analysis*, *data*, *method* etc. have always the same actor (the researcher) and encapsulate the action. As a matter of fact, according to Author (2010, p. 27)

In a study the research process implies that the **researcher analyses** and **investigates data** (that have been previously collected) by a viable **method** for a specific **purpose**. Then, s/he will obtain **evidences** and **findings** that make up a **theory** that, eventually, will allow the researcher to write significant **results** in a **paper**. Accordingly, these words can be defined as *research process words* (here after RPWs) because they emphasize the research process aspect in the text of the research article abstracts.

Intuition leads me to think that investigating the collocates of these terms may help to understand which words occur more frequently when research-oriented evaluation (Thetela 1997) is identified.

WordSmithTools has been used to investigate how words are used in the two corpora, because words enter into meaningful relations with other words around them. This software is an integrated suite of programs for looking at how words behave in texts; it has several tools, however in the present analysis important functions are *WordList* and *Concord*. *WordList* creates word lists, ordering them by frequency and alphabetically. *Concord* locates all references to any given word or phrase within a corpus, showing them in standard concordance lines with the search word centred and a variable amount of context at either side.

Analysing concordance data is the most detailed part of the corpus study. Tognini-Bonelli (2001, p. 3) suggests “[a] corpus, examined at first in KIWIC format [...], is read vertically, scanning for the repeated patterns present in the co-text of the node”. The ‘node word’ or keyword is displayed in the centre with a small amount of context on each side.

In the present study, since a rhetorical phenomenon is investigated, it has appeared more reasonable to take into account a context longer than the usual five words to the right and to the left — +5L or +5R — the usual standard for length of citation, as suggested by Sinclair (2004, p. 141). As a word or a phrase is studied it appears evident that more context is needed. As a matter of fact, sometimes longer stretches of text are analysed and even the whole abstract has been taken into account in order to fully understand the phenomenon of evaluation. Since the present research paper investigates the use of specific nouns, concordance lines are first sorted by words on the left and then are analysed. Therefore focus is on modifiers and verbs.

The methodology here applied is corpus-based. Part of this methodology is automatic because the computer carries out a relatively simple matching and counting exercise and shows a list of recurrent structures. However, it may omit some information. Therefore alongside with the automatic aspect of frequency of co-occurrence generated by computer software alone there is the need of a complementary methodology performed by the human researcher, that is the interpretation of the data the ‘reading concordances’ procedure (cf. Sinclair 2003). Sometimes eliciting response from the corpus and incorporate them into the paradigmatic description appear to be uncertain. Introspection plays a pivotal role for the interpretation of textual evidence, for the analysis of collocation results and for the identification of lexical relations.

After running concordances, and careful reading stretches of texts to understand whether or not ROE is realized, the investigation proceeds with collocation analysis in those fragments of texts where only ROE is present either as implied or clearly expressed. The main purpose of the investigation is to find recurrent pattern for each RPWs and to verify whether or not all the investigated words share common patterns. In detail, recurrent verbs, adjectives or any relevant grammatical structures, such as negative or modalized constructions are investigated if they appear with a certain recursiveness.

More excerpts provide more complex structure and pattern to look at, and another important criterion for the analysis is the ‘semantic preference’ as defined by Sinclair (2003, p. 178) “sometimes in the structure of a phrase there is a clear preference for words of particular meaning”. This implies that in concordance lines, words or phrases that are semantically similar will be observed closely. The focus is on repeated events rather than on single occurrences, because as Sinclair (1996, p. 78) suggests: “[...] unique one-off events are necessarily ignored but they cannot be evaluated in the absence of an interpretative framework provided by repeated events”. Language patterns usually are taken into consideration if they occur at least twice. When a reliable description of regularities is assembled then it is possible to build up generalization and read those against former theories.

As already mentioned, the starting point of the analysis is the investigation of specific lexical items and then the analysis goes to the environment of the items themselves, the pattern where the item appears to be. In this way, excerpts are grouped first according to evaluation, either positive or negative; then semantic preference controls the collocational and colligational pattern, and finally extracts are grouped on the basis of grammatical construction. For instance, if we refer again to the excerpt number 1 in the file 5_IJP: "I provide the first comprehensive data on the composition and mineral content". In this extract, the lexical item that presents the research process aspect is *data*, positive evaluation is construed by the positive adjectives *first* and *comprehensive*, ultimately these adjectives will be present in some other excerpts in the corpus referred to other research process words.

Findings and Discussions

After analysing the RPWs and having performed collocational analysis, generalisations have to be cautious due to the limited size of both corpora and also to the limited number of raw frequencies in each corpus (Table 1.).

Table. 1 RPWs frequency in MCS and in IJP

Research Process Words	IJP Freq.	MCS Freq.
Analysis	63	212
Analyses	38	14
Data	182	193
Evidence	67	15
Evidences	1	1
Finding	13	19
Findings	49	4
Investigation	10	24
Investigations	6	4
Method	15	522
Methods	28	220
Methodology	2	17
Methodologies	0	1
Paper	5	341
Papers	5	1
Procedure	2	31
Procedures	0	17
Research	37	32
Researches	0	0
Result	31	31
Results	137	249
Study	129	111
Studies	89	22
Theory	16	94
Theories	5	4

Collocates that express ROE and co-occur with the RPWs are both adjectives and verbs. Amongst the former there are *new*, *first*, *important*, *efficient*, *accurate* *supportive*, and *effective*, while among the latter verbs are *show*, *provide*, *support*, and *to be consistent with*. Herein some excerpts show these co-occurrences. As a general rule of layout, in all the extracts reported, the RPWs and the evaluated entity are in bold face while the evaluative attribution is underlined; file number and acronym of the journal are between brackets:

2. **Results** of the different **analyses** are mutually supportive and provided useful information for monitoring bodily condition and diseases. (313_IJP).
3. Numerical **results** illustrate the usefulness of these new figures of merit. (662_MCS).
4. Our **data** provide the first detailed information on the endocrine characterization of the ovarian cycle in *Pygathrix nemaeus* and suggest that social changes have [...] However, because of relatively small sample size, particularly concerning the latter finding, more data are needed to confirm these results. (261_IJP).
5. The largest number of recorded observations are in the foraging context, wherein contrary to expectations, there is no evidence for female chimpanzees exhibiting more innovation than males. The **study** is the first extensive investigation of behavioral innovation in primates and provides evidence that much individual variation in the propensity to innovate can be explained in terms of sex, age, and social rank. (87_IJP).
6. In addition, based on **analysis** and insight into the correlations between dimensions of the Halton sequence, we illustrate why our algorithm is efficient for breaking these correlations. (63_MCS).
7. And we thus proposed an efficient analysis algorithm for analyzing the stability. The effectiveness of the proposed **method** is illustrated by the numerical examples. (286_MCS).
8. Our **analysis** and numerical experiments show that the proposed schemes are stable and produce highly accurate solutions. (474_MCS).

In excerpts number 2 and 3 the ‘key’ adjective, in terms of evaluation, is *useful*, something that is *useful* in a research study is positively evaluated by the researcher himself. In fragments number 4 and 5 in the phrases *the first detailed* and *the first extensive* the adjective *first* triggers positive evaluation; the identification of evaluation in text depends on the way in which information is presented, *first* could serve as an example of textual organising device as well as evaluative device.

In excerpts number 6 and 7 evaluative keywords are the verb *illustrate* and the adjective *efficient*. In fragment number 8 the whole sentence *numerical experiments show that the proposed schemes are stable and produce highly accurate solutions* provides positive evaluation in a rather cumulative way, by means of key evaluative lexical items such as *show*, *stable* and *highly accurate*. Thompson and Ye (1991, p. 367) considers evaluation as a often cumulative rather than clearly signalled strategy.

A sentence like ‘results of the different analyses are mutually supportive and provided useful information’ or the adjectival construction ‘stable and highly accurate solutions’ appear to be quite familiar expressions of the academic jargon to researchers, this is the way evaluation is accomplished in the academic context, the less noticeable evaluation is, the more likely it is to manipulate the reader. In a genre, like research article abstracts where authors literally have to promote themselves in order to get published, implicit evaluation is more likely to appear.

Although it is not possible to present many quantitative data in a sufficiently economical form here, some interesting observations may be drawn. For example, the lemma FINDING

(both singular and plural word form of the noun) barely shows evaluation in both corpora (table 2) probably because stating clearly positive opinions about the results of a research study is not very appropriate in terms of scientific accuracy and objectivity. However, when the plural word form of the lemma FINDING is evaluated, it is mostly evaluated in a positive way in the IJP corpus. It usually co-occurs with *our* and the verbs *confirm* and *corroborate*, that have a positive semantic prosody. Furthermore, positive evaluation is construed in the recurrent pattern *to be consistent with*. On the other hand, negative evaluation is construed, when *findings* is premodified by *these* or *our* and followed by verbs such as *obligate*, *contrast* or *fail*, that have a negative semantic prosody. Apparently in the IJP corpus, *finding* is always a noun and when the lemma is positively evaluated it co-occurs with three positive adjectives: *first*, *extensive* and *further*.

On the other hand, in the MCS corpus the singular word form *finding* is positively evaluated but there are very few examples and no recurrent patterns. While the plural form of the lemma, shows positive evaluation and co-occurs with the expression *are consistent with* and the adjective *excellent*.

Albeit, the limited size of both corpora, it is interesting to notice ROE occurrence in the IJP and in the MCS corpus and to draw some observations.

Table 2. RPWs ROE in MCS and in IJP

RPWs	IJP ROE	MCS ROE
Analysis	3 (2+, 1-)	25 (24+, 1-)
Analyses	4 (3+, 1-)	2+
Data	27 (15+, 12-)	11 (9+, 2-)
Evidence	25 (14+, 11-)	12 (10+, 2-)
Evidences	0	1+
Finding	0	2+
Findings	15 (12+, 3-)	4+
Investigation	1+	0
Investigations	1+	1+
Method	5 (4+, 1-)	47+
Methods	4+	28+
Methodology	1+	7+
Methodologies	0	1+
Paper	1+	24+
Papers	2+	1+
Procedure	1+	9+
Procedures	0	0
Research	8+	11 (8+, 3-)
Researches	0	0
Result	1+	12 (9+, 3-)
Results	16+	49 (46+, 3-)
Study	9 (8+, 1-)	12 (10+, 1-)
Studies	11 (7+, 4-)	4+
Theory	2+	7 (5+, 2-)
Theories	0	0

The table above shows raw data of the occurrences of ROE for each research process word in the IJP and in the MCS corpus. The symbol + and – stands for positive and negative evaluation. At first glance, MCS corpus shows more evaluation related to RPWs than the IJP corpus. In the MCS corpus *results* and *method* carry more ROE while *data* and *evidence* carry more ROE in the IJP corpus. The value of ROE in the MCS corpus goes from absence to a maximum of 49, while the value of ROE in the IJP corpus goes from absence to a maximum of 27. However, since the two corpora are different in sizeⁱⁱⁱ, occurrences need to be normalised. Having done this, the following figures clearly show the trend of ROE in percentage in both corpora:

Figure 1. ROE distribution of singular RPWs

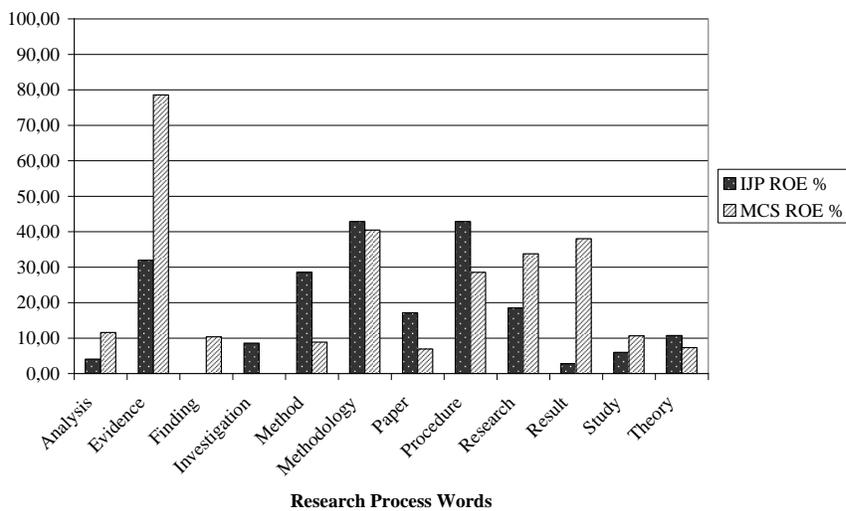
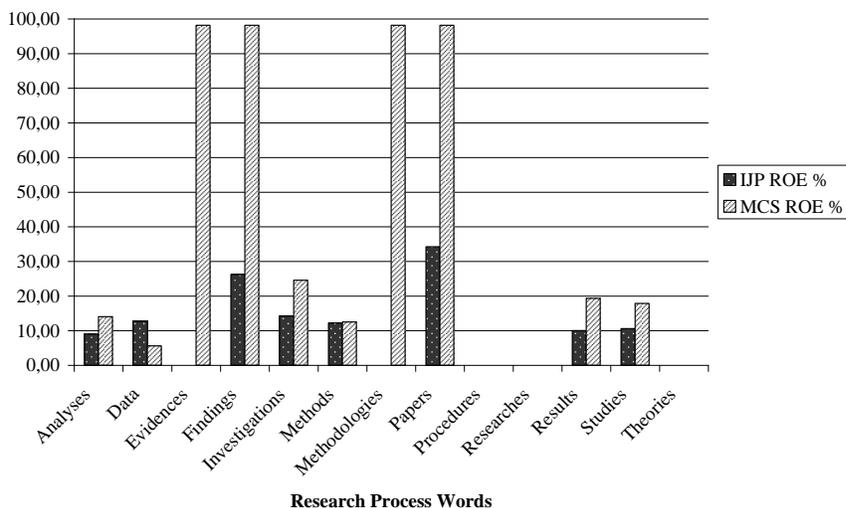


Figure 2. ROE distribution of plural RPWs



Quite surprisingly, ROE, appears more often in the MCS corpus, the journal concerning with mathematics rather than in the IJP corpus, despite Bazerman's (1988) claim about mathematics as the perfect model for scientific writing thanks to its clarity and preciseness in comparison with all other disciplines.

However, if we focus on the RPWs: *data, investigation, method, methodology, paper, procedure* and *theory* these words show more ROE in the IJP corpus in comparison with the MCS corpus. The total list of the research process words count 25 words, however, in case of three words (*procedures, researches* and *theories*) there is no evaluation in neither of the two corpora. Therefore, in IJP only 7 words carry more ROE.

A possible explanation for this result may be drawn, because in reading several abstracts from the two different disciplines, some preliminary hypotheses have been formulated. In detail, the extent to which evaluation is present in the texts examined, seems to depend on the nature of the topic under discussion. Therefore, difference between the two sets of journals is crucial, as already noticed in the data section. Despite the observation that IJP being more similar to the soft science is more evaluative than hard science of the MCS corpus, the maximum frequency of ROE *per word* is still present in the MCS corpus, for the words: *evidences, findings, methodologies* and *papers*.

Referring to the move structures of both corpora, in particular to the IMRD structure, apparently, IJP focuses on *method*, and *method* and *results* coincide most of the time.

On the contrary, in MCS the language is very concise the 2 submoves *indicating main feature* and *indicating main purpose of the study* (cf. dos Santos' moves) are often not clearly stated. MCS abstracts focus on *describing the methodology* and *discussing the results* moves. In the IJP corpus, the RPWs *investigation, method, methodology*, and, *procedure* are more evaluated in comparison with MCS and it is worth noticing that all these words are in the singular form. However, the plural form *methodologies* is definitively more evaluated and in the MCS corpus.

As previously noticed in the Introduction section, in general, in a research study the 'method' belongs to the 'process aspect' while the 'result, paper and, data' highlight more the 'product aspect' of the study. Intuitively evaluation is expected to be more present in the 'method'.

Another possible factor about the evaluative trend suggested by Thompson (personal conversation) is what it might be called the 'applicability' of the disciplines: with Primatology, there is application to the concrete world of primates; but with Mathematics (especially with pure maths rather than applied) the focus is more exclusively on theoretical research issues. For example, a 'problem' in Primatology might concern either how to measure primate populations (ROE) or disappearing natural resources for the primates (TOE), whereas in Maths the 'problems' are likely to be how to calculate a particular value or how to solve an equation (ROE).

In the MCS corpus, authors evaluate their methodologies on the basis of the novelty and its originality. In addition, they evaluate their methodologies on the extent to which they influence the course of science and the development of the disciplines of science. All authors are united in their emphasis on exploring common methodological concerns and providing a critical evaluation of central ideas from a methodological perspective.

In mathematics what counts are numbers and *results* are numbers, not surprisingly the word *results* in the MCS corpus is premodified most of the time by the adjective *numerical*. In addition, the average length of MCS abstracts is definitively shorter than IJP abstracts, therefore

authors need a device to draw readers' attention to the entire research paper, and eventually this device is provided by using evaluative lexis in texts with a smaller quantity of words.

Researchers evaluate their contribution of the various methods as central in the debates and in theory building, they evaluate their findings through research, development, and demonstration, and present their results to their discourse community through international journals and conferences.

Conclusion

In this research paper, the characteristics of scientific abstracts, have been explored on lexical and discourse levels, main focus has been on microstructure of text and macrostructure of value. The present study has attempted to answer the following research question: 'What are the signals of (ROE) in research article abstracts?' More specifically, the hypothesis to test has been whether evaluated entities in a specific genre 'collocate' with specific terms or group of terms.

It has emerged that some words and verbs are very likely to appear in the vicinity of the RPWs in order to build cohesion in research article abstracts. Recurrent terms related to evaluative lexis fall under the category of 'Significance', 'Newness', and 'Usefulness'. Results suggest that, in ROE, virtually all values and their realizations can be covered by the three categories, summed up, for instance, in three recurrent adjectives like: *significant*, *useful* and *new*.

Writing within a scientific genre implies respecting clear and hidden rules. Abstracts are written in a peculiar evaluative way, it is sufficient to acknowledge that the layout and style of an abstract identifies it as belonging to the area of 'real science' and, therefore, worthy of serious consideration by scientists; it also establishes the criteria by which the text will be evaluated, by implying other relevant goals, such, as accuracy.

As Hunston (1983, 1993, and 1994) suggests the author presents him/herself as a researcher working towards the achievement of specific goals. The events in the research process are viewed in this light. Evaluation in a specific genre, like in research article abstracts, has a specific trend, peculiarities of this tendency can be noticed in the move structure of the abstract itself. As a matter of fact, evaluation is very likely to appear in *discussing the results*, *situating the research*, and in *describing the methodology* (dos Santos1996). It is also very likely as Swales (1990) suggests that in writing the text the scientist hopes to achieve other goals, such as acceptance by the scientific community. These goals are not stated in the text, but the more admissible of them may be deduced as they are necessary for the interpretation of certain parts of the text.

Once evaluation has been identified in a move it is widely expected to appear in the rest of the text as well, according to a cumulative phenomenon.

However, any corpus data is only representative of itself and not of the entire universe of study. Nevertheless,, the analysis of a corpus, if assembled with a certain ratio, tends to strongly indicate certain trends in a specific variety of English. Representativeness is a thorny issue in corpus linguistics in any case, and it might be more important to linguistic analysis to know the corpus that is used very well, and to interpret the results accordingly (cf. Mahlberg 2005). Having suggested another way of looking at research-oriented evaluation and how it works in text, it is worth looking at the implications of this study.

The analysis carried out in the present research paper has raised issues from the pedagogical point of view, that have some relevance to the field of English for Academic Purpose — EAP.

First, as Thetela (1997) suggests it is essential in the reading of an academic paper to understand the content but also the angle from which the writer wants that content to be interpreted and judged by his/her reader whether s/he is a newbie or a well-established member of the related discourse community.

The EAP trainer may help learners recognizing the evaluative aspect in a specific genre, it may result useful to provide students with a pre-set of expressions and sentences like: *numerous studies have debated, this paper presents, the purpose of the present study, new evidence is emerging to question this image or few data exist regarding*; because value judgements in academic writing are basically constrained. This awareness can be further reinforced by helping students in their reading to identify and separate the different moves of a research article abstract. By giving readers an accurate picture of how information is typically organized in research paper abstracts in biology and mathematics, it is also conveyed a more precise critical reading where, for instance, a researcher may be interested in one aspect of research instead of another (e.g. conclusions or methodology). Once students are able to separate the topic of the paper, from the findings and the purpose of the study, the next step is to use this competence to improve their own skills in writing a well-structured abstract and make them going beyond with their perspective research studies.

Computer-assisted analysis of texts and corpora can provide new understanding of form-meaning relations. Corpus data can ideally help us understand conventionalised and original phenomena which contribute to systematic variation within and across texts and discourses in given socio-cultural contexts and through time. I would certainly wish to promote the need to incorporate corpus-based studies into instructional materials, otherwise prescriptions run the risk of becoming obsolete, and students do not have the chance to learn real language in use. This is inspired by Sinclair's dictum (Sinclair 1987, p. xv) that "usage cannot be invented, it can only be described" which supports the deliberate and programmatic substitution of invented data for observed data, and of the scientist's own intuition for the reports of informants.

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About the Author:

Amelia Maria Cava is currently Adjunct Professor in English language and Linguistics at the *Università di Napoli 'Federico II'*, Faculty of Medicine. She holds a Ph.D. in English for Specific Purposes from the *Università di Napoli 'Federico II'* (Naples, Italy) and an MA in Corpus Linguistics from the University of Liverpool (UK). She has extensive experience in teaching English as a second language. Furthermore, her research interests focus on Genre Analysis, Corpus Linguistics, and Academic English.

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ⁱ Specific details about the structure are at the following URL:

[http://www.springer.com/uk/home/life+sci?SGWID=3-10027-70-355705840&detailsPage=contentItemPage&contentItemId=142956&CIPageCounter=CI_FOR_AUTHORS_AND_EDITORS_PAGE0\(25.07.2012\)](http://www.springer.com/uk/home/life+sci?SGWID=3-10027-70-355705840&detailsPage=contentItemPage&contentItemId=142956&CIPageCounter=CI_FOR_AUTHORS_AND_EDITORS_PAGE0(25.07.2012)).

ⁱⁱ http://www.elsevier.com/wps/find/journaldescription.cws_home/505615/authorinstructions. (25.07.2012).

ⁱⁱⁱ The IJP corpus has 85,577 tokens, while the MCS corpus has 98,181.