Cross-disciplinary use of Organizational Linkers in Research Article Abstracts

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Abstract
This study focuses on realizations and discourse functions of the organizational linkers in the writing of research article abstracts from four disciplines. To this end, 120 research article abstracts from four disciplines namely, Applied Linguistics, Economics, Agriculture, and Applied Physics (30 from each discipline) were selected. All research article abstracts were extracted from empirical research articles published in international high impact journals. The corpus was analyzed adopting Gosden (1992) taxonomy. The most striking result is that the realizations and discourse functions of the organizational linkers, to a large extent, are guided by the nature of research article abstract and discipline. This result adds substantially to the comparative understanding of research article abstract writing across disciplines and evidences the need to tailor writing according to English for specific needs.

Key terms: Organizational linkers, writing research article abstracts, discourse functions, disciplinary study

Introduction

Disciplinary Writing

Disciplinary writing is specific to the discipline, representing variations between different disciplinary communities that are characterized by ''a broadly agreed set of common goals'' and ''a suitable degree of relevant content and discoursal expertise'' (Swales, 1990, p.24) (see also Afros and Schryer, 2009; Ebrahimi and Chan, 2015; Golebiowski, 2009; Hyland, 2005, 2008, 2009; Kanoksilapatham, 2015; Khedri et al., 2013; Pho, 2008). Accrding to Swales (1990) and Belcher and Braine (1995), success in academic writing involves an understanding of the rules and conventions of the discipline. Along the same line of argumentation, Hyland (2009, 2000) notes that disciplinary differences result in specificity in the macro and micro structures of academic writing. Hyland (2009) also argues that disciplinary writers draw on the "persuasive practices of their discipline, encoding ideas, employing warrants, and framing arguments in ways that their potential audience will find most convincing".

In claim making about their research, they keep in mind their readers' exposure to matters such as rebuttals to claims, prior knowledge and the organsiational patterns that are used to present the argument (Hyland, 2008). Several studies (Golebiowski, 2009; Kanoksilapatham, 2015; Khedri et al., 2013; Pho, 2008)have focused their studies on disciplinary and across disciplinary studies. They all have found that disciplinary background could be seen explicitly in academic writing genres. They have stressed the importance of including findings of disciplinary studies in teaching EAP and ESP course in academic writing genres. These studies and the underlying claim of disciplinary writing have opened up and rationalized disciplinary research in the area of academic writing genres. Thus, this study focuses on research article abstract (RA

abstract) writing which is a specific academic writing genre. In the next section, related issues of the RA abstract genre is discussed.

RA Abstract as a Genre

Many studies have recognized the RA abstract as an important part of a research article (RA) that stands as an independent discourse. According to Martin (2003) and Ventola (1994), an RA abstract aids writers to pack important and significant information and findings reported by an RA into a compact unit. It also serves to guide the flow of information to be communicated to the disciplinary community. Saving reading time is another function of an RA abstract and this is done by "informing the reader about the exact content of the article", thus motivating the reader to pursue the full text if deemed relevant (Martin, 2003 p. 26).

Another function of an RA abstract is to convince conference organizers or journal editors to accept or publish the RA. Reading abstracts could help readers to find the appropriate RAs to read in today's busy world flooded with information (Pho, 2008). Based on these functions, the abstract has attained the status of an idependent academic genre which critical to knowledge making. Thus, analyzing the RA abstract as a genre could provide the readers and the writers with helpful insights concerning its underlying macro (rhetorical) and micro (linguistic features) structures (Lores, 2004).

Related studies

Various angles have been adopted to throw light on the this genre of research. For example, Pho (2008) studied the linguistic realizations of organizational moves of RA abstracts from two disciplines, that of applied linguistics and educational technology. She found that linguistic features such as authorial stances can help to disctinguish the moves of RA abstract. She also stressed the influence of disciplinary knowledge on selections of linguistic features. Kanoksilapatham (2013) scrutinized the linguistic realization of organizational moves of RA abstracts from discipline of civil engineering. She analyzed 60 RA abstracts. The results suggested an appropriate academic style of writing in caviling engineering RA abstracts in specific discipline of Civil Engineering. Golebiowski (2009) studied the rhetorical structure of abstracts from two disciplines of Applied Linguistics and Education. She found that in these two disciplines, writers use different rhetorical structures to meet the objectives of abstracts. she found that disciplinary nature influence the writers in demonstrating the value of their research and also in indicating their proficiency credibility.

She stressed the influence of disciplinary background knowledge on rhetorical moves of abstracts. Hu and Cao (2011) shed the light on the use of hedge and boost metadiscourse markers in applied linguistics RA abstracts published in English and Chinese-medium journals. They analyzed 649 abstracts from 8 Applied Linguistics journals. They found that English-medium journals uses more hedges compared to Chinese-mediunm journals. They also found empirical research articles used more boosters compared to non-empirical research articles. Khedri, et al,(2013) worked on the mapping of interactive metadiscourse markers in the RA abstracts from different disciplines. They found that disciplinary knowledge influence selections of interactive metadiscourse markers in an explicit ways.

Ebrahimi and Chan (2015) investigated the discourse functions of grammatical subjects used in research article abstracts from two discuiplines. They analyzed two sets of 30 research article abstracts extracted two high impact journals from Applied Linguistics and Economics disciplines. The results of their study indicated that there are significant disciplinary differences

among two sets of research article abstracts in relation to the grammatical subjects' discourse functions.

As the extant literature reveals, all these studies attest to the fact that there is disciplinary difference in the use of linguistics features used by writers while constructing their discourses. To accentuate the nature of disciplinary practice, research could focus on the notion of organizational linkers, which has received little attention. In this sense, some scholars such as Gosden (1992) have remarked that one of the linguistic features which appears to have the potential to signal disciplinary difference is organizational linkers at the sentence boundary. With this in mind, this study intends to study the manifestions of organizational linkers in RA abstracts and their discourse functions from four disciplines, namely, Applied Linguistics, Economics, Agriculture and Applied Physics. In this study organsiational linkers are defined as linguistic elements that precede the grammatical subject in the declarative sentence.
e.g.: ***In this study,*** we present an idiodynamic methodology for studying rapid changes in WTC. There are many types of organsiational linkers with distinct discourse functions. The framework used is that of Gosden (1992) which is further explained in the method of analysis section in the methodology used in this study.

Methodology
Selecting the Disciplines and Journals
This study is cross-disciplinary in nature. To ensure that the selected disciplines could represent the spread of disciplines across the academic context, Becher's (1989) taxonomy was used as a criterion selection of the disciplines. He groups academic disciplines into soft and hard sciences. Hard science includes science disciplines while soft science includes the disciplines in the humanities and social sciences. Becher (1989, 1994) also divides the disciplines of each science into pure and applied. The pure disciplines are "theoretical" and "reflective" in nature while the applied disciplines are "practical" and "active" in nature. Based on Becher's (1989, 1994) categorization of disciplines, four disciplines consisting of Economics (soft-pure), Applied Linguistics (soft-applied), Agriculture (hard-pure) and Applied Physics (hard-applied) were selected for this study. In this study, the following abbreviations were used to refer to the disciplines: AL (Applied Linguistic), Eco (Economics), Agri (Agriculture) and Phy (Physics).

After selecting the disciplines, the next step was selecting the representative journals from the disciplines. The journals selected were from a pool of CIJ indexed journals (Thomson Reuters) which were 'Oxford Economic Papers' and 'Applied Linguistics' published by Oxford University Press and 'The Journal of Agricultural Science' and 'The European Journal of Applied Physics' published by Cambridge University Press. The rationale behind the selection criterion was to have a corpus which is representative of RA abstracts produced by successful writers or what Mauranen (1996) called "good text". She elaborates that:
"We here take the typical native speaker user in edited and published texts as a criterion for acceptable use, and regard any text that meets this criterion as ''good''. In this way, all L1 texts in the material are good texts by definition. Even though they cannot be held up as ideal models, their typical features can be used as a guide to the working of text in that language" (p. 213).

Selecting the RA Abstracts
One hundred and twenty (120) RA abstracts with 30 RA abstracts from each journal were selected as a representation of each discipline to make up the corpus for the analysis in this study. All the RA abstracts were extracted from the regular RAs published between 2010 and 2012 with an implied IMRD (Introduction, Method, Result, Discussion) developmental structure

(following Swales (1990)'s approach for RA text organization). The details of the corpus are summed up as below:

Table 1*. Description of the Corpus*

	AL	Eco	Agri	Phy	Total
No. of RA abstracts	**30**	**30**	**30**	**30**	**120**
No. of journals	**1**	**1**	**1**	**1**	**4**
Total number of words	**5239**	**4427**	**8753**	**5858**	**24257**
Total number of Organizational Linkers	**38**	**36**	**43**	**27**	**144**

Method of Analysis

The framework suggested by Gosden (1992) includes the following organizational linkers that mark: Location, validation, condition, cause, contrast, time, purpose, point of view, and means. Each of them is explained below:

1. Location Organizational Linker*:* This linker aims to show and describe the world-related or discourse-related context of the research in relation to its findings and claims.
E.g.: ***In the present study***, we surveyed the English language-learning motivations of 518 secondary school students, university students, and young adult learners in the capital of Chile, Santiago.

2. Validation Organizational Linker: This linker signals supportive evidence to validate the research hypothesis, findings, and conclusions. These supportive evidences could be stated in the study by making reference to the tables, figures or by citing from other studies done by the disciplinary discourse community.
E.g.: ***Based on our findings***, we proposed a new interactive model of language-learning motivation, which consists of goal systems, attitudes, self-efficacy beliefs, and future self-guides.

3. Condition Organizational Linker: This linker supports the study by reporting real-world events and facts coming from process and procedures of the experiment carried out, focusing on cause and effect relationship. It also focuses on hypotheses which are not fully tested yet.
E.g.: ***When the students misinterpreted metaphors***, they only seemed aware of having difficulty in ~4 per cent of cases.

4. Cause Organizational Linker: This linker helps writers to present the cause or the rationale for the research actions and hypothesis.
E.g.: ***Encouraged by this finding***, the possibility of using monthly forecasts to predict soil water availability was tested.

5. Contrast Organizational Linker: This linker is mainly used with the intention of expanding opposing ideas to a proposition.
E.g.: ***Although Chile is often regarded as a poster child for inflation targeting policies in emerging economies***, no significant reductions in inflation levels were found when a later policy start date some analysts believe to be more reflective of the true policy adoption date was used.

6. Time Organizational Linker: This linker aims to show time-related context of the research, research actions, findings or claims.
E.g.: ***Since the mid-20th century***, graduate schools in the USA have witnessed a growing participation of international students, many of whom do not speak English as their first language.

7. Purpose Organizational Linker: This linker helps to present the purpose of a research action.
E.g.: ***To address partially the question of why this is the case***, the performance of the ECMWF monthly ensemble forecasting system was examined.

8. Point of view Organizational Linker: This linker focuses on an overt point of view temporarily to help writers gain a high discourse profile, and this link is often used together with the grammatical subject of the sentnee expressed in the first person, " *We*".
E.g.: ***In view of these findings***, we suggest that language aptitude has a compensatory function in language attrition, helping the attriter to retain a high level of L1 proficiency despite reduced L1 contact.

9. Means Organizational Linker: This linker introduces common processes and techniques used in the scientific investigation.
E.g.: ***Using real-time data***, we explore the determinants of both fiscal plans and their implementation for OECD COUNTRIES OVER THE PERIOD 1995-2006.

Unit of Analysis
        In this study, only the organizational linker which is realized at the T Unit boundary is considered. Thus, the unit of analysis in this study is T-unit which is defined by Fries and Francis (1992) as a clause complex which contains one main independent clause together with all the hypotactic clauses which are dependent on it.

Procedure
        To analyze the data for the organizational linkers, the following analytical procedures were followed. First, 120 RA abstracts (30 from each discipline) were extracted from the target journals and converted into word file. Second, after establishing the corpus, the researchers proceeded to identify organizational linkers of each sentence. To this end, the researchers read the 120 RA abstracts carefully and identified all the used organizational linkers . In this step, to mitigate the threat of false identification of organizational linkers, three raters were invited to check a sample of 32 RA abstracts from the corpus. The three raters were three PhD students pursuing their PhD in Applied Linguistics. If there were discrepencies in identification, the differences were subject to negotiation and discussion until an agreement was reached. Third, the researcher analyzed the RA abstracts for the used organizational linkers in terms of types and function. In this step, especially for detecting the function, the researcher again read the RA abstracts to mitigate any false detection of function due to partial understanding or misunderstanding of the RAs. This step was vital in the detecting of the discourse functions of the organsiational linkers in the Eco, Agri, and Phy RA abstracts as the researchers has little or no knowledge about topics covered in these RA abstracts. In addition, in the cases where the researchers could not understand the content, the researcher would discuse the content with an M.A. or PhD candidate who are enrolled at faculties where the discipline is practised. Forth, to ensure reliability, the sample of 32 RA abstracts were checked by the same three PhD candidates.

Finally, the frequency and occurrence of the types and functions of the organizational linkers were recorded and tabulated to facilitate a systematic discussion.

Results and Discussion

The four sets of RA abstracts were investigated for the organizational linkers' and the result is presented in Table 2. The types of organizational linkers' (henceforth "OL") found in the data were *Location, Validation, Condition, Cause, Contrast, Time, Purpose, Point of View,* and *Means*. In the following sub-sections, the results and their interpretations are presented in relation to organizational linker types.

Validation Organizational Linker

A marked disciplinary difference was reported in relation to the use of the Validation OL (e.g. 1) (see Table 2). AL writers used this type of OL for 11 times constituting 28% of all the OLs while Agri writers applied this OL only once (2%). These findings are in line with Chan and Ebrahimi's (2012) findings. They analyzed research article abstracts and found that in AL RAAs, writers use more validation linkers. They also found that this linker receives little attention from hard science disciplines' writers. The findings of this study are not in the same line with findings reported in study conducted by Ebrahimi, et al. (2015). They analyzed the use of linkers in the results and discussion sections of RA across different disciplines. The differences could be due to the difference of section of RA being studied. It seems that the selection of the Validation OL is influenced by the functions of rhetorical sections of RA. The findings presented in Table 2 could help to claim that in hard science RA abstracts informations presented can speak for themselves and do not seek for validation.

The result also yielded an interesting point concerning the application of the Validation OL. In AL RA abstracts, it was used in all the four rhetorical sections of IMRD. A greater use of the Validation OL in AL RA abstracts also pointed to the tendency of these writers to assign this responsibility to the disciplinary community rather than be explicit about it. The result also declared that AL writers are less inclined to practice the stance of using strong certainty in claim making; rather they preferred to elaborate on their own ideas in a reasonable and convincing way to back up their claims, arguments and findings. The lack of use of the validation OL in the Agri RA abstracts could be discussed on the grounds that the arguments, claims and findings in this discipline are founded more on common standards based on accessible available empirical data that are subject to little mitigation by community members.

E.g. 1: ***Based on careful examination of the time dependence of the mobility for the FET devices***, it was indicated that the mobility significantly increased in initial stage to several thousand hours. (Phy 4)

Table 2.Frequency and Percentage of the Validation Organizational Linker

	AL	Eco	Agri	Phy
	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Validation	11(28%)	5 (14%)	1 (2%)	2 (7%)
Total OL	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Location Organizational Linker

The use of the Location OL also revealed a telling disciplinary difference (from 16% in AL RA abstracts compared to 37% in Agri RA abstracts) (see Table 3). The findings of this study are in contrast with findings reported in Ebrahimi, et al. (2015). They analyzed results and discussion sections and found little inclination of writers to the use of this OL. The differences could be sourced from the differences between the data analyzed in both studies. The use of this OL could help to present discoursal and real world location of study. Such an information could be of great help to those researchers that want to do similar researches or to decide to read the accompanying RA.

This OL, in Agri RA abstracts, was used to present the real world context (e.g. 2) in which the result is made meaningful and to establish spatial location (e.g. 3) for the presented information to facilitate the interpretation. It was also used as a signpost to anchor the reader's attention on to the topic of the study as well as to direct readers to movement between the rhetorical sections of the RA abstract (e.g. 4-5).

E.g. 2: However, ***among the top five varities***, the highest yielding varities under conventional farming systems were not always the highest yielding varities under organic farming systems. (Agri 6)

E.g. 3: ***In Finland***, the last decade has been exceptionally warm. (Agri 2)

E.g. 4: ***In conclusion***, different forage legumes did not perform equally in the cutting and grazing systems. (Agri 5)

E.g. 5: ***In this work***, we investigated the hot-electron dynamics of AlGaN/GaN HEMT structures grown by MOCVD on sapphire and SiC substrates at 80 K. (Phy 2)

Table 3. *Frequency and Percentage of the Location Organizational Linker*

	AL	Eco	Agri	Phy
	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Location	6 (16%)	6 (17%)	16 (37%)	9 (33%)
Total	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Condition Organizational Linker

An additional disciplinary difference between the four sets of RA abstracts is located in the use of the Condition OL (e.g. 6) (see Table 4). This OL was most used in Eco RA abstracts (22%) and the least in Phy RA abstracts (7%). This result is in contrast to findings reported by Ebrahimi, et al. (2015). Findings in this study might suggest that Eco writers in contrast to Phy writers, felt the necessity to justify their claims and arguments in all the four rhetorical sections of RA abstracts (IMRD). These justifications may help to increase the chance of publication. A strong sense of the need to justify the claims and arguments in this manner could also be motivated based on the writers' electing to express their personal opinions while maintaining a stance of being objective and invisible. Another reason behind the use of this type of OL is to provide readers with a clarity of the situation in which the study was carried out. In contrast, the Phy writers are less inclined towards having to display this function in their RA abstract writing possibly because of the reliance again on standards-based laboratory experiments and conditions. The findings could reveal that in Eco RA abstracts, writers prefer to state the conditions from which the results or claims emerged to convince the reader about the validity and objectivity of

finding or claim. Reporting the findings or claims next to the condition from which emerged helps the reader to know what are the expected findings or claims.

E.g. 6: ***When the position of the added nanoparticle is closer to the middle point of SWCNT length***, the mass sensitivity is increased. (Phy 28)

Table 4. *Frequency and Percentage of the Condition Organizational Linker*

	AL	Eco	Agri	Phy
	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Condition	6 (16%)	8 (22%)	9 (21%)	2 (7%)
Total	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Time Organizational Linker

The results indicated a telling disciplinary difference in the use of the Time OL across the four disciplines. Agri and Eco writers, in turn, showed the highest and the least propensity in the realization of this OL (12% and 3% respectively) (see Table 5). The results is in line with findings of Chan and Ebrahimi's (2012) study. A closer look at the Agri RA abstracts indicated that this OL was used to give a focus on a) the time duration of the study (e.g. 7); b) time context of the result to help anchor their interpretation (e.g. 8); and c) a chronologically sequence of the procedures of the study (e.g. 9). These uses of this OL could help researchers to claim the centrality and significance of study. Presentation of such information in RA abstract also could act as a signpost to guide readers while reading the ra abstract

E.g. 7: ***In a 5-year study (2004-2008)***, the possibility of exploiting intra-cultivar variation in cotton (*Gossypium hirsutum* L.) was investigated. (Agri 13)

E.g. 8: ***During the winter season,*** Aardi goats had lower water intake in comparison with Awassi sheep. (Agri 15)

E.g. 9: ***After supplementation finished***, previously supplemented ewes or those grazing the higher herbage mass lost LW and condition. (Agri 29)

Table 5. *Frequency and Percentage of the Time Organizational Linker*

	AL	Eco	Agri	Phy
	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Time	3 (8%)	1 (3%)	5 (12%)	1 (4%)
Total	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Purpose Organizational Linker

In terms of the Purpose OL, the result indicated a disciplinary difference between the four disciplines where the application fluctuated from 3% in the Eco RA abstracts to 18% in the Phy RA abstracts (see Table 6). This suggests that the Phy writers were most oriented towards the explaining of research actions and procedures in the RA abstracts and to indicate reason-result relationship between the research actions and procedures compared to the others. The Purpose OL could result in justified RA abstracts. This could play a pivotal role in publication.

Table 6. *Frequency and percentage of the Purpose Organizational Linker*

	AL	Eco	Agri	Phy

	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Purpose	2 (5%)	1 (3%)	3 (7%)	5 (18%)
Total	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Contrast Organizational Linker

Similarly, the result showed that the realization of the Contrast OL also fluctuated; from a figure of 5% in Agri RA abstracts to 19% in Eco RA abstracts (see Table 7). This result is inline with Chan and Ebrahimi (2012). This could be justified based on similary in the analyzed genre. The result of this study indicates that Eco writers preferred to validate their studies through contrasting with other findings. This contrast was carried out in two ways, one was to contrast the findings within the same study (e.g. 10) and the other was to contrast the findings with earlier ones reported in the literature (e.g. 11). Contrasting the findings directly seemed to increase the validity of the findings which in turn appeared likely to increase the validity of the study. Such contrasting could also serves the function of creating research space and highlights the significance of study.The little attention given to the Contrast OL by the Agri writers gives support to the practice of   hard disciplines, for example Agri, in seeing that this approach as not strongly needed to convince their readers of the validity of their findings.

E.g. 10: ***While such outcomes can be explained by high search costs***, the observation that at least 17% of consumers actually reduced their surplus as a result of switching cannot. (Eco 18)

E.g. 11: ***In contrast to earlier findings***, the weights placed on inflation and unemployment are of similar magnitude. (Eco 15)

***Table 7.** Frequency and Percentage of the Contrast Organizational Linker*

	AL	**Eco**	**Agri**	**Phy**
	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Contrast	6 (16%)	7 (19%)	2 (5%)	3 (11%)
Total	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Means Organizational Linker

Next, the data revealed a disciplinary difference in relation to the realization of the Means OL (see Table 8). This OL appeared not to be accessed by the AL writers, while Eco and Phy writers used it equally (12%). This finding is also reported in studies of other sections of RA as well as RA abstract. A closer look at the result in Table 8 could help in claiming that the use of this OL is disciplinary imposed. A main function of this OL type is to present the techniques applied to achieve the study's objectives (e.g. 12-14) to enhance the reliability of the findings.

E.g. 12: ***By distinguishing between discretionary and non-discretionary fiscal policy***, this paper analyses the stability of fiscal rules for EMU countries before and after the Maastricht Treaty. (Eco 25)

E.g. 13: ***Using a panel of almost 300,000 Australian companies***, we estimate a piecewise-Reiteration exponential hazard rate model to examine the relationship between innovation and company survival. (Eco 15)

E.g. 14: ***Using a revised thin serface barrier model***, the calculated curves match well with the measured curves. (Phy 3)

Table 8. *Frequency and Percentage of the Means Organizational Linker*

	AL	Eco	Agri	Phy
	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Means	-	4 (12%)	1 (2%)	3 (12%)
Total	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Viewpoint and Cause Organizational Linker

The result also depicted that the Viewpoint and Cause OL were little used by the four groups of writers (see Table 9) to show different dispositions as the writers develop the information in their studies.

Table 9. *Frequency and Percentage of the Viewpoint and Cause Organizational Linker*

	AL	Eco	Agri	Phy
	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Viewpoint	2 (5%)		1 (2%)	1 (4%)
Cause	1 (3%)	2 (5%)	3 (7%)	-
Total	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Table 10 sums up the frequency and percentage of the OLs used in the data analyzed. This Table also presents an overview of the comparisons in the manifestations of the OLs used in the four sets of RA abstracts. In addition, the "other" category category includes OLs which could not be categorized under any of the predertermined categories of the OLs.

Table 10. *Frequency and Percentage of the Types of Organizational Linkers*

	AL	Eco	Agri	Phy
	Fre. (Per.)	Fre.(Per.)	Fre. (Per.)	Fre. (Per.)
Validation	11(28%)	5 (14%)	1 (2%)	2 (7%)
Location	6 (16%)	6 (17%)	16 (37%)	9 (33%)
Condition	6 (16%)	8 (22%)	9 (21%)	2 (7%)
Contrast	6 (16%)	7 (19%)	2 (5%)	3 (11%)
Time	3 (8%)	1 (3%)	5 (12%)	1 (4%)
Purpose	2 (5%)	1 (3%)	3 (7%)	5 (18%)
Viewpoint	2 (5%)		1 (2%)	1 (4%)
Means	-	4 (11%)	1 (2%)	3 (11%)
Cause	1 (3%)	2 (5%)	3 (7%)	-
Others	1 (3%)	2 (5%)	2 (5%)	1 (4%)
Total	38 (100%)	36 (100%)	43 (100%)	27 (100%)

Fre.= Frequency   Per. = Percentage

Conclusion

This study intended to find out how OLs are used in AL, Eco, Agri and Phy RA abstracts. It seeks to add to the meaningful debate forwarded by Pho (2008), Hyland (2005, 2008, 2009) and Ebrahimi and Chan (2015) who claimed that disciplinary background shapes academic writing, which is the RA abstract in this study. The results affirmed the presence of disciplinary difference in the use of various types of OLs, suggesting that writers with different disciplinary

backgrounds may use different organizational linkers to construct an RA abstract. In other words, disciplinary background imposes on writers to select specific OLs to present the intended meanings. In addition, the results also affirmed some similarity in the selection of OLs as a result of the genre in question.

Generally, the data obtained point to the greater use of OLs by the writers from the soft science's disciplines compared to their counter parts in hard science's. This suggests that these writers are more inclined to the use of the OLs to mark sentences boundaries in to textual organization, such as signaling changes and turns in real world and the depicting of discourse circumstances. The writers use these elements in tandem with the maneuvre of the rhetorical moves of the RA abstract (IMRD). As for the various types of the OLs, disciplinary differences are suggested in the manner of the writers mapping these linkers types onto their discourse which function as textual organizers. These disciplinary differences were more clearly seen in the use of the validation, condition and contrast OLs. Therefore, it could be concluded that disciplinary rules and regulations imbibed as a result of disciplianary experience may have influenced the choice of a particular OL to aid the writer in forwarding the claims or arguments.

Insights obtained in this study would be of great help to novice writers, especially non-native ones, who are building up their careers in the academic world in which being able to write effective RA abstracts is a necssssity . Additionally the data could provide these writers on how published writers balance their choices of the OL in their disciplines. This balance is further governed by functional notions and may depend on a number of other simultaneous factors in operation; among which are length, idea complexity and relative emphasis. These insights would help increase the chance of an RA abstract as well as the RA of being accepted for conference presentation or publication in a journal. As such, such aids to text structuring also stress the importance of explicit teaching of OLs as cohesive devices in writing. They are however, not confined just to writing, but are alos useful for readers in comprehending the RA abstract as they have functional and communicative purposes especially in the context of the move structures in which the OLS are found.

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