



43/2023

Research Journal
 Studies about Languages
 pp. 46–63
 ISSN 1648-2824 (print)
 ISSN 2029-7203 (online)
 DOI 10.5755/j01.sal.1.43.34785

LINGUISTICS / KALBOTYRA

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Received 08/2023

Accepted 11/2023

HOW TO CITE: Le, T. N. P. (2023). Text construction through patterns of signalling nouns: Evidence from the Discussion-Conclusion section of applied linguistics research articles. *Studies about Languages / Kalbų studijos*, 43, 46–63. <https://doi.org/10.5755/j01.sal.1.43.34785>

Text construction through patterns of signalling nouns: Evidence from the Discussion-Conclusion section of applied linguistics research articles

Teksto konstravimas naudojant signalinius daiktavardžius taikomosios kalbotyros mokslinių straipsnių diskusijos ir išvadų dalyse

THI NGOC PHUONG LE, University of Danang, Vietnam
 University of Auckland, New Zealand

Abstract

There has been a great interest in abstract nouns such as *concept*, *problem*, *result* from different research approaches. These nouns, labelled here as ‘signalling nouns’, have been extensively investigated in numerous studies focussing on a range of aspects. Differences in terms of their patterns and uses have been explored between genres, disciplines and languages, yet little is known about possible variation on the level of *rhetorical move*. The present study examines the distribution of signalling nouns and their semantic, lexico-grammatical and discourse features across the moves in the Discussion-Conclusion section of 124 applied linguistics research articles. The examination of signalling nouns from such a micro level of move allows for deeper insights into rhetorical factors governing their differing preferences for particular patterns and the performance of each pattern associated with a particular noun. This detailed account also highlights how a text is constructed cohesively through the co-occurrence of moves.

KEYWORDS: applied linguistics research articles, signalling nouns, rhetorical structure, communicative functions.

Introduction

Abstract nouns such as *concept*, *problem*, *result* with their cohesive and evaluative functions have attracted great attention from many researchers (e.g., Aktas & Cortes, 2008; Álvarez de Mon y Rego, 2006; Botley, 2006; Charles, 2003; Flowerdew, 2003; Flowerdew & Forest, 2015; Gray, 2010; Gray & Cortes, 2011; Kanté, 2010; Moreno, 2004; Yamasaki, 2008). Different facets of abstract nouns (patterns and uses) have been explored in a wide variety of written and spoken genres (e.g., research articles, lectures, or textbooks), and different disciplines (e.g., applied linguistics, civic engineering, or law). They have also been compared between languages (Spanish vs. English), genres (textbooks vs. journal

articles), and broad disciplinary groupings (social sciences vs. natural sciences). This type of noun has been differently labelled in the literature as ‘carrier nouns’ (Ivanic, 1991), ‘advance/retrospective labels’ (Francis, 1994), ‘enumeration’ (Tadros, 1994), ‘shell nouns’ (Hunston & Francis, 1999; Schmid, 2000), ‘general nouns’ (Halliday & Hasan, 1976), and ‘signalling noun’ (Flowerdew, 2003, 2006, 2010; Flowerdew & Forest, 2015). These different labels can imply different perspectives (structural or discoursal) and different criteria used for identifying this type of nouns (including or excluding concrete nouns like *man*, *people*). This can thus result in a variation in the membership of unspecific noun class and varying degrees of importance attached to the members.

Unlike most studies that have investigated a limited number of pre-selected patterns of unspecific nouns (e.g., Botley, 2006; Gray, 2010; Gray & Cortes, 2011; Kanté, 2010), or particular discourse functions (anaphoric/cataphoric) (Álvarez de Mon y Rego, 2006; Botley, 2006; Charles, 2003; Gray, 2010; Gray & Cortes, 2011; Moreno, 2004; Yamasaki, 2008), a few studies (e.g., Aktas & Cortes, 2008; Flowerdew, 2003, 2006; Flowerdew & Forest, 2015) have explored more comprehensively the use of abstract nouns and a wider range of semantic, lexico-grammatical and discourse features associated with this class of noun. Most notably, Flowerdew and Forest (2015), when taking a discourse perspective and drawing on a substantial body of previous work into unspecific nouns, account for a broader range of unspecific nouns under a “single unified framework” (p. 36). Under this framework, different types of abstract nouns (e.g., logical coherence nouns, cognitive nouns) that have different levels of importance in different conceptual frameworks are now given more equal importance.

Flowerdew and Forest (2015) further make a significance contribution to the existing literature on two grounds. First, based on their corpus of spoken and written academic genres, the authors describe several grammatical features of unspecific nouns that have not been reported in previous studies (see pp. 20–21, for further details). The authors also modify and add clarification to the existing account of grammatical features of unspecific nouns. More particularly, their study gives evidence for the existence of the lexico-grammatical pattern ‘noun + complement clause’ with the addition of preposition-clauses to the existing clause types: *that*-, *wh*-, *to*-clauses.

Flowerdew and Forest’s (2015) study shows the distribution of signalling nouns with their associated semantic, lexico-grammatical and discourse categories across the academic domains (journal articles, textbooks, and lectures) and disciplines (natural and social sciences), through which cohesive properties of these signalling nouns are highlighted. In their study, discourse features of signalling nouns are theoretically characterised based on Winter’s (1977) notion of clausal relations (e.g., cause-effect) and Halliday and Matthiessen’s (2013) logico-semantic relations (e.g., elaboration). These features are reflected in their tagging system with particular regard to the clause-level relationship that a signalling noun has with its lexical realisation. Two types of relation are identified: in-clause relations in which the specific can occur in the same clause as the signalling noun, and across-clause relations when the specific occurs in a clause separate from the signalling noun. In the case of across-clause specification patterns, a further distinction is made between proximal relations (the specifics appear in the immediately preceding or following context) and distal relations in which there is intervening text (one or more sentences or paragraphs) between the signalling noun and its specifics (Flowerdew & Forest, 2015, p. 126).

It is important to note that under Flowerdew and Forest’s (2015) framework, the discourse features that are manifested in the clause-level relationship between the signalling noun and its specific point to their intra-textual connection. However, it is also interesting to make implicit rhetorical characteristics of signalling nouns, or in other words, the communicative functions that signalling nouns and their realisation perform across a text. Furthermore, a good number of studies have shown how different patterns and uses of abstract nouns operate on the levels of genre, discipline or linguistic community, yet little is known about possible variation on a micro-level of *move*, which is defined as “a discoursal or rhetorical unit that performs a coherent communicative function in written or spoken discourse” (Swales, 2004, p. 228). Numerous genre-based studies following the Swalesean approach have shown that different article sections have distinct communicative functions realised through moves and steps. It is thus an open question as to whether abstract nouns are used differently in these sections, and how these nouns help establish cohesion to convey the communicative purpose of individual article sections.

The main purpose of the present study is to further delineate the cohesive properties and behaviour of abstract nouns by showing their distribution in sections of research articles (RAs) in applied linguistics. We chose this

discipline as there have been several rhetorical frameworks developed for RAs in this field and thus available for use in the present study. Moreover, the current research focuses on one RA section, i.e., Discussion-Conclusion section, because this section is deemed to be critical in an RA, where new knowledge claims are made and implications in view of main findings are put forward. We adopt Flowerdew and Forest's (2015) framework since it provides arguably the most comprehensive account of unspecific nouns in academic discourse (Benitez-Castro & Thompson, 2015, p. 400). To avoid possible confusion that may be caused by different labelling, in the present study, we use the term 'signalling nouns' (SNs), which are defined as abstract nouns which have no specific meaning when in isolation, and whose meaning is made specific through their context (Flowerdew & Forest, 2015, p. 1).

Our study provides an account of the connection between SNs/their specifications and the communicative functions of the Discussion-Conclusion section by addressing two research questions:

- 1 What are signalling nouns and their semantic, lexico-grammatical and discourse features in the Discussion-Conclusion section of applied linguistics research articles?
- 2 How are the signalling nouns distributed across the communicative functions of the Discussion-Conclusion section of applied linguistics research articles?

The corpus

Methods

To address the research questions, we draw on a corpus of 124 applied linguistics empirical RAs selected from four high-quality peer-reviewed journals including *Language Learning* (LL), *Applied Linguistics* (APL), *Modern Language Journal* (MLJ) and *TESOL Quarterly* (TQ). In the present study, the 'Discussion-Conclusion' section refers to the remaining content appearing after the Results section either with a conventional heading (e.g., 'Results', 'Findings') or a functional heading (e.g., 'Session Structure Features'). We selected RAs that have the Results section separated from the other sections.¹

The selected RAs were converted into text files for analysis using concordance software *AntConc* (Anthony, 2018). Other elements such as titles, authors, abstracts, tables, figures, texts accompanying tables and figures, footnotes, acknowledgements, and references were excluded. The main corpus used in the present study consists of 124 Discussion-Conclusion texts. Moreover, for the key word analysis, another corpus which is comprised of texts of the other RA sections serves as the reference corpus. Table 1 shows details about the corpora and its constituents.

Table 1 Journal selection

		Applied Linguistics	Language Learning	Modern Language Journal	TESOL Quarterly	Total
Number of tokens	Period covered	2006–2013	2007–2012	2007–2013	1990–2013	
	Total no. of RAs	32	10	39	43	124
	Introduction	235 388	96 142	331 068	299 296	961 894
	Methods					
	Results					
	Discussion-Conclusion					
	Discussion-Conclusion only	61 602	23 126	93 905	82 859	261 492

¹ The list of selected journals and RAs may be provided at the reader's request.

Procedure

The Discussion-Conclusion texts were analysed both quantitatively and qualitatively through three stages, as illustrated in Fig. 1.

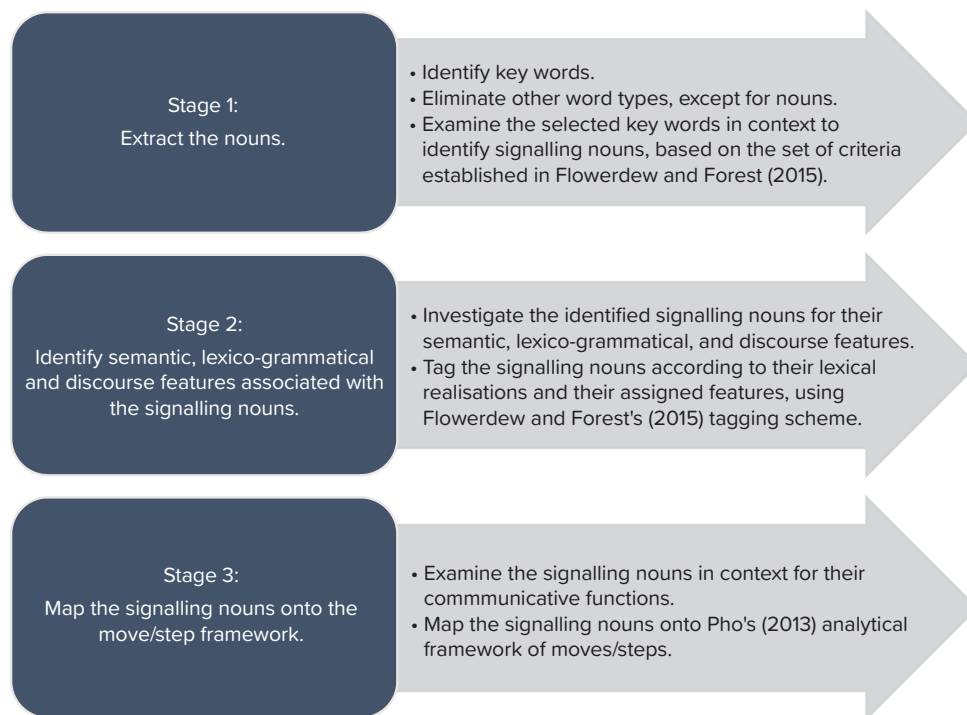


Fig. 1 Data analysis procedures

Stage 1: Noun extraction

The first stage involved the identification of SNs. First, key words in the corpus of Discussion-Conclusion texts were extracted using software *AntConc* (Anthony, 2018). These key words are characteristic of the Discussion-Conclusion section, and therefore can be expected to be associated with the communicative functions of this section. The key words being extracted were subject to an elimination process, so that only nouns were included for further analysis because these nouns can function as SNs. Next, the selected key nouns were closely examined in context to determine whether these nouns qualify as SNs. The present study used the criteria for identifying SNs established in Chapter 5 of Flowerdew and Forest's (2015) book, among which the main one is *encapsulation*, meaning that to qualify as an SN, a noun must have lexical specifics provided elsewhere in the text (Flowerdew & Forest, 2015, pp. 48–49).

The identification of SNs takes the whole text into consideration as the relevant unit for recognition. In this way, the relationship between the SN and its realisation is not one-to-one. Rather, an SN can have many lexical realisations, and a segment can act as a lexical realisation for multiple SNs. Following Flowerdew and Forest (2015), it is necessary to clarify some issues related to the frequency of the SNs. First, not every instance of an unspecific noun can function as an SN, and therefore each instance was examined for its signalling noun status. The counts were made, therefore, based on the instances of the SNs. Second, in the case where an SN has multiple realisations, both in-clause and across-clause realisations, only in-clause realisations were counted. Flowerdew and Forest (2015) claim that across-clause SNs are more frequent, and they do not want to inflate the counts. This is also the case in the present study where across-clause specifics are predominantly more frequent than in-clause.

Stage 2: Feature identification

The second stage involved identifying semantic, lexico-grammatical, and discourse features of the SNs, and manually tagging the identified SNs according to their associated features. This was done based on close concordance examination of these nouns in their context. The tagging scheme developed by Flowerdew and Forest (2015) was used in the present study.

Stage 3: Communicative function identification

During the third stage, the SNs and their specific were thoroughly examined in context for their communicative functions, and then mapped onto the analytical framework of moves/steps in the Discussion-Conclusion section, outlined in Pho's (2013) study (as demonstrated in Table 2). We selected this framework as it has been developed based on a corpus consisting of applied linguistics RAs, and thus it is directly relevant to the present study. Pho (2013) classifies the moves into three levels: obligatory if the moves occur in all the articles, prototypical (more than 60%) or optional (less than 60%).

Table 2 Pho's (2013) analytical framework of the rhetorical structure in the Discussion-Conclusion section

Moves and steps in the Discussion-Conclusion section	Degree of obligation
Move 1 Preparing for the presentation of the discussion section	Prototypical
Step 1 (Re)stating data collection and analysis procedure	
Step 2 Restating research questions or hypotheses	
Step 3 Giving background knowledge	
Step 4 Indicating the structure of the section	
Move 2 Summarising the study	Optional
Move 3 Highlighting overall research outcome	Obligatory
Move 4 Discussing the findings of the study	Obligatory
Step 1 Interpreting/Discussing results	
Step 2 Comparing results with literature	
Step 3 Accounting for results	
Move 5 Drawing conclusions of the study/Stating research conclusion	Prototypical
Move 6 Evaluating the study	Prototypical
Step 1 Indicating limitations	
Step 2 Indicating significance	
Move 7 Deductions from the research	Obligatory
Step 1 Making suggestions/Drawing implications	
Step 2 Recommending further research	

Signalling nouns characteristic of the Discussion-Conclusion section

Results

The first stage of the methodological procedure yielded five SNs meeting the criteria (Table 3). They were subject for further analyses of their semantic, lexico-grammatical and discourse features.

Table 3 SNs in the Discussion-Conclusion section

Rank	Key word	Freq.	%	Texts	RC. Freq.	RC. %	Keyness
3	findings	513	0.2	111	900	0.09	164.47
5	finding	250	0.1	87	377	0.04	109.5
9	implications	118	0.05	70	142	0.01	74.22
23	limitations	89	0.03	60	135	0.01	38.56
34	result	176	0.07	75	398	0.04	26.95

Signalling nouns and their semantic features

Table 4 shows the semantic categories of the five selected signalling nouns. The majority of the SNs (*findings*, *finding*, *limitations*, and *result*) belong to the semantic category 'fact', which represents information about the world. Flowerdew and Forest's (2015) study also finds that 'fact' SNs are the most frequent in their academic discourse corpus. This suggests that the SNs reflect the common practice in the Discussion-Conclusion section; that is, predicating the discussion, evaluation and deduction on evidence (i.e., results). In addition, there is only one 'idea' SN (*implications*), which are used to present writers' interpretations of and suggestions about a particular phenomenon.

Table 4 SNs and their semantic categories

Rank	Key word	Semantic category
3	findings	Fact
5	finding	Fact
9	implications	Idea
23	limitations	Fact
34	result	Fact

Signalling nouns and their lexico-grammatical and discourse features

Lexico-grammatical features of SNs

The following lexico-grammatical features were identified for the SNs in the present study. Examples are provided in the square brackets.

- Noun phrase: SN + complement clause (*that*-, *wh*-, or *prep*-clause) [*These findings contrast with the previous findings that planning time positively influences the quality of learner output* (APL11)]
- Clause structure: SN + be + nominalisation, also called 'container's sentence'
In addition to the verb *be*, other relational verbs such as *include* are also found in the present corpus.
SN + be + *that*-clause [*The first important finding of this study was that there are few differences* (APL18)]
SN + be + deverbal noun [*Other important implications for relevant SLA research include implementation of different elicitation methods* (MLJ21)]
- Marked patterns
Comparable to the container's sentence is what Flowerdew and Forest (2015) call 'marked patterns', but with SNs pointing to a different direction.
Deverbal + be + SN [*We argue that such an increase in word sense relations is the **result** of learners beginning to make associations between the multiple senses available within individual lexical items.* (LL3)]
- SNs and specifics in apposition [*In addition, the significant main effect of word type ... indicates that L2 word properties have measurable impacts on L2 print ..., a **finding** which is consistent with that from previous studies* (APL6)]

Tags/SNs	findings	finding	implications	limitations	result	Total			
CNppo	18	2	3			23	183	229	
CNth	15	38	1		4	58			
CNofd	5	5				10			
CNing	4	2			1	7			
CNwhR	4				3	7			
CNCo	2			2		4			
CNAp	2	1			1	4			
CNwh	1					1			
CNAdj	1		1		23	25			
CNvd	1	4	1	2	4	12			
CNvth		29			3	32			
ANAp	2	5				7	46		
ANppo	1					1			
ANvd		1			10	11			
ANAdj					26	26			
ANCo					1	1			
Total	435	233	69	51	143	931	931		931

Below are a few examples of the most frequent lexical-grammatical and discourse features in the Discussion-Conclusion section.

ANAcD – anaphoric, across-clause, distal

[in Move 4 Discussing the findings, occurring after Move 3 Highlighting overall research outcome]

*The **findings** do indicate that if learners meet unknown words a minimum of ten times during reading, sizeable vocabulary growth may occur.* (APL10)

ANAcP – anaphoric, across-clause, proximal

*A Pearson correlation revealed no significant relationship between the two variables, $r = -0.12$, $p = .71$, which provides further support for the present results. These **findings** contrast with the previous findings* (APL11)

CNAcP – cataphoric, across-clause, proximal

*Our analysis yielded several substantive **findings**. First, frequency level showed significant effects both for learners' vocabulary breadth knowledge and vocabulary fluency at each particular time point and for the rates at which learners' vocabulary breadth knowledge and vocabulary fluency develop.* (APL17)

CNAcD – cataphoric, across-clause, distal

[in Move 5 Drawing research conclusions move, appearing after Move 1 Preparing for the presentation move]

Moves and steps ANAccd 297		Lexico-grammatical and discourse tags and their frequency across the moves/steps																Total			
		ANAcP	CNAcP	CNAcd	CNth	CNvth	CNAdj	CNppo	CNvd	CNofd	CNing	CNwhR	CNCo	CNAp	CNwh	ANAdj	ANvd		ANAp	ANppo	ANCo
		264	112	29	58	32	25	23	12	10	7	7	4	4	1	26	11		7	1	1
Move 6 Evaluating the study	Step 1 Indicating limitations	30	1	33	3	1		3	1	2											74
	Step 2 Indicating significance	7	2						1												10
	Step 3 Evaluating the methods	4	1	1				1								2					9
Move 7 Deductions from the research	Step 1 Making suggestions / Drawing implications	12		7	6			1	3	1											30
	Step 1B Making pedagogical implications	43	11	30	8	3		1	2			1							1		100
	Step 2 Commenting on the generalizability of the research	3																			3
	Step 3 Recommending further research	31	6			1		1	2			1				1	1				44

Notes. The moves/steps highlighted in grey are found in the present corpus, but not in previous frameworks.

Signalling nouns and communicative functions

Table 7 shows the distribution of the specification patterns across the moves/steps. The analyses of the SNs in context revealed several moves/steps that are not found in the analytical framework. The first is Step 1.5 *Outlining findings*, in which writers indicate that they are going to present their findings in the following text. The second newly found is Step 4.4 *Evaluating results*, where writers give evaluative statements about the findings by stating, for example, whether the findings are surprising or expected. This is compatible with Yang and Allison's (2003) framework of Move 4 *Commenting on results*², which consists of four steps including *Interpreting results*, *Comparing results with literature*, *Accounting for results*, and *Evaluating results*.

The third new step is Step 7.1B *Making pedagogical implications*, where some suggestions about teaching and learning are proposed. In Pho's (2013) framework, Step 7.1 *Making implications* includes all types of implications, such as general or pedagogical implications. However, the contextual analyses of the SNs showed that a significant number of tags which are used for making implications (approximately three quarters) are devoted to proposing pedagogical implications, suggesting that *Making pedagogical implications* should be treated as a separate step. The last two new communicative functions are Step 6.3 *Evaluating the methods*, through which writers raise their comments on the methods of their study, and Step 7.2 *Commenting on the generalizability of the research*, in which writers comment on the extent to which their study can be generalised into other contexts. However, these two steps are not found to be very frequent in the present study.

² Yang and Allison's (2003) Move 4 Commenting on results functionally corresponds to Pho's (2013) Move 4 Discussing the findings of the study.

The distribution of lexico-grammatical and discourse features associated with SNs across the moves/steps

As can be seen from Tables 5 and 6, approximately 75% of all the lexical realisations are across-clause, as opposed to nearly 25% for in-clause. The predominance of across-clause lexical realisations is consistent with the results of Flowerdew and Forest's (2015). Unsurprisingly, across-clause patterns occur in a broader range of moves and steps than in-clause ones (see Table 7). They are present in most of the obligatory and prototypical moves, including Step 1.5 *Outlining findings*; Move 4 *Discussing the findings of the study* and its constituent steps; Step 6.1 *Indicating limitations*; and Step 7.1 *Making suggestions/Drawing implications*, Step 7.1B *Making pedagogical implications*, and Step 7.3 *Recommending further research*.

Within across-clause relations, different SNs show their distinct preferences for the direction of matching (anaphoric and cataphoric) and the distance (proximal or distal) between the SN and its specific. While the SNs *findings*, *finding*, and *results* have anaphoric across-clause realisations as the most frequent pattern, *implications* and *limitations* establish more cataphoric across-clause realisations. As *findings*, *finding* and *results* altogether have a higher frequency than *implications* and *limitations*, it follows that anaphoric across-clause relations are more prevalent than cataphoric ones, present in all the main moves 4, 6 and 7. In terms of the distance, the majority of the specifics of *implications* and *limitations* are present in the immediately following text (ANAcP). *findings* and its anaphoric specifics tend to have a distal relationship (ANAcD), whereas its singular counterpart *finding* has more proximal relations than distal (ANAcP).

In terms of in-clause realisations, prospective use is predominantly more frequent than encapsulation, which is also in line with the finding of Flowerdew and Forest's (2015) study. In-clause cataphoric patterns are mainly formed with SNs *findings* and *finding* and fulfil the functions of highlighting overall research outcomes (Move 3) and discussing the findings of the study (Move 4). The two most frequent patterns are 'SN + verb + *that*-clause' (CNvth), which is more associated with Move 3, and 'SN + *that*-clause' (CNth) with Move 4 and its steps.

SN profile of individual moves/steps

This section presents detailed information on the distribution of the SNs as well as their associated lexico-grammatical and discourse features across specific moves and steps. Due to space constraint, it focusses on moves/steps which are realised by more than 50 instances. Examples from the corpus are given following the convention: SN is indicated in **bold**, and its realisation is underlined.

Move 3 Highlighting overall research outcomes

Move 3 *Highlighting overall research outcomes* is realised mainly by the SNs: *findings*, *finding* and *result* with *finding* being the most frequent. The construction '*finding* + verb + *that*-clause' is the most frequent (27.7%). The only verb appearing in this construction is *be* in its present simple (15 cases) and past simple forms (8 cases). Of particular note is that the modifications of *finding* contain evaluative adjectives such as *interesting*, *important*, *major*, and *notable*. It is clear that in the Discussion-Conclusion section, writers report results of their study and add comments on these findings (see Example 1). In all cases (23), SN *finding* occurs with demonstrative *this* (as in *this study*) to "specify the references" (Li et al., 2022, p. 17), meaning that researchers would like to emphasise that they are reporting findings from their own studies and distinguish their findings from those of previous studies. Other patterns of *finding* which also frequently occur in this move include '*finding* + *that*-clause' (8.4%) and '*finding* + verb + deverbal/deadjectival noun' (4.8%).

Ex 1 A new **finding** in this study is that high school L2 learners (LL10)

Move 3 is also realised by the SN *findings* and its across-clause specifications, with the anaphoric distal relations being the most frequent (CNAcD, 10.8%). Concordance analyses showed that in this case the SN itself refers to some specific results reported in preceding context, but the reporting of results based on the evidence is repeated in the following text, for example, in the Conclusion section of the study (see Example 2).

Ex 2 The **findings** demonstrated that speakers with ... were more likely to exhibit nativelike grammatical intuitions than (APL14)

Move 4 Discussing the findings of the study – Step 4.1 Interpreting results

Step 4.1 *Interpreting results* is realised by the highest number of tags (21.7% of the total), point to the importance of this step in Move 4 *Discussing the findings of the study*. Again, the research nouns: *findings*, *finding* and *result* are the most common in this step. Across-clause realisations are the most frequent, filling the top four positions in the profile of tags, as illustrated in Table 6.

The use of *findings* in distal relations is the most frequent (ANAcD, 30.2%), giving the second place to its proximal use (ANAcP, 19.3%). Concordance analyses of these patterns provide insights into the relationship between distance relations (proximal or distal) and move/step sequencing. The results of analyses showed that the Step 4.1 can occur in different parts of the section. When in anaphoric proximal positions, *findings* anaphorically refers to results which have been reported in immediately preceding context. This means that *findings* occurs in Step 4.1, following Move 3 *Highlighting overall research outcomes*. In this case, the sequence Move 3-Step 4.1 is formed (see Example 3). In contrast, with its anaphoric distal relations, the specifications of *findings* are not present in immediately prior context; they are rather interrupted by intervening discourse which can represent other moves/steps like Step 4.2 *Comparing results*, Step 4.3 *Accounting for results* (see Example 4).

Ex 3 *For instance, in PDR-high requests, 100 percent of the native speakers used mitigatory-preparatory expressions These findings suggest that the learners did not have the linguistic resources ...*^(APL11)

Ex 4 *Given the findings of this study, we would like to suggest that the use of some metacognitive strategies ... may interfere with successful performance ...*^(APL9)

The specification pattern of *finding* in this step is different from *findings* in that anaphoric proximal relations are more frequent than other patterns of *finding*, accounting for 15.8% of the total number of tags in this step. As *finding* is used to refer to an individual result, its lexical realisation is often present in the immediately preceding discourse (see Example 5). The same explanation applies to *result* and its across-clause anaphoric proximal relations, which rank 4th with 7.9% (see Example 6). This observation about the specification patterns of *finding* and *result* also points to the sequence Move 3-Step 4.1.

Ex 5 *It is true that the learners in our study were more successful at ... than they were at This finding could be seen as lending some support to the claim that ...*^(APL31)

Ex 6 *Among the participants with above-average aptitude, on the other hand, these variables turned out not to be significantly correlated. This result thus indicates that ...*^(APL14)

The second most frequent pattern of the SN *finding* that is of interest in this step is '*finding* + *that*-clause', which means that results are reported again and packed in the *that*-clause. This integrated construction again shows that Move 3 co-occurs with Step 4.1.

Move 4 Discussing the findings of the study – Step 4.2 Comparing results with literature

Step 4.2 *Comparing results with literature* has the second greatest number of tags, suggesting that this step is quite common in the Discussion-Conclusion section. The profile of tags for this step is quite similar to that for Step 4.1 *Interpreting results* in that the top five positions are filled with across-clause anaphoric relations.

In Step 4.2, *finding* with its anaphoric proximal relations is the most frequent, accounting for 23.6%. The specification of *finding* immediately precedes the SN itself, indicating that the SN *finding* is referring to a specific result (see Example 7). When comparing results with those in previous studies, writers tend to refer to individual results. Similar explanations also apply to the case of *result* and its anaphoric proximal relations (see Example 8), which constitutes 7.2% of the total number of tags in this step. The SN *findings* with their anaphoric proximal and distal relations is also worth mentioning. With their anaphoric proximal relations, the specific of *findings* is present in immediately preceding context, meaning that results are reported before comparisons are made (see Example 9). The patterns associated with *finding*, *result*, and *findings* show that the Move 3 *Highlighting overall research outcomes* precedes Step 4.2 and confirm the sequence Move 3-Step 4.2.

- Ex 7 *This study revealed that there was no relationship This **finding** contradicts the findings of a previous study (Sagarra 2007)* (APL1)
- Ex 8 *Considering the first research question, all three groups that received WCF outperformed the group that received no feedback This **result** corroborates those of several recent studies on article use* (APL28)
- Ex 9 *A Pearson correlation revealed no significant relationship These **findings** contrast with the previous findings that* (APL11)

The anaphoric distal relations of *findings* show that the specification and the SN are separated by intervening texts which can express other discourse functions such as interpreting results (Step 4.1) (see Example 10). This again confirms the step order (Step 4.1-Step 4.2).

- Ex 10 *The **findings** are similar to previous factor analytic studies with different populations* (MLJ38)

Move 4 Discussing the findings of the study – Step 4.3 Accounting for results

The most frequent pattern in Step 4.3 *Accounting for results* is *findings* with its across-clause anaphoric distal relations, making up 13% of the tags. This means that its specifications are mentioned in preceding discourse, and separated by some intervening texts (see Example 11). This pattern explains the order of this step, because in these intervening texts, interpretations (Step 4.1) and comparisons (Step 4.2) can be made based on results before explanations are given (Step 4.3). Alternatively, this pattern shows that more than one explanations are given in these intervening texts.

- Ex 11 *These observations could explain the present **findings** because the students* (TESOL18)

The SN *result* in adjunct positions (ANAdj and CNAAdj) predominantly occurs in this step (at 22.8%). As noted earlier, they are the most common specification patterns of this SN. In these relations, *result* forms n-grams as *a result* or *as a result of*, and is used to give explanations for a finding. Finally, *finding* whose specifications are specific results presented in the immediately preceding text (ANAcP) is still common in this step, and merits the same explanations as its presence in the previous steps (4.1; 4.2).

Move 4 Discussing the findings of the study – Step 4.4 Evaluating results

The SN *finding* with its across-clause anaphoric proximal relations is the most frequent in Step 4.4 *Evaluating results* (28.8%). It is unsurprising since the evaluation is usually made on an individual result. This is also the case for the SN *result*. These two observations point to the sequence Move 3-Step 4.4. On the contrary, *findings* in their across-clause anaphoric distal relations (ANAcD) (see Example 12) comes in second place at 21.2%. Intervening discourse can refer to other communicative functions (Steps 4.1; 4.2; 4.3), thus giving some evidence to the step order.

- Ex 12 *Moreover, also when considered in the light of consolidation theories (e.g., Medina et al., 2008), our **findings** for vocabulary size are not as surprising as they might seem at first.* (LL9)

Move 6 Evaluating the study – Step 6.1 Indicating limitations

The most frequent SN in Step 6.1 *Indicating limitations* is *limitations* with its cataphoric across-clause proximal relations (CNAcP, 44.6%). Concordance analyses showed that most of the cases of *limitations* announce upcoming drawbacks which are present in immediately following texts (see Example 13).

- Ex 13** *Before we conclude the discussion, we want to note several **limitations** of this study. One major limitation is that (TESOL32)*

The SN *findings* with its cataphoric across-clause distal relations is also very frequent in realising the function of indicating limitations. In this case, writers tend to indicate drawbacks of their study and state how these drawbacks influence the interpretation of the findings which have been reported previously (see Example 14).

- Ex 14** *Consequently, it is not possible to determine if, in cases where ..., the **findings** can be attributed to the effect of one or more of the feedback variables. (APL28)*

Move 7 Deductions from the research – Step 7.1B Making pedagogical implications

Step 7.1B *Making pedagogical implications* is the most frequent step in Move 7 as it is realised by more than half of the total tags for this move. Unsurprisingly, *findings_ANAcD* is also the most frequent tag in this step (see Example 15). The same explanation is still valid in that any pedagogical implications are usually made based on research findings, and the intervening texts refer to other previous moves/steps, reflecting the move sequence.

- Ex 15** *The **findings** have important pedagogical implications for teaching articles to L2 learners (APL31)*

On the contrary, *finding* in its proximal relations highlights the fact that results are reported again in the immediately previous sentences before pedagogical applications are suggested (see Example 16).

- Ex 16** *A third notable finding is that These **findings** underscore the positive effect (MLJ3)*

Discussion and Conclusion

Summary and discussion

The present study has presented the semantic, lexico-grammatical, and discourse features of the SNs characteristic of the Discussion-Conclusion section of the applied linguistics RAs, and their distribution across the moves/steps. This section summarises the main findings of the present study, as well as offers a discussion on these findings.

The relationship between SN patterns and their communicative functions

Contextual analyses in the present study revealed that different SNs have differing preferences for patterns. For instance, while *findings*, *finding*, and *results* are more likely to involve in across-clause anaphoric relations, *implications* and *limitations* tend to have across-clause cataphoric relations with their specifics present in the immediately following text. This difference in the direction of matching can be linked to the communicative functions of these SNs. Most of the instances of *findings* and *finding* are used to comment on results or discuss findings (Move 4). Writers tend to report the results of their study and then make comments. In this case, the specifications of *findings* and *finding* precede the SNs themselves. In contrast, the majority of instances of *implications* and *limitations* are used to introduce suggestions and applications (Move 7) and state drawbacks (Move 6) after the discussion of the results (Move 4). Therefore, the lexical realisations of these two SNs often appear subsequently. Even the same SN but in different forms like *findings* and *finding* favours different patterns. For instance, *findings* predominantly has distal relations with its specifics, while *finding* has more proximal relations than distal. Again, this difference can be explained in terms of their communicative functions. *findings* conveys a wider variety of communicative purposes in the Discussion-Conclusion section. When used in Move 7 *Deductions from the research*, *findings* refers to the overall results which have been already reported in prior discourse in other previous moves such as Move 3 *Highlighting overall research outcomes*, or Move 4 *Discussing the findings of the study*. In contrast, *finding* in its singular form usually refers to a specific result, and is used most in Move 4 to offer comments, make comparisons, suggest explanations, or give evaluations based on this specific result. Therefore, the specifics of *finding* tend to be present in the immediately preceding text. The current finding that the singular and plural forms of the same word (i.e., *finding*) prefer different patterns in relation to the communicative functions

they perform corroborates with Sinclair's (1991) claim that each distinct form functions as a lexical unit with its own environment (p. 8), and with those of previous corpus-based studies (e.g. Le & Harrington, 2015; Saber, 2012). These findings therefore justify the assertion that analysis should start with word forms rather than lemma.

Each SN has various patterns which can be distinctive of particular rhetorical functions. The construction 'SN + verb + *that*-clause' of the SN *finding* particularly fulfils the purpose of reporting research outcomes (Move 3), whereas the patterns 'SN + *that*-clause/prepositional phrase' of *finding* mainly realise the function of interpreting results (Step 4.1). This relationship has also been clearly shown through patterns associated with the SN *result*. *result* with its specifications in the immediately preceding text occurs with high frequencies in all the four steps of the most frequent move (Move 4 *Discussing the findings of the study*). This means that writers tend to make interpretations and comparisons, and give explanations and evaluations directly based on the results of their study. However, *result* when occurring in the form of clusters (*as a result, as a result of*) particularly realises the communicative function of Step 4.3 *Accounting for results*.

Overall, the findings from our study point to the relationship between the SNs/their features and the rhetorical functions. The distinct patterns associated with the SNs are influenced by the communicative functions that the SNs perform. In other words, each move/step has a rather distinctive profile of patterns formed by the SNs and their specification. Without such a reference to rhetorical functions, it would have been still an open question as to why different SNs tend to prefer different patterns and what role different patterns of an SN play in the text.

Move/step sequence and recycling

The contextual examination of the SNs and their associated lexico-grammatical and discourse features for communicative functions they help convey sheds some light on the phenomena of move/step sequence (the order in which moves/steps occur) in the Discussion-Conclusion section. The analyses showed that the move sequence tends to follow the description outlined in the analytical framework of moves/steps. The reporting of a result (Move 3) is usually followed by the interpretations (Step 4.1), comparisons (Step 4.2), explanations (Step 4.3) and evaluations of the result (Step 4.4), and these steps in Move 4 *Discussing the findings of the study* were also found to occur in order, most of the time.

These analyses also point to the co-occurrence of moves/steps. Move 3 was found to frequently co-occur with each of the steps in Move 4, leading to the most frequent sequence Move 3-Move 4. This confirms the move order as shown in the analytical framework and gives support to Basturkmen's (2009) observation about the prevalence of the Move 3-Move 4 sequence (*Reporting results-Commenting on results*) in language teaching RAs. Move 3 also co-occurs with other moves/steps including Move 6 *Evaluating the study* and Move 7 *Deductions from the research* and their constituent steps, albeit with lower frequencies. This shows that writers tend to report their results again when they make comments, comparisons, give explanations, indicate limitations and propose suggestions or implications. This finding about sequencing and collocational patterning of moves/steps realised by the SNs and their specifications indicates that links within the same section of an RA can be created and maintained through the use of SNs.

Syntactical realisation of moves/steps

Detailed concordance examination of the SNs and their lexical realisations for the communicative functions they help convey provides interesting information regarding how a move/step is characterised grammatically. One example is that Move 3 *Highlighting overall research outcomes* can be realised in diverse syntactic forms, ranging from a sentence, several sentences to a clause or a phrase. As shown in Example 17, the specific realises Move 3, while the SN helps fulfil the function of comparing results with those from previous studies (Step 4.2). In this case, Move 3 is realised in the form of phrase.

Ex 17 *The findings of a facilitative effect for the Hispanophones are in line with post hoc explanations for results obtained in previous ...* (MLJ25)

In contrast, across-clause relations between the SN and its specific point to the tendency that the specific is expressed in a sentence or many sentences, as these two equative elements occur in different clauses. In Example 18, the specific of the SN *findings* fulfils the purpose of highlighting overall research outcome (Move 3), while

the SN itself occurs in Step 4.2 *Comparing results with literature*. In this case, the specific exists in the form of a full sentence.

Ex 18 *A Pearson correlation revealed no significant relationship between the two variables, $r = -0.12$, $p = .71$, These findings contrast with the previous findings* (APLII)

When a move is realised by a unit below the sentence level, such as a clause or a phrase like what is reported above, this is usually referred to as move/step embedding, which indicates that a move/step is embedded within another move/step. This phenomenon has not attracted much attention from previous research, possibly because there are comparatively a few instances of embedding (Le & Harrington, 2015). This is also the case in the present study as shown in lower numbers of in-clause patterns distributed across the moves/steps. This finding that a move/step can be realised in a range of syntactic forms points to the complexity and diversity in the expression style where writers attempt to realise their communicative purposes in many different forms. It is important that learners have awareness of this diversity in order to be able to read and write effectively in their own field of study.

An extension to the relationship between signalling nouns and their lexical realisations

In an attempt to investigate the phenomenon of SNs from a discourse point of view, Flowerdew and Forest (2015) have described the discourse features that the SNs may have, by showing the clause-level relationship between the SNs and their lexical realisation. The present study has extended this clause-level-only relationship by showing the rhetorical relationship that the SNs have co-established with their specifics. This relationship points to the communicative functions performed by the SNs and those by their specifics, which in turn indicates how the transition from one communicative function to another is made, and hence, cohesion is maintained. The detailed analyses of the SNs and their environment conducted in the present study therefore emphasise that SNs can provide a key to understanding a particular text.

Pedagogical implications

The findings from the present study have several implications for teaching and learning academic writing. First, the study reveals the cohesive functions that the SNs perform by densely packaging information and carrying it forward or indicating what is going to be presented. The ability to use SNs to convey information and achieve cohesion and coherence is of great importance for novice writers to develop in order to produce a text that is acceptable to their discourse community.

Second, the analyses of the SNs in their context further showed a range of features associated with these signalling nouns, particularly lexico-grammatical features, necessitating the context-based teaching of this class of noun and its associated patterns to convey intended communicative functions. It is then of great use to offer learners opportunities to expose to the use of these nouns in authentic texts of their own study and research field, so that they gain better understandings of conventional practices in their disciplinary community.

Limitations and directions for future research

We are well aware that the present study cannot address all issues related to the signalling noun phenomenon, and thus we suggest some directions for future research. The present study examines the SNs in the Discussion-Conclusion section only. This results in the fact that possible links between potential SNs in this section and their lexical realisations that may be present in the other RA sections can be missed or broken. Future research can be conducted on SNs in all RA sections to explore how cohesive links are established and maintained throughout the whole article. It may be also necessary to explore the characteristics of elements in the lexical realisation patterns associated with the SNs, as well as their specifics, which can include grammatical-rhetorical information related to tense and verb choices, for instance. Results from this future research would contribute to providing a more comprehensive account of SNs in their environment.

Acknowledgements

I am grateful to Associate Professor Michael Barlow for his comments on the earlier versions of this paper.

Conflict of Interest

The author declares no conflict of interest regarding the publication of this article.

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Santrauka

Thi Ngoc Phuong Le

Teksto konstravimas naudojant signalinius daiktavardžius taikomosios kalbotyros mokslinių straipsnių diskusijos ir išvadų dalyse

Abstraktieji daiktavardžiai, tokie kaip sąvoka, problema, rezultatas, kelia mokslininkų susidomėjimą. Šie daiktavardžiai, čia vadinami signaliniais, išsamiai analizuojami daugelyje mokslinių darbų, kur tiriama skirtumai tarp žanrų, disciplinų ir kalbų. Visgi apie galimus skirtumus iš retorikos perspektyvos mažai žinoma. Šiame tyrime nagrinėjamas signalinių daiktavardžių ir jų semantinių, leksinių-gramatinių bei diskurso savybių pasiskirstymas taikomosios kalbotyros mokslinių straipsnių diskusijų ir išvadų sekcijose.

About the Author

THI NGOC PHUONG LE

Dr., Lecturer, University of Foreign Language Studies, University of Danang, Vietnam;
School of Cultures, Languages and Linguistics, University of Auckland, New Zealand

Research Interests

Academic discourse, genre analysis, phraseology, corpus linguistics,
English for Specific Purposes

Address 18 Symonds St, Auckland Central, Auckland, 1010, New Zealand

E-mail ltnphuong@ufl.udn.vn

Orcid iD 0000-0002-8472-668X

