Exploring rhetorical moves in a digital academic genre: A cross-disciplinary study of the highlights section[1]

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Abstract

This cross-disciplinary paper explores the ways in which writers promote their research articles in the highlights section of journals available online as a digital academic genre. A corpus of highlights from 300 research articles was randomly selected from journals in two major domains of knowledge, hard sciences and soft sciences. The corpus contained texts from the fields of (1) Chemistry and (2) Computer Science representing hard sciences and from (3) Linguistics and (4) Management representing soft sciences published in reputable journals in 2018 and 2019. The corpus was analysed in terms of the promotional and rhetorical moves based on a model developed by the researchers using the UAM Corpus Tool. The results show that despite similarities in the use of rhetorical moves, for example, *Promoting the results* (Move 4) as the most frequently used move in both corpora, there were disciplinary variations in the highlights section. Whereas hard science majors give secondary importance to *promoting the value* (Move 2) of their research, soft science majors *promoted the scene of the study* (Move 1) in the highlights. Analyses of the cyclical patterns of the highlights reveal that whereas hard sciences researchers combined *promoting the results* with *promoting the methodological issues* (Move 3), soft sciences writers showcased their results as well as *promoting background information* (Move 1) related to their actual research.

Keywords: move analysis, digital academic genre, soft and hard sciences, highlights section, research articles.

Resumen

Explorando movimientos retóricos en un género académico digital: estudio interdisciplinar de la sección de destacados

El presente artículo explora desde una perspectiva interdisciplinar las diferentes maneras en que los escritores promocionan sus artículos de investigación en la sección de destacados de revistas en línea, entendiendo tales textos como una forma de discurso académico digital. Con este fin, se ha confeccionado un corpus compuesto por 300 artículos destacados de revistas de investigación seleccionados de manera aleatoria pertenecientes a dos grandes áreas de conocimiento: las conocidas como ciencias *duras* y ciencias *blandas*. En concreto, el corpus está compuesto a partir de textos publicados en revistas de renombre en 2018 y 2019 de las siguientes disciplinas: como representantes de las ciencias duras, (1) química y (2) ciencias de la computación, y, como representantes de las ciencias blandas, (3) lingüística y (4) administración. Se han analizado los movimientos promocionales y retóricos de estos textos con base en un modelo desarrollado utilizando la herramienta UAM Corpus. Los resultados evidencian que, a pesar de las similitudes en el uso de movimientos retóricos (por ejemplo, el Movimiento *promocionar los resultados* (Movimiento 4) es el más frecuente en los dos corpus), hay variaciones en la sección de destacados que atañen a la disciplina en cuestión: mientras que las especialidades de las disciplinas duras otorgan una importancia secundaria a *resaltar el valor de su investigación* (Movimiento 2), las disciplinas de las ciencias blandas incidieron en *promover los antecedentes del artículo e introducir el problema y los objetivos* (Movimiento 1). Los análisis de los patrones cíclicos de los textos de la sección de destacados revelan que, mientras en las ciencias duras se prefiere combinar el movimiento de *resaltar los resultados* con el de *promocionar los problemas metodológicos* (Movimiento 3), en las ciencias blandas se tiende a ofrecer los resultados *destacando* principalmente *los antecedentes* (Movimiento 1) relacionados con su investigación.

Palabras clave: análisis de movimientos, género académico digital, ciencias blandas y duras, sección de destacados, artículos de investigación.

1. Introduction

It has long been known that scholarly articles, or Research Articles (RAs), encompass a number of complex communicative functions (Gillaerts & Van de Velde, 2010). Many studies (e.g., Farnia & Baratizade, 2020; Kanoksilapatham, 2015; Moghaddasi et al., 2019) have specifically examined research articles and their sub-sections to find communicative functions, rhetorical and linguistic features peculiar to RAs. However, research has shown that both the rhetorical and organizational preferences of writers vary across sections of RAs (Samraj, 2002), cultures (Li & Xu, 2020) and disciplines (Hyland, 2000). Regarding disciplinary practices, Hyland (2005: 176) points out that writers attempt to build "a recognizable social world

through rhetorical choices" in their academic discourse while maintaining disciplinary norms and goals. Several studies have shown cross-disciplinary differences regarding the relationship between writer and audience (Hyland, 2008), and the use of evaluative (Farnia et al., 2020) and multi-word expressions (Omidian et al., 2018) in the articles. Farnia et al. (2020), for instance, reported hard science disciplines employed a more frequent use of certain lexico-grammatical features, intensification and quantification devices in the conclusion section than soft science disciplines. In other words, the hard science authors expressed their argument and evaluation more strongly compared to soft science authors. Hyland (2008) reported that soft science authors emphasized more the personal projection in their text, whereas hard science authors highlighted the replicability of their research and generalizability of their findings.

There is no doubt that research on academic genres is likely to shed light on how communicative language use and discourse organization in scholarly publications, and can contribute to creating effective and efficient discipline-specific academic communication. Bhatia (2005), however, stressed that academic genres have recently been associated with another very prevailing feature, almost common to all. That is the "invasion of promotional values" (Bhatia, 2005: 123) attached to these discourses, which has made the promotional elements and genres become a focus in the field of discourse analysis. In other words, it is now widely known that scholarly publication is a kind of promotion of not only the work itself but also the researchers. Nevertheless, as a recently introduced and only-digitally-available emerging genre with *promotional value,* the highlights section of RAs appears to have gone unnoticed. Since the introduction of the concept of highlights for RAs in 2010, little (for example, Malmir et al., 2019; Yang, 2016) has been done to explore the nature and function of highlights even though they are the means of drawing the attention of both the general and the expert readership to a specific study in a field at a glance.

The highlights section as an emerging genre is unique in the sense that it is what welcomes a potential reader onto the journal webpage about a specific article, just after the title and before the abstract, by promoting the relevant points of the study. This involves a more concentrated version of key points compared with abstracts. These eye-catching 'adverts' for RAs are expected to help readers find a relevant article and reach a quick conclusion about what is unique about it. Keeping the very little attention paid so far to the highlights section available only in an online space in mind, this genre-

oriented analysis will primarily deal with the rhetorical moves and related issues about the highlights section (i.e., lexical and grammatical) published in hard and soft sciences by taking a cross-disciplinary view.

2. Digital academic discourse and research on highlights section as a part-genre

The ongoing evolution of academic discourse has recently moved to more technology-oriented domains triggering brand-new forms of knowledge-sharing platforms for academic communication. In addition to more prototypical and 'analogue' (Kuteeva & Mauranen, 2018: 2) modes of academic discourses, new constellations of genres with new academic practices seem to be taking their place in digital academic discourse, which can be attributed to a move towards making academic communication largely digitalized. An up-to-date definition of digital academic discourse by Kuteeva and Mauranen (2018: 2) describes the written dissemination of an academic activity as "online with the support of digital media". The interplay between the production of academic knowledge and dissemination through new domains clearly contributes to restructuring interaction patterns and practices. Such digitally-transformed practices may be unique to these digital academic discourses (i.e., visual abstracts) or a continuation of previously followed academic activities peculiar to established genres. Even so, Mauranen (2013) pointed out that the established categorizations of various genres, and even sub-genres, can be re-visited when a new means of communication is introduced.

Digital genres and practices as a necessary part of language for specific purposes (LSP) inquiry (Hafner & Pun, 2020) have become noticeable in contemporary research publications. Several studies have analyzed digital genre practices in blogs (e.g., Luzón, 2017), research websites (Lorés, 2020), and personal webpages (e.g., Dillon & Gushrowski, 2000), to name a few. However, while research on digital discourse practices and online language use may be abundant, research on academic contexts of digital discourse has not received much attention (Kuteeva & Mauranen, 2018). Following Herring et al. (2004) in conceptualizing communication through the digital form of a text as genre, we seek to characterize the *Highlights Section* as an emerging part-genre bound to research articles available only in an online space, and to re-visit it with a closer examination in order to see and

understand the nature of this emerging genre. With this in mind, we also consider the promotional value of the *Highlights Section* within the nature of the research article, with its to-the-point, sentence-like snapshots.

Communication achieved by the highlights section can be linked to the idea of the 'marketization' (Shaw et al., 2014) of a particular research article. The promotion of academic knowledge through such a new channel not only makes it unique, but a highlights section could also be seen as an online advertisement for a study which can be read before purchasing/downloading the article. The promotional value provided by the highlights section therefore contributes to our understanding of how "promotional genres, in this respect, undoubtedly have become the most versatile and fast developing area of discourse" (Bhatia, 2005: 213).

As the first study examining the highlights section, Yang (2016) primarily dealt with evaluative language in the highlights (i.e., hedges, boosters) and explored the opinions of editors and authors about the significance of the highlights section via questionnaires. In this study, Yang (2016: 91) categorized the emerging part-genre as an "attendant genre" which is part of a larger genre and cannot exist independently but is intended to increase the visibility of the main work. In line with this, it is important to see how the highlights section with very brief presentations of what is significant about the main work could add to the visibility of the article with its promotional nature and elements. Elsevier (n.d.)[2] stated that the highlights need to include *result-oriented points*, indicating the organizational structure. Nevertheless, little is really known about the generic structure, the type of language used and especially what is really being highlighted, particularly when the following highlights from Yang's (2016: 98) corpus are taken into account:

1. Functional theories often characterize language as tool for communication.
2. FCIT pioneered a missing market (investment in diversified portfolios by the general public).
3. It was the first institutional investor in emerging markets.

Yang (2016) pointed out that some of these highlights do not essentially highlight a core result unique to the studies conducted, but bring some other valuable information forward in order to promote it as something deserving to be announced. Nonetheless, as Yang (2016) also claimed, providing points

not matching the publisher's guidelines does not really meet the expectations and comply with the communicative functions of a highlights section. A detailed examination of the highlights sections from different disciplines could therefore contribute to exploring the nature of the highlights section and establish whether writers are complying with the guidelines.

Malmir et al. (2019) analyzed the rhetorical moves and metadiscourse devices of highlights sections in applied linguistics *only*. Analyzing the corpus by means of AntConc, they found that the writers not only discussed their research findings and methodology as the focus in a new study, but the highlights in applied linguistics *even* represented instances of previous literature and gaps. In line with this, Yang (2016) also pointed out that in soft disciplines (i.e., Applied Linguistics) the highlights are constructed to link new and old knowledge by acknowledging and discussing previous knowledge or research gaps. Moreover, the results in Malmir et al. (2019: 60) showed that the highlights section as a promotional genre shared similar features with 'advertising language' such as the use of phrases, and determiner omissions.

In this respect, given the scarcity of previous research and a need for a systematic investigation of the highlights section as an understudied part-genre, the aim of this study is threefold. First, we shall seek to identify the rhetorical and communicative functions of highlights in RAs from a discipline-based perspective (Chemistry and Computer Science representing hard sciences and Linguistics and Management representing soft sciences). This will also enable us to establish the *obligatory*, *conventional* or *optional* moves (Swales, 1990) across disciplines. We shall focus on the observed moves to confirm the potential discipline-based variations. Second, we shall look at the rhetorical combinations to learn the most frequent cyclical patterns in the corpus. Third, while dealing with the highlights in each discipline, we intend to address the discrepancy between what is asked by the publisher in the guidelines and what is practised by writers.

3. Research method

3.1. Corpus

The present study analyses a corpus of highlights from 300 articles randomly collected from four subject disciplines representing the hard sciences, Chemistry (CH) and Computer Sciences (CS) and the soft sciences, Linguistics

(LI) and Management (MA). The reason why different disciplines were included in the study is because we needed different academic domains in order to better understand the nature of highlights.

Knowledge domain	Subject discipline	Number of texts	Journal title
HARD SCIENCES	Chemistry (CH)	75	Analytical Biochemistry Forensic Chemistry Food Chemistry Journal of Molecular Structure Journal of Fluorine Chemistry
	Computer Sciences (CS)	75	Journal of Informetrics Journal of Computational Science Information Systems Applied Soft Computing Sustainable Computing: Informatics and Systems
	TOTAL	150	
SOFT SCIENCES	Linguistics (LI)	75	English for Specific Purposes Journal of Pragmatics Journal of Second Language Writing Language and Communication Linguistics and Education
	Management (MA)	75	Human Resource Management Review International Journal of Information Management Organizational Behavior and Human Decision Processes Journal of Vocational Behavior Journal of Strategic Information Systems
	TOTAL	150	

Table 1. Journals of Research Articles.

The data were selected from the highlights of RAs published in reputable leading journals by Elsevier with high impact factors. In total, 300 highlights sections, comprising 1244 individual highlights, from the journals listed in Table 1, were randomly collected by considering 'the status of equivalence' (Moreno, 2008) with all texts representing the same academic genre, the same language code (English), addressing an issue in their specific field of research, and intended for similar readership.

3.2. Data collection and data analysis procedure

To compile the corpus, first, the subject disciplines were randomly selected from those published under *Physical Sciences and Engineering*, and *Social Sciences and Humanities* on Elsevier's publishing webpage: *Chemistry* and *Computer Sciences* were selected as representatives of Physical Sciences and Engineering (we refer to them as hard sciences), and *Linguistics* and *Management* were selected as representatives of Social Sciences and Humanities (we refer to

them as soft sciences). Five journals (see Table 1) in each subject discipline were then randomly selected from journals published by Elsevier and indexed in SSCI, SCI, SCIE or SCOPUS. To keep an equal number of highlights across the disciplines, we relied on the journals publishing highlights sections online for at least two years since not many journals added highlights section to their journal profiles earlier than their 2018 volumes. Finally, 75 articles with highlights sections were selected for each subject discipline, yielding a total of 300 articles representing hard and soft sciences[3].

The highlights sections were then labeled with a code to represent the research article and subject discipline and were uploaded into UAM Corpus Tool 3.3 for further qualitative and quantitative analyses of individual highlights (n=1244). We compared what was found in the corpus with the author guidelines issued by Elsevier (n.d.) for creating highlights to examine whether there were any discrepancies. We read and re-read each highlights section and created the potential moves and steps (see Figure 1) based on the lexico-grammatical clues which are generally used to represent ideas in a research article. Sometimes, we consulted professionals in each subject discipline for their feedback on the rhetorical categories which we developed based on checking the contents against the article.
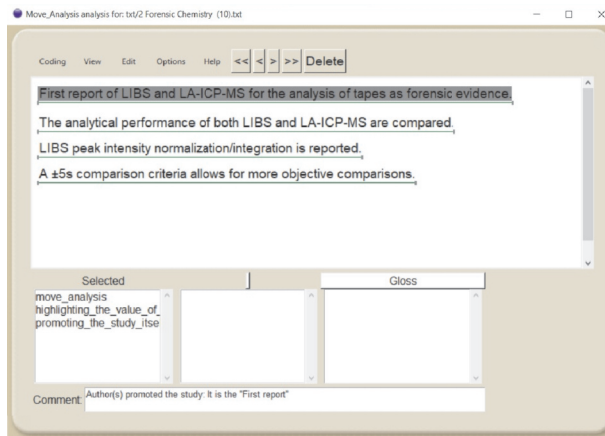

Figure 1. Manual analysis of highlights and creating potential categories.

To develop the rhetorical categories and ensure that we had created a relevant/appropriate category, we also checked all decontextualized sentences/phrases functioning as highlights against their articles since we

realized that not all authors followed the guidelines to include 'only results' of their study. For example, although two of the consecutive decontextualized highlights (1) and (2) below taken from an article published in *Human Resource Management Review* could be seen as either *gap/problem/niche* or *results* of the research, we needed a close whole-article examination.

(1) Despite availability of theoretical and empirical advice, many organizations failed to take up effective approaches to HRM.

(2) Neither academia nor HRM practitioners are incentivized to change current practice.

When that particular paper was carefully studied and the following sentences (see sentences below, 3 taken from *Introduction* and 4 taken from *Abstract*) were checked against them, we found that (1) served as making *a statement of a problem/challenge/niche* whereas (2) did not function as a representation of a problem/challenge/niche but a result of the study. In such cases, judging the highlights based on the overall semantic meaning did not generate a reliable coding. We therefore conducted contextualized analyses of the highlights one by one in order to ensure that the coding was successful.

(3) A number of studies have shown that, despite availability of theoretical and empirical advice, many organizations failed to take up effective approaches to HRM (Becker and Gerhart, 1996, de Gama *et al.*, 2012, Kane *et al.* 1999). (Taken from the introduction to the same article from *Management*)

(4) It concludes that neither academia nor HRM practitioners are incentivized to change current practice with negative consequences for employees, organizations, and HRM practitioners. (Taken from the abstract of the same article from *Management*)

After a careful examination of the corpus, we created major moves and steps in highlights sections (see Table 2 in Results). Once the model was developed, in order to assess the inter-rater agreement on the coding, Researcher 1 coded half of the corpus and Researcher 2 coded the other half. The coders then exchanged their datasets to recode and compare with the previous coding done by the other. This technique was employed to check how consistent the coders were in identifying the moves and to ensure the consistency of the coded data. Any discrepancy between coders was discussed to reach an agreement. The process of developing the model and coding the data took around five months.

Following agreement on the moves and steps and to explore the objectives of the study, we examined the corpus to report a frequency-based descriptive analysis for cross-disciplinary comparison. We also examined the data for possible cyclical patterns and rhetorical combinations of the moves to report *obligatory*, *conventional* or *optional* moves (Swales, 1990) in each discipline. The last step was about the analyses regarding salient lexico-grammatical characteristics for this part-genre as well as the number of highlights per text and the number of characters per highlight across disciplines, in order to identify some of the discrepancies.

4. Results and discussion

4.1. Analytical framework based on move analysis

From the genre analysis of the highlights sections taken from articles in four different subject disciplines (Chemistry, Computer Science, Linguistics and Management), we identified five major moves and eight steps under relevant major moves in the corpus (see Table 2). *Move 1 – Promoting scene* refers to phrases or sentences giving background knowledge about the article, introducing a problem that is dealt with or an objective of the research. *Move 2 – Promoting the value of the research* refers to very easily identifiable highlights in order to demonstrate the significance of the tool/framework developed or the overall research to reveal the distinct contribution to the field. *Move 3 – Promoting methodological issues* is attributed to highlights with the functions of detailing any kind of methodological issue ranging from a method used to data of the study. *Move 4 – Promoting results* covers the highlights reporting a specific result unique to that particular study. *Move 5 – Promoting recommendations* foregrounds any kind of recommendation in the form of a suggestion for future research or any kind of pedagogical/technical implication for practitioners in the field.

Major moves	Steps
Move 1: Promoting scene	Providing background information Making a statement of a problem/challenge/niche Presenting an aim
Move 2: Promoting the value of research	Promoting the study itself Promoting developed tools/framework
Move 3: Promoting methodological issues	Referring to an approach/method Presenting data sources Describing developed tools/framework
Move 4: Promoting results	
Move 5: Promoting recommendations	

Table 2. Moves in Highlights section.

In the following sections, we shall focus on the overall findings of the moves across disciplines by introducing and discussing the major moves and their constituent steps. Next, the move combinations in the highlights and the distribution of moves in the hard and soft sciences will be presented. Considering the guidelines reserved for producing highlights for articles published in Elsevier's journals, we shall report some discrepancies and challenges found between what is required by the guidelines and what is practised.

4.2. Moves and steps across disciplines

Table 3 shows the distribution of major moves across the corpora. As the most frequent move, writers in all disciplines gave a high priority to highlighting/promoting results. However, although writers are expected to summarise their findings in the form of three to five bullet-point highlights following Elsevier's guidelines, the corpus showed the employment of moves other than results.

Table 3 shows that the second most frequent move which CH writers used in their highlights was *promoting methodological issues* (23.05%) while for SC writers it was *promoting the value of the research* (30.30%), whilst LI and MA writers used *promoting scene* (12.30% and 19.35% respectively) as the second most frequent move. Writers in CH, LI and MA gave equal importance to *promoting the value of the research* as the third most frequent move in the corpus, whereas CS writers preferred to highlight their *methodological issues*. Writers in all disciplines placed the least value on *promoting recommendations*.

Moves	HARD SCIENCES				SOFT SCIENCES			
	Chemistry		Computer Science		Linguistics		Management	
	N	%	N	%	N	%	N	%
Move 1: Promoting scene	23	7.80	47	14.80	39	12.30	61	19.35
Move 2: Promoting the value of research	44	14.90	96	30.30	34	10.75	26	8.25
Move 3: Promoting methodological issues	68	23.05	61	19.25	19	6	18	5.70
Move 4: Promoting results	151	51.20	109	34.40	211	66.55	199	63.20
Move 5: Promoting recommendations	9	3.05	4	1.25	14	4.40	11	3.50
Total	295	100	317	100	317	100	315	100

Table 3. Overall findings across the corpus.

The results suggest writers' tendencies in using discipline specific moves to develop highlights sections. In other words, some moves are more frequent in one discipline compared with the other(s). A detailed analysis revealed that besides *Promoting results*, CH researchers promoted their methodology by referring to the materials used in their research, whilst CS writers promoted their tools/models in the highlights sections. On the other hand, LI and MA writers acknowledged the importance of what is already known to the reader, indicating the gap, and presenting the aims.

4.2.1. Move 1: Promoting scene

Promoting scene comprises three steps: (1) providing background information, (2) making a statement of a problem/challenge/niche, and (3) presenting an aim. Table 4 presents the number of occurrences of steps in Move 1 in the corpus. *Promoting scene* is similar to the introduction sections of research articles: they provide a literature review in the introduction to support a niche (Samraj, 2002), then they indicate a gap and state the aims.

	Steps	HARD SCIENCES				SOFT SCIENCES			
		Chemistry		Computer Science		Linguistics		Management	
		N	%	N	%	N	%	N	%
Move 1: Promoting scene	Step 1: Providing background information	6	26.10	2	4.25	11	28.20	22	36.10
	Step 2: Making a statement of a problem/challenge/niche	1	4.35	13	27.65	7	17.95	12	19.65
	Step 3: Presenting an aim	16	69.55	32	68.10	21	53.85	27	44.25
Total in Subject Disciplines		23	100	47	100	39	100	61	100
Total in Major Disciplines		70		41.20		100		58.80	

Table 4. Distribution of Move 1 across the corpus.

Presenting an aim was the most frequently used step in *promoting scene* across the dataset (see Table 4). Stating a 'reference to research purpose' was particularly found in hard sciences (Maswana et al., 2015). In other words, the importance of stating aims in the introduction is reflected in the highlights section of research articles.

Table 4 also suggests some discipline-specific results. MA and LI were found to have similar orders of frequency in steps with *presenting an aim* as the most frequent and *making a statement of a problem/challenge/niche* as the least frequent. However, compared with other disciplines, CH writers showed fewer tendencies to establish a gap. This clearly shows another discipline-specific nature of highlights, as CH writers gave less priority to Steps 1 and 2 and more to the aims of the study, whilst CS writers had a greater preference for stating gaps than the other disciplines. Overall, the soft science disciplines had more elaboration on steps in Move 1 than the hard science disciplines. This is in line with previous findings which demonstrated that the disciplinary variation influenced the rhetorical organization and language use (see Kanoksilapatham, 2005; Swales, 1990).

4.2.1.1. Step 1: Providing background information

An author highlights a piece of information which is most likely known to be background knowledge for the readers, as in examples (5) to (8) excerpted from our corpus. The sources of excerpts in the corpus are shown with an abbreviation in parentheses.

(5) Midsized noncoding RNAs have an ever-expanding role in molecular biology. (CH)

(6) There are multiple methods (diachronic, synchronous variants) for creating bibliometric time-series. (CS)

(7) Technical vocabulary is important for L1 and L2 learners of Plumbing. (LI)

(8) Employee inclusion is an important outcome of HR diversity practices. (MA)

These instances provide background information to the reader, stating a concept/fact already accepted and not requiring further study. Some highlights can carry this function even if they are decontextualized, indicating they are not at least presenting results. However, there are some highlights which might confuse readers, giving them an assumption that the writer is presenting the results of the paper when s/he is not. This can only

be alleviated after a close examination of the article where the reader might find that the highlights in the highlights section were drawn from/stated in the introductory lines of the abstract or introduction sections of the article, which does not meet the readers' expectation that highlights summarise the results of the study.

4.2.1.2. Step 2: Making a statement of a problem/challenge/niche

An author highlights a particular research problem, challenge or niche, which generally stands out as the motive or gap of the study, as in examples (9) to (13).

(9) Using proper social media content in decision making is *an ongoing challenge*. (CS)

(10) While some approaches were devised for the public and query stages, the enrich stage has *not been investigated yet*. (CS)

(11) Teaching article writing to graduate students before they do research is *challenging*. (LI)

(12) The conditions under which the self is dehumanized *remain understudied*. (MA)

(13) *Not much work* done to examine the core knowledge about Facebook. (MA)

The words in italics in these examples establish an indication to a gap/problem/niche which, in Samraj's (2002) term, are "positive justifications" of what is reported in the study. Words such as 'lack', 'challenge' and 'struggle' were used to indicate a gap/problem/niche in the research highlights.

4.2.1.3. Step 3: Presenting an aim

An author highlights the aim of the research article so that readers can easily obtain information about the subject of the article. *Presenting an aim* is mostly a response to questions such as 'Why did the researcher carry out the study?' and 'What does s/he do in this paper?' as in examples (14) to (17).

(14) We *present* an axiomatic analysis of the journal rank aggregation problem in the formal framework of social welfare functional. (CS)

(15) We *aim to* reduce developers' efforts and reuse knowledge in assessing alternatives. (CS)

(16) This work *explores* the meanings of plateaus and rises in list contents using experimental methods. (LI)

(17) We *investigate* how gender influences continuance intention to use SNSs. (MA)

These examples show that the writers explicitly described the function of the highlights using verbs such as 'explore', 'investigate' and 'aim'.

4.2.2. Move 2: Promoting the value of the research

Promoting the value of the research comprises two steps: step 1, promoting the study itself and step 2, promoting a developed tool/framework/method. Table 5 shows the occurrence of the steps in Move 2 in the corpus. This move could probably be the one which attracts the reader to study the article. Researchers are generally looking for innovation in a research article which can be promoted either in the form of the study itself, or the employed framework/tools.

| | Steps | HARD SCIENCES | | | | SOFT SCIENCES | | | |
| | | Chemistry | | Computer Science | | Linguistics | | Management | |
		N	%	N	%	N	%	N	%
Move 2: Promoting the value of the research	Step 1: Promoting the study itself	6	13.65	5	5.20	17	50	14	53.85
	Step 2: Promoting developed tools/framework	38	86.35	91	94.80	17	50	12	46.15
Total in Subject Disciplines		44	100	96	100	34	100	26	100
Total in Major Disciplines		140		70		60		30	

Table 5. Distribution of Move 2 across the corpus.

Similar to Move 1, the results of Move 2 show a discipline-specific preference in employing the steps. CH and CS writers employed promoting developed tools/framework/model more frequently than promoting the study itself. Although the occurrence of Steps 1 and 2 was equal in LI, with only a slight difference, the order of the steps was also similar in MA. The variation of use in the hard and soft sciences indicates the nature of the study, as hard science writers want to demonstrate the importance of the developed tool/framework/model used in their research. The overall findings show that hard science writers opted for more description of the steps in Move 2 than the soft science writers (see Table 5).

4.2.2.1. Step 1: Promoting the study itself

An author highlights what is significant about the research in general in order to draw readers' attention to the contribution of the study to the specific research field, as in examples (18) to (21).

(18) The contents of Mn in wild grape (Vitiscoignetiae) wines are reported for *the first time*. (CH)

(19) The study provides *better* solutions comparing to antenna synthesis in previous literatures. (CS)

(20) *The article advances* our empirical knowledge of expressive resources in the world's languages by describing the form, semantics and pragmatics of a highly conventionalized contour used in several languages of the Arnhem land region in Australia. (LI)

(21) *A reconceptualization* of error in English academic writing is proposed. (LI)

In (18), the writer(s) used *for the first time* to indicate the value of the research, whereas (19) compared the present research and assigned a better evaluation compared with previous research. In (20), the writer(s) referred to the advancement which the article brought whereas in (21), the author(s) provided a new conceptualization at the end of their paper after their systematic analysis in order that the reader can better understand errors in English academic writing and this opens up a new area in the field, indicating the value of the research.

4.2.2.2. Step 2: Presenting developed tools/framework

An author highlights a new/unique tool or method specifically used in the study in order to promote it as one of the outcomes of the study, as in (22) to (25).

(22) The developed electrochemical sensor *possesses high sensitivity, easy operation, and low cost*. (CH)

(23) TAN can *overcome the limits* of recent literature based on naïve Bayes theories. (CS)

(24) *New and hybrid method* to identify technical words. (LI)

(25) *Proposes a multilevel framework* of implicit leadership network theories (ILNTs). (MA)

(22) demonstrates that the CH writer(s) attempted to promote the sensor which they developed by stating its qualities compared with other sensors. In (23), the CS writer(s) promoted TAN as a new model of Bayes superseding 'naïve Bayes model'; in (24), the LI writers promoted a new hybrid method for recognising new words, and in (25), the MA writers promoted a new framework.

4.2.3. Move 3: Promoting methodological issues

Promoting methodological issues comprises three sub-moves: (1) *referring to an approach/method*, (2) *presenting data sources*, and (3) *describing the research process*. Table 6 shows the distribution of Move 2 and its constituent steps across the corpus.

| | | HARD SCIENCES | | | | SOFT SCIENCES | | | |
| | Steps | Chemistry | | Computer Science | | Linguistics | | Management | |
		N	%	N	%	N	%	N	%
Move 3: Promoting methodological issues	Step 1: Referring to an approach/method	18	26.50	6	9.85	4	21.05	11	61.10
	Step 2: Presenting data sources	3	4.40	6	9.85	3	15.80	2	11.10
	Step 3: Describing research process	47	69.10	49	80.30	12	63.15	5	27.80
Total in Subject Disciplines		68	100	61	100	19	100	18	100
Total in Major Disciplines		129		77.70		37		22.30	

Table 6. Distribution of Move 3 across the corpus.

The results show that writers in CH, CS and LI gave priority to *describing the research process* in their highlights, whereas MA writers promoted the approach/method used in their study. *Presenting data sources* was the least frequently used step in the dataset.

4.2.3.1. Step 1: Referring to an approach/method

An author highlights the particular/general field-specific approaches or methods used to carry out the study, as in examples (26) to (29).

(26) *β-1.2-Glucooligosaccharides were colored by the Anthon-*MBTH *method to similar extent.* (CH)

(27) *We employ several diffusion indicators* (e.g., diffusion breadth and speed on the article, journal and domain levels) to provide insight into the influence and diffusion patterns of the three software tools. (CS)

(28) *Phrases are objectively derived* but also contain teacher ratings. (LI)

(29) *This study employed a two-stage analytical approach* by merging structural equation modeling and neural network analysis. (MA)

The difference between *referring to an approach/method* and *promoting a developed tool/method* is that the former presents what approach/method the authors used in their study whilst the latter provides some evidence in the highlights to differentiate that the tools/methods used in the study were genuinely new. In (28), the writers attempted to explain how they developed corpus-based resources for secondary schools by discussing the approach which they followed to decide on the phrases. In other examples (26, 27 and 29), the writer(s) simply described which method/approach was employed to carry out the research.

4.2.3.2. Step 2: Presenting data sources

An author highlights the data of the study in order to inform readers about the sample of the particular study, as in (30) to (34).

(30) Eriocheir sinensis specimens are collected from *eight sites in China.* (CH)

(31) The 8640 editor members from the *211 economics journals* in the ABS Journal Guide are collected for the empirical research. (CS)

(32) TEF was extracted from *93 drafts* written by *64 students* and *93 chats.* (LI)

(33) *The data were taken from* the International Corpus of English-Nigeria. (LI)

(34) A questionnaire survey was conducted *to collect* the required *data from* convenience sampling of Saudi bank customers. (MA)

The examples clearly show that the highlights are *describing data sources* such as the number of *sites* (in 30), *journals* (in 31), *students* and *chats* (in 32), *corpus* (in 33) and *participants* (in 34). This highlight step, however, was the least preferred step among writers.

4.2.3.3. Step 3: Describing the research process

An author highlights the research process by summarising some procedural issues with respect to how the research was completed, as in examples 35 to 38.

(35) The analytical performance of both LIBS and LA-ICP-MS are compared. (CH)

(36) *We performed an extensive experimental analysis* on a data set extracted from a social network. (CS)

(37) Knowledge constructing talk across *three online subjects was analyzed and described.* (LI)

(38) Citation, co-citation & cluster analyses *were used to identify* six core knowledge areas. (MA)

As these examples show, the writers described the sequence of stages or actions used as the methodology to reach the results.

4.2.4. Move 4: Promoting results

Promoting results was the most frequently used move in the data set, which is in line with the purpose of writing highlights in the journals. An author highlights any particular finding or result which deserves to be mentioned compared with many others, as in examples 39 to 42.

(39) Acetonitrile/water addicted with acetic *enhanced* the ionization efficiency. (CH)

(40) *We find* a clear separation between usage and citation metrics in Research Gate (CS)

(41) *Participants reported* increased skills and confidences to read and write international article post-course. (LI)

(42) *The results revealed* idiosyncratic associations among privacy concerns, affects, and coping. (MA)

Promoting results seems to be the easiest move to recognize (as these examples show), but there were instances of the function of the highlights being different from what it seemed to be, as in 43.

(43) The decaying process of vertebrates leads to the emission of volatile compounds. (CH)

In (43), at first glance, a reader might assume that the writer was describing the results, but checking the highlight against the paper revealed that (43) described background information.

4.2.5. Move 5: Promoting recommendations

Promoting recommendations was the least frequently used move in the corpus. In this move, an author highlights a piece of information as a recommendation in the form of a suggestion for future research or a pedagogical implication to be used for educational purposes or by practitioners in the field, as in examples (44) to (48).

(44) *Further research* is needed on the volatile changes through drying and storage. (CH)

(45) The effect may extend to institutional as well as national comparisons and has *further implications for analytical methodology.* (CS)

(46) *It is recommended* that translingual scholars consider the unique demands of spoken and written genre. (LI)

(47) Genre-based pedagogy can *be a useful pedagogical framework* for CLIL. (LI)

(48) Useful list of frequent technical words in finance that *can inform teachers, classroom instruction, and material development.* (LI)

Examples (44) to (46) recommended new objectives for further research, whereas (47) and (48) suggested how the results can be pedagogically employed in educational settings.

In summary, the findings show distinct variations in the type and frequency of rhetorical moves in different disciplines. Despite the differences, however, there were more similarities in highlights sections featuring subject disciplines in the hard and the soft sciences. It can therefore be suggested that there are still cross-disciplinary variations in creating highlights.

4.3. Move combinations across disciplines

Since we found different moves other than result-oriented highlights, we investigated whether there was a cyclical pattern for each subject discipline favouring combinations of particular moves.

		Move 1		Move 2		Move 3		Move 4		Move 5	
		Number of texts	%	Number of texts	%	Number of texts	%	Number of texts	%	Number of texts	%
HARD SCIENCES	Total (150)	50	33,33	81	54,00	77	51,33	111	74,00	9	6,00
	Chemistry	16	21,33	31	41,33	37	49,33	60	80,00	6	8,00
	Computer Science	34	45,33	50	66,67	40	53,33	51	68,00	3	4,00
SOFT SCIENCES	Total (150)	70	46,67	41	27,33	28	18,67	132	88,00	18	12,00
	Linguistics	30	40,00	21	28,00	15	20,00	66	88,00	9	12,00
	Management	40	53,33	20	26,67	13	17,33	66	88,00	9	12,00

Note: This analysis is based on *the number of texts* in which the individual moves are present.

Table 7. Distribution of moves across the corpus.

The results show a clear distinction between the hard and soft sciences with respect to Move 2 *Promoting the value of research*. Table 7 shows that more than half of the texts in the hard sciences employed this particular move to promote their developed tool/framework/method, whereas it was not a very actively employed move in the soft sciences. Similarly, hard sciences writers put great emphasis on Move 3 *Methodological issues* with explicit references to the research process/approach or data sources in their highlights sections compared with the soft sciences. Although both knowledge domains included their results in the highlights (Move 4), it is apparent that more articles in the soft sciences (n=132) presented their results in the highlights section compared with the hard sciences (n=111). We argue that LI and MA highlights sections were more result-oriented when overall results in Table 3 (260 vs. 410 Move 4 *Promoting results*) are taken into account.

Swales (1990) stated that a move is obligatory when it is found in 67% of the total texts, conventional if it is between 33% and 66%, and optional if it is less than 33%. In the hard sciences, there was only one obligatory move, Move 4 *Promoting results*. Moves 1, 2, and 3 in the hard sciences were found to be conventional whereas Move 5 seemed to be optional. In the soft sciences, however, we found that Move 4 was again the only obligatory move; Move 1 was conventional and the rest seemed optional.

Conforming to the guidelines, Table 8 shows that Move 4 *Promoting results* was the most commonly used move and was used in combination with other moves in all disciplines. When the combinations were scrutinized closely, however, there seemed to be a major discipline difference between the hard and soft sciences.

Chemistry		Computer Science		Linguistics		Management	
Moves	**F (text)**	**Moves**	**F (text)**	**Moves**	**F (text)**	**Moves**	**F (text)**
M3+M4	15	M4	10	M4	28	M1+M4	22
M4	12	M2+M4	10	M1+M4	10	M4	21
M2+M4	10	M1+M2+M3	9	M1+M3+M4	6	M1+M3+M4	5
M2+M3+M4	9	M2+M3	8	M2+M4	6	M1+M2+M4	4
M1+M4	6	M2+M3+M4	8	M1+M2+M4	4	M2+M4	4
M3	5	M1+M3+M4	7	M4+M5	3	M2+M4+M5	3
M2	3	M1+M2+M4	6	M2+M3+M4	3	M2+M5	2
M1+M2	3	M1+M2+M3+M4	3	M2	2	M1+M2+M3	2
M2+M3	2	M2	3	M1+M4+M5	2	M3+M4	2
M1+M2+M3+M4	2	M1+M2	3	M1	2	M1+M2	2
M4+M5	1	M3+M4	2	M1+M2+M3+M4	2	M4+M5	2
M3+M4+M5	1	M1+M4	2	M1+M2	1	M2+M3+M4	1
M2+M4+M5	1	M1+M3+M4+M5	2	M3+M4	1	M1+M4+M5	1
M1+M5	1	M1+M4+M5	1	M5	1	M1	1
M1+M2+M3	1	M1+M3	1	M1+M2+M3	1	M1+M2+M3+M5	1
M1+M3+M4	1			M2+M3+M5	1	M1+M2+M3+M4	1
M1+M4+M5	1			M1+M3+M5	1	M1+M3	1
M1+M3+M4+M5	1			M1+M2+M5	1		
	75		75		75		75

Note: The frequency of the combinations is based on the number of the texts in the sub-corpora having that particular combination. As an example, M2+M4 in Computer Science can only be seen in 10 texts.

Table 8. The combination of moves across the corpus per text.

Writers in the hard sciences preferred to combine showcasing their results and Move 3 *Promoting methodological issues*, whereas soft science writers appeared to report their results and Move 1 *Promoting scene* (aims/problems/background knowledge) related to their actual research quite regularly. It seems that hard science researchers find innovation in their research employing different methodologies, while soft science researchers promote their studies by introducing their distinct settings. This might explain why Move 3 was used more in the hard sciences as well as why Move 1 was employed more in the soft sciences.

When CH and CS are compared, interestingly, Move 1 was found to be conventional for the latter. This is simply illustrated by the number of instances of Move 1 in this subject discipline combined with other moves and the higher number of texts adopting Move 1 as shown in Tables 7 and 8. We found that the highlights sections in LI (51%) and MA (57%) were dominated either by Move 4 or by the combination of Move 1 with Move 4.

4.4. Discrepancy between the guidelines and what is practised

While dealing with the rhetorical moves in the highlights section for each discipline, we also explored the nature of highlights in order to better

understand their use. We checked Elsevier's guidelines and underlined various key specifications of highlights, ranging from the length of highlights to what the highlights should convey to the readers. We identified a few discrepancies between the guidelines and what was practised. The results are presented in Table 9.

Knowledge domain	Discipline	Highlights	Highlights per article*	Characters	Characters per highlight**
HARD SCIENCES	*Total*	612	4.08	54,398	88.88
	Chemistry	295	3.93	25,378	86.02
	Computer Science	317	4.22	29,020	91.54
SOFT SCIENCES	*Total*	632	4.21	55,668	88.08
	Linguistics	317	4.22	27,742	87.51
	Management	315	4.20	27,926	88.65

* The guidelines for authors on Elsevier ask for *three* to *five* highlights per article.
** The guidelines for authors on Elsevier ask for *85 characters including space* per highlight, which can be between 10-12 tokens for each.

Table 9. Highlights and characters across the corpus.

First, comparison of the lexical features of the highlights with the guidelines showed that the RAs displayed approximate conformity. As Table 9 shows, all the disciplines abode by the guidelines in relation to the number of highlights per text. Elsevier's guidelines clearly recommend that highlights be "three to five result-oriented points". Our analysis showed that authors used 3.93 to 4.22 highlights per text, which matches the guidelines perfectly.

Some authors, however, especially CS researchers, produced relatively longer highlights, exceeding the upper limit stated ("must be 85 characters or fewer, including spaces") in the guidelines. On the one hand, there were some authors who simply transformed their longer results/findings, as in (49), into a very condensed form, as in (50), in order to conform to the specific requirements. On the other hand, there were others, as in (51), who did not comply with the relevant guidelines but produced very long highlights sections.

(49) Our results show that both perceived justice and perceived value influence knowledge integration, which in turn affects knowledge quality. (from an abstract in MA)

(50) Both value and justice matter for knowledge integration. (MA)

(51) We show how these responses shape the effects of diversity practices on employee inclusion, and question a commonly held assumption that leaders' full alignment with HR's practices is always the most conducive for achieving favorable employee outcomes such as felt inclusion. (MA)

(49) is taken from an MA abstract and we found a substantially matching reflection of that result-oriented long sentence in the highlights. The writers made it acceptable for the highlights section by condensing the main idea into *sixty-one characters* as can be seen in (50). In comparison, (51) contained *280 characters* in order to provide a result-oriented point from the study, but an identical sentence was found in another section of the article, indicating that there had been no attempt to convert a result into a highlight.

Some of the respondents in Yang's (2016: 100) study reported that they could not effectively convey the importance of what they found with a character limit for each highlight. This could contribute to understanding why some produced longer highlights to convey core issues of their research.

Another issue is the impracticality of decoding the functions of some highlights easily since they cannot be decoded unless they are checked against the paper. This might be due to Elsevier's limit on characters (eighty-five characters including spaces). In other words, the fewer characters the authors use, the less clear the highlight might be. For example, (52) below has the function of background knowledge according to the relevant article; however, standing alone, it could read more like a result. As such, adding a lexical unit which signals that it is background knowledge would solve the problem (as in 53).

(52) Semantic wave is a useful analytical tool to study…

(53) Semantic wave is *[known to be]* a useful analytical tool to study…

With respect to the syntactic features of the highlights, they were found to fall into three major types: (1) Full Sentences; (2) Noun Phrases; and (3) Verb Phrases as highlights. Irrespective of the disciplines, it was discovered that highlights were overwhelmingly written in the form of a full sentence. From the readers' perspective, sentences could be easier to grasp, because some phrases might seem problematic for readers to realize what is meant since such chunks are subject to special grammatical rules. A good characteristic of a highlight could be linked to the extent to which it minimizes the load on the working memory on the reader's comprehension because decoding

phrases might cause the memory to be loaded until the phrases are finalized, especially when the phrase is at least 85 characters long, as in (54). Malmir et al. (2019) also suggested that the lexico-grammatical choices the authors use in the process of writing their highlights could simply create comprehension difficulties that potentially trigger ambiguity and hinder dissemination of knowledge.

>   (54) Extensions and fine tuning of our schemes for the safe zone monitoring [26] concepts.

The head nouns in (55) to (57) illustrate that the authors attempted to bring forward an important element of their research and write their highlights in the form of noun phrases. As an example, (55) shows that the authors shared the significance of their research by stating it is the 'first report' of a case. However, it appeared relatively more frequent for hard sciences writers, especially for Chemistry, to use noun phrases as highlights, as in (56).

>   (55) First *report* of LIBS and LA-ICP-MS for the analysis of tapes as forensic evidence. (CH)

>   (56) *Producing* polyfluorinated amino quinolones by reduction of nitro quinolones. (CH)

>   (57) Striking comparisons in Arsenic L3 (s, d)-edges peaks for the polymorph of As2S3 crystals. (CS)

The last category that the highlights fall into in terms of the grammatical features is the form of verb phrases as in (58) to (60). These highlights were either in *simple present tense* or *past tense*. Nevertheless, regarding the present tense highlights, some highlights in the form of *verb phrases* used the base form (58), indicating either first person singular or plural pronoun as their subjects. In contrast, some other highlights with *verb phrases* included the third person singular -*s*, indicating a subject of the third person singular pronoun. We believe that the subjects of these sentences could be 'the study, research, article or paper' and the authors may have strategically deleted them so as to save some characters. (59) can be a good example for this case with eighty-seven characters, conforming to the guidelines. Otherwise, with the inclusion of 'the study, research, article, paper' as its subject, the number of characters in that particular highlight could have easily surpassed the upper limit based on the guidelines.

(58) Evaluate the performance analytically and experimentally. (CS)

(59) Suggests that the awareness of linguistic elasticity may benefit health communication training. (LI)

(60) Examined the relations between adaptability, satisfaction, and intended academic persistence. (MA)

Although the guidelines clearly recommend that highlights be result-oriented, some articles did not report result-oriented highlights. Instead, they reported new approaches, new tools or frameworks in their highlights. This could clarify why some authors promoted their tools/framework rather than presenting results. As agreed by both the authors and editors who participated in Yang's study, the lack of any explicit mention related to why highlights are promotional and need to be result-oriented "often causes a disparity between what the guidelines describe and what the authors actually write" (Yang, 2016: 101). We therefore suggest a new conceptualization of highlights section for such articles.

5. Concluding remarks

Accepting the significance and value of highlights as an *attendant* (Tse, 2012: 83) and emerging genre in RAs, we have reported our genre analysis of the highlights section with a cross-disciplinary approach and have proposed our model for exploring the generic structure and rhetorical moves for this digital academic genre. In spite of similarities in promoting results across a corpus comprising 1244 highlights from 300 articles, some discipline-specific results were found across the hard and soft sciences which ranged from variations in types and frequency of moves to combinations of moves or cyclical patterns in developing highlights, which is in some contradiction to Elsevier's guidelines requiring researchers to solely promote the results of their research in the highlights section. This could be explained by Yang's (2016: 101) argument with respect to 'inevitable marketing strategy' role that the authors are expected to take on since the authors in our dataset clearly signified various aspects of their research to be promoted other than the results, to accomplish the promotional value attached to the part-genre.

A major noticeable difference in disciplinary specificity concerning highlights is that the authors from hard sciences presented relatively higher instances of methodological issues to capture their readers' attention along with their

prevalent result-oriented highlights whereas authors from soft sciences appeared to write highlights functioning as providing the readers with domain-specific knowledge. Authors from soft sciences did accord with the observation by Yang (2016: 99), that is, showing 'a kind of implicit appeal to share background knowledge, placing the readers within obviously naturalised boundaries of disciplinary understanding'. Regarding the relationship between the lexical and syntactic features of the highlights and the disciplinary specificity, we could not find any strong association which signals that the lexico-grammatical choices are more related to the authors' style preferences. This can also be supported by the results of Malmir et al. (2019: 60) that there had been variations with respect to the lexical and syntactic preferences *even* in the same discipline, characterizing the lexico-grammatical aspect of highlights as 'intrinsically context-dependent structures'.

Despite the findings made with our proposed model, this study has a number of limitations. First, the data were analysed from four subject disciplines, so further studies could include more subject disciplines from the same major disciplines to investigate possible variations across the same disciplines. Also, we only analysed highlights from journals in the field of *Physical Sciences and Engineering* (hard sciences) and *Social Sciences and Humanities* (soft sciences). Further research could take other disciplines such as Life Sciences and Health Sciences into consideration to have a more generalizable view and understanding of the part-genre.

The findings have several implications for researchers and publishers to benefit from the potential of highlights section with a promotional value to attract readers. First, the highlights section as a recently developed part-genre requires clearer templates for authors to facilitate decisions on what to put on the journal profile as a promotion of their articles. Second, the findings show that authors in different disciplines used different rhetorical patterns in the organization of their highlights section. Future authors could therefore learn what aspects of a study are more prominent to be included in the highlights section. Third, the results show that the function of some highlights cannot be realized without checking them against the paper. Authors are therefore strongly recommended to create highlights whose function can be understood outside the main text. According to Elsevier's guidelines, highlights can be added to a paper once it is accepted for publication; however, we suggest that submission of highlights be made along with manuscript submission so that reviewers can also evaluate the relationship of the highlights with the results of the study.

The following perspectives could be adopted by journals which could then inform potential authors to write highlights once the paper is accepted. This might even result in updating the guidelines. If the paper is a data-oriented/empirical research article, we suggest that Move 1 followed by Move 4 would be an appropriate combination as far as our results are concerned. If the article is more theory-based research with the intention of conceptualizing or devising a new method/approach/framework/tool, the authors can be advised to take Move 1 followed by Move 2. Regarding the variability of the grammatical formats used in the highlights (sentences, phrases, bullets with abbreviations), authors could be asked to produce grammatically correct short sentences to showcase their results. With regard to the nature of disciplines, journals could suggest different guidelines; other than presenting result-oriented highlights, some disciplines could require more emphasis on the method whereas others might need to highlight other aspects.

References

Bhatia, V. K. (2005). "Generic patterns in promotional discourse" in H. Halmari & T. Virtanen (eds.), *Persuasion across Genres: A Linguistic Approach*, 213-225. John Benjamins. DOI: <https://doi.org/10.1075/pbns.130.13bha>.

Dillon, A. & B. Gushrowski (2000). "Genres and the Web: Is the Personal home page the first uniquely digital genre?". *Journal of the American Society for Information Science* 51(2): 202-205. DOI: <https://doi.org/10.1002/(SICI)1097-4571(2000)51:2<202::AID-ASI11>3.0.CO;2-R>.

Elsevier (n.d.). "Highlights". URL: <https://www.elsevier.com/authors/journal-authors/highlights> [25/01/2020].

Farnia, M. & S. Baratizade (2020). "Genre analysis of the Method sections in applied linguistics research articles: A cross-linguistic study". *The Asian ESP Journal* 16(6.1): 214-248.

Farnia, M., S. Saeedi & Z. Ataei (2020). "A cross-disciplinary study on evaluative strategies in research articles conclusion sections". *International Journal of Research in English Education* 5(1): 1-18. DOI: <https://doi.org/10.

29252/ijree.5.1.1>.

Gillaerts, P. & F. Van de Velde (2010). "Interactional metadiscourse in research article abstracts". *Journal of English for Academic Purposes* 9(2): 128-139. DOI: <https://doi.org/10.1016/j.jeap.2010.02.004>.

Hafner, C. A. & J. Pun (2020). "Editorial: Introduction to this special issue: English for academic and professional purposes in the digital era". *RELC* 5(1): 3-13. DOI: <https://doi.org/10.1177/0033688220917472>.

Herring, S. C., L. A. Scheidt, S. Bonus & E. Wright (2004). "Bridging the Gap: A Genre Analysis of Weblogs" in *Proceedings of the Thirty-seventh Hawaii International Conference on System Sciences (HICSS-37)*. IEEE Press. DOI: <https://doi.org/10.1109/HICSS.2004.1265271>.

Hyland, K. (2000). *Disciplinary Discourses: Social Interactions in Academic Writing*. Longman.

Hyland, K. (2005). "Stance and engagement: a model of interaction in academic discourse". *Discourse Studies* 7(2): 173-192. DOI:

<https://doi.org/10.1177/1461445605050365>.

Hyland, K. (2008). "Persuasion, interaction, and the construction of knowledge: Representing self and others in research writing". *International Journal of English Studies* 8(2): 1-23.

Kanoksilapatham, B. (2005). "Rhetorical structure of biochemistry research articles". *English for Specific Purposes* 24: 269-292. DOI: <https://doi.org/10.1016/j.esp.2004.08.003>.

Kanoksilapatham, B. (2015). "Distinguishing textual features characterizing structural variation in research articles across three engineering sub-discipline corpora". *English for Specific Purposes* 37: 74-86. DOI: <https://doi.org/10.1016/j.esp.2014.06.008>.

Kuteeva, M. & A. Mauranen (2018). "Digital academic discourse: Texts and contexts: Introduction". *Discourse, Context & Media* 24: 1-7. DOI: <https://doi.org/10.1016/j.dcm.2018.06.001>.

Li, Z. & J. Xu (2020). "Reflexive metadiscourse in Chinese and English sociology research article introductions and discussions". *Journal of Pragmatics* 159: 47-59. DOI: <https://doi.org/10.1016/j.pragma.2020.02.003>.

Lorés, R. (2020). "Science on the web: The exploration of European research websites of energy-related projects as digital genres for the promotion of values". *Discourse, Context & Media* 35: 1-10. DOI: <https://doi.org/10.1016/j.dcm.2020.100389>.

Luzón, M. J. (2017). "Connecting genres and languages in online scholarly communication: An analysis of research group blogs". *Written Communication* 34(4): 441-471. DOI: <https://doi.org/10.1177/0741088317726298>.

Malmir, B., R. Khany & M. Aliakbari (2019). "Journal article highlights in Applied Linguistics: An exploration into the rhetorical moves and their lexico-grammatical features". *Iranian Journal of English for Academic Purposes* 8(4): 49-63.

Maswana, S., T. Kanamaru & A. Tajino (2015). "Move analysis of research articles across five engineering fields: What they share and what they do not". *Ampersand* 2: 1-11. DOI: <https://

doi.org/10.1016/j.amper.2014.12.002>.

Mauranen, A. (2013). "Hybridism, edutainment, and doubt: Science blogging finding its feet". *Nordic Journal of English Studies* 12(1): 7-36. DOI: <https://doi.org/10.35360/njes.274>.

Moghaddasi, S., H. A. B. Graves, R. Graves & X. Gutierrez (2019). "See Figure 1: Visual moves in discrete mathematics research articles". *English for Specific Purposes* 56: 50-67. DOI: <https://doi.org/10.1016/j.esp.2019.08.001>.

Moreno, A. I. (2008). "The importance of comparable corpora in cross-cultural studies" in U. Connor, E. Nagelhout & W. Rozycki (eds.), *Contrastive Rhetoric: Reaching to Intercultural Rhetoric*, 25-41. John Benjamins. DOI: <https://doi.org/10.1075/pbns.169.04mor>.

Omidian, T., H. Shahriari & A. Siyanova-Chanturia (2018). "A cross-disciplinary investigation of multi-word expressions in the moves of research article abstracts". *Journal of English for Academic Purposes* 36: 1-14. DOI: <https://doi.org/10.1016/j.jeap.2018.08.002>.

Samraj, B. (2002). "Introductions in research articles: Variation across disciplines". *English for Specific Purposes* 21(1): 1-17. DOI: <https://doi.org/10.1016/S0889-4906(00)00023-5>.

Shaw, P., M. Kuteeva & A. Okamura (2014). "Submission letters for academic publication: Disciplinary differences and promotional language". *Journal of English for Academic Purposes* 14: 106-117. DOI: <https://doi.org/10.1016/j.jeap.2014.02.002>.

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

Tse, P. (2012). "Stance in Academic Bios" in K. Hyland, C. Sancho Guinda (eds.), *Stance and Voice in Written Academic Genres*, 69-84. Palgrave Macmillan. DOI: <https://doi.org/10.1057/9781137030825_5>.

Yang, W. (2016). "Evaluative language and interactive discourse in journal article highlights". *English for Specific Purposes* 42: 89-103. DOI: <https://doi.org/10.1016/j.esp.2016.01.001>.

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NOTES

[1] An earlier version of this paper was presented at the second international Metadiscourse Across Genres (MAG) conference titled "Metadiscourse in digital Communication: What has changed?" hosted by CERLIS in June, 2019.

[2] <https://www.elsevier.com/authors/journal-authors/highlights> [25/01/2020].

[3] Akbaş, E., & Farnia, M. (2022). Corpus of Highlights Section (Version 1) [Data set]. Mendeley Data. https://doi.org/10.17632/dsc6ydj293.1