

Subject-Independent Functions and Academic Word Use in an Applied Linguistics Research Article

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Abstract

This paper provides further evidence from applied linguistics on the essentiality of a general list of academic vocabulary in academic achievement. For this purpose, the current research attempted to display that academic words assume subject-independent functions in academic writing, based on the functional framework developed by Hirsh (2010). The framework views writing from three perspectives: textual, ideational, and interpersonal – the three layers of the functional grammar of Halliday (1976). These three layers are corresponded with functional categories in the framework. Within this framework, a sample paper taken from a prestigious scholarly journal in the field of applied linguistics, including 468 academic words, was analyzed. The analysis, confirming the findings of earlier investigations with respect to coverage, showed that each occurrence of academic words could be assigned to a functional category. The paper argues that the assignment of academic vocabulary to functional categories is related to the requirements of the research community to disseminate knowledge according to uniform reporting standards. The findings emphasize the significance of academic vocabulary both in terms of assuming functions, and of pedagogy, implying that a limited, but a general, list of academic vocabulary can give a good return for learning, particularly in the realm of writing and reading in EFL contexts.

Keywords

Academic words, Academic writing, Applied Linguistics, Functional category, Functional framework.

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Introduction

The field of vocabulary studies has bloomed in various areas. One such area is academic vocabulary that includes words with high frequency and wide range of occurrence across different disciplines (Nation, 2004). One systematic attempt at compiling a general list of academic words, well received among the scholars, is that of Coxhead (2000). Some material developers have even placed it as a benchmark for developing teaching materials for EAP (e.g. Schmitt & Schmitt, 2005). In contrast, another group of researchers disagree with the usefulness of general academic word lists across different disciplines (Hyland & Tse, 2007; Wang et al., 2008) and suggest a move away from the general toward specialized lists at an early stage (Fraser, 2008). Nevertheless, the current research reviews some quite recent evidence pointing to the contrary, and presents further evidence from one more field, highlighting that there might be some usefulness in a general list of academic vocabulary, both for reading and writing purposes equally. More specifically, this study will illustrate and emphasize the lexical contribution of academic words to academic writing in the field of applied linguistics as the area is more familiar to the readers in terms of rhetoric and content.

Scholars indicate that there is a pressing and urgent need in the field to conduct studies in order to assess the usefulness of academic vocabulary in academic writing (Coxhead, 2012; Granger & Paquot, 2010; Hirsh, 2010). The following sections will bring us closer to that direction. For this purpose, firstly, a brief background of the academic word list (Coxhead, 2000) and its coverage will be presented. Next, a functional framework in which academic words in academic writing are associated with functional categories (Hirsh, 2010) will be introduced and then applied to a research article in applied linguistics. The analysis will subsequently attempt to provide a lexical profile of the article, verify the involvement of academic vocabulary in the functional categories, and relate it to published guidelines for writers set by *Reading in a Foreign Language (RFL)*. Finally, the results will be discussed bearing in mind that the findings might have theoretical

and pedagogical implications in the interest of using a general academic word list for reading and writing purposes in applied linguistics, *and* across other fields under the condition that the current findings are confirmed.

The Academic Word List, its significance, and corpus-based evidence for its coverage

Among the available lists compiled, the *Academic Word List* (AWL) (Coxhead, 2000) is the most extensively used list in teaching and discussed in the literature (Schmitt, 2010). The AWL contains 570 word families that are relatively formal and occur in a wide range of disciplines and with a reasonable frequency, extracted out of 3,500,000 words of academic corpora. The list includes words beyond the most frequent 2,000 words in *General Service List* (GSL) of West (1953). The GSL approaches 75% coverage of the running words in a text and the AWL covers 8–12 % of tokens of a page. More particularly, several researchers have recently conducted corpus-based lexical studies and reported the following results for the AWL coverage: 10.07% (Chen & Ge, 2007), 10.6% (Hyland & Tse, 2007), 10.46% (Li & Qian, 2010), 9.06% (Martínez, Beck, & Panza, 2009), 11.17% (Vongpumivitch, Huang, & Chang, 2009), to cite a few. Taken together, the GSL and AWL account for around 85% of the word coverage in a sample academic text (see Coxhead, 2000; Hirsh, 2010; Nation, 2004). Academic words are mostly used in texts when academic writers want to do academic things, e.g. refer to others' work (*assume, establish, indicate*) or deal with data (*analyze, assess, categories*) (Nation, 2001).

Researchers indicate the importance of academic vocabulary in the life of a university student. Nagy and Townsend (2012) argue for the determining role of academic language in student success and the role academic vocabulary plays in this respect. Likewise, Coxhead (2012, p. 138) believes that the academic words “will support the students in their academic studies at university” since they will encounter them in their readings, lectures, and tutorials at university. The words will also help their vocabulary size and awareness to improve (Coxhead, 2012).

These words will also identify them as belonging to academic community. This identity and membership will be indicated through the appropriate and accurate use of vocabulary in writing and speaking (Corson, 1985; Ivanič, 1998; Wray, 2002, all cited in Coxhead, 2012).

Writers at university level are aware of the importance of vocabulary and the audience of their writing with specific expectations of their lexical choices. In a very recent study, Coxhead (2012) provided an integrated reading and writing task and conducted an interview, with 14 second language (L2) writers, focusing on their language learning background, academic studies, the reading and writing task, and their vocabulary use in their writing. The findings showed that the participants were aware of the useful tasks and vocabulary in their academic context in terms of whether to select or reject them in writing, or learn them in general, and of the impact of academic audience of lecturers and peers on their vocabulary choices. The study also highlighted that academic writing conventions and techniques, such as quoting, summarizing, and paraphrasing, could be used by some university students to improve word use in writing as some participants in the study had done.

Academic vocabulary and the assumption of subject-independent function

Hirsh (2010) accounts for the presence of academic vocabulary in academic texts: one explanation for their presence is that, in the early days, English resorted to Latin and other languages to discuss scholarly ideas and concepts that were written in those languages prior to the time English came to the scene. Thus, English language borrowed these academic words (Boyle, 2009). The second explanation is the peer-review process through which guidelines for contributing authors are complemented and the conventions for academic writing are perpetuated. These conventions and guidelines across a broad range of subject areas and academic disciplines, as Hirsh (2010, p. 167) observes, “define a central role for academic vocabulary in academic texts alongside general service words and technical terminology”.

According to Hirsh (2010), academic words assume an important subject-independent function in academic writing. This is illustrated by Hirsh (2010) through developing a functional framework that views writing from three perspectives: textual, ideational, and interpersonal. These perspectives are the three layers of the functional grammar of Halliday (1976). In Halliday's metafunctional model, the textual layer deals with creating connected text. The ideational layer concerns expressing content in terms of the experience of the writer while the interpersonal layer is concerned with the relationships between the writer and the reader. In Hirsh's (2010) functional framework, these layers are corresponded with functional categories, which together develop a functional classification of academic vocabulary. As (Hirsh, 2010, p. 36) states, "the existence of specialized vocabulary common to academic texts across a range of subject areas suggests that academic writers are using these words to perform similar functions in their writing". Hirsh (2010) takes the commonality of functions across academic writing from the work of many researchers, including Meyer (1997) and Johns and Davies (1983).

Hirsh (2010) identifies seven functional categories (i.e., metatextual, extratextual, intratextual, scholarly process, states of affairs, relations between entities, and authoritative) that he maps onto Halliday's (1976) metafunctional layers (Fig. 1). At the textual level, academic vocabulary is associated with the function of (a) developing coherence in texts through headings and in-text cues (metatextual), (b) "situating the text within the wider research community" (p. 46) by making links between the text and other researchers at any given time, links to other bodies, methods borrowed from other researchers, ethical consent, and further research (extratextual), and (c) indicating semantic links between adjoining ideas at phrase, sentence, and paragraph levels or between parts of the text (textual cohesion) using conjunctions and carrier words.

Metafunctional layers	Corresponding functional categories
Textual	Metatextual, Extratextual, Intratextual
Ideational	Scholarly process, States of affairs, Relations between entities
Interpersonal	Authoritative

Fig. 1 Framework for functional analysis of academic words
(Adapted from Hirsh, 2010, p. 45)

At the ideational level, academic vocabulary represent the function of (a) scholarly process that includes the processes taken or methodological procedures and scientific activities of enquiry, (b) states of affairs, introducing aspects of the subject matter of the text, such as context, setting, participants, and their characteristics, (c) relations between entities, concerned with adding to existing knowledge about the nature of relationship between entities.

At the interpersonal level, academic words are involved in the function of “how the text shapes the nature of the relationship between writers and readers” (p. 57). Therefore, authoritative category, the seventh category, sets the tone for the relationship between the writer and the reader through the choice of academic words that make the writing authoritative and scholarly, as expected of a published work in journals and books that conform to socially-situated conventions and within the academic discourse community.

Hirsh (2010) applies the functional classification system above to journal articles from biomedicine, arts, commerce, and law, and to book chapters. He also compares academic and non-academic writings, including a journal article and newspaper article or story reporting on the same research. In academic writings, i.e. journal articles and book chapters, the data revealed that academic words were assigned to all functional categories without any case that needs the addition of a new category. Neither was there a redundancy within the classification system in its application to the texts analyzed. In other words, functional representation of academic vocabulary could be suitably accommodated within the classification system. It was, however, “impractical in the analysis of texts...to provide data on the

interpersonal layer for each text” (p. 58). The choice of academic words gives the texts a tone of authority and formality, implying that authors are well-informed. Failure to use academic vocabulary will make the texts unsuitable for publication in a scientific journal and contrary to conforming to academic expectations of the discourse community.

In the newspaper article compared, there were two cases of academic word occurrences that took attitudinal function at the interpersonal layer that is distinct from the categories provided, suggesting that popular press is different from academic writings and is free to make attitudinal statements about the issues being talked about. Attitudinal category is not appropriate in academic writing.

All in all, the functional framework, suggested by Hirsh (2010), presents a subject-independent framework within which subject-specific ideas and concepts are presented in academic texts. Academic vocabulary plays a very significant role in the construction of this framework.

Notwithstanding the unawareness among the EFL learners, they need to read and also write in English using these words for the purpose of their career. In order to be up-to-date and obtain academic achievement, graduate and post-graduate students as well as university professors have to read academic articles, published in international peer-reviewed scholarly journals that normally publish in English nowadays. They also have to write and publish academic papers in these refereed journals to get career promotion. In some EFL contexts, like that of Iran, even university professors offering Persian literature courses who normally publish in Persian in domestic scholarly journals have to also publish a couple of academic articles in English, especially in the journals that are indexed and abstracted in ISI Thomson Reuters with high impact factors, in order to be promoted to the status of an associate or full professor.

Journal article reporting standards

There is a set of reporting standards for the information included in reports of empirical investigations that define and preserve a role for

academic vocabulary in research report conventions and guidelines. The motivation for the development of the standards “has come from within the disciplines of the behavioral, social, educational, and medical sciences. Uniform reporting standards make it easier to generalize across fields, to more fully understand the implications of individual studies” (*Publication Manual of the American Psychological Association*, 2010). Conventionally, articles in the APA style are organizationally structured into the (a) abstract, (b) introduction of the research problems, (c) method, e.g. the characteristics of the participants, sampling procedures, (d) results, and (e) discussion.

The study

In this small-scale study, the above functional framework or classification system (Hirsh, 2010) is applied to a single research article in applied linguistics – randomly selected from an issue of the journal of *Reading in a Foreign Language* – in order to gain an understanding of the functional representation of academic vocabulary that appear in the distinct sections of the article that conforms to the requirements of the reporting standards in the APA style. More specifically, the study will attempt to confirm whether the academic vocabulary, as operationalized in Coxhead (2000), serve functions in academic writing in an applied linguistics article. A search in Google Scholar did not retrieve similar studies with articles of applied linguistics, other than Vongpumivitch et al. (2009) who does a frequency analysis of the AWL words and non-AWL content words in applied linguistics research papers, which differs in nature from the current investigation. If the findings are positive and in line with the framework suggested by Hirsh (2010), then a general list of academic vocabulary might be regarded as contributive to every student’s academic life and achievement, especially in EFL contexts, as long as the fields of applied linguistics (currently under study), biomedicine, arts, commerce, and law, as investigated by Hirsh (2010), are concerned.

Since *RFL* readers are also familiar with community standards

(APA) and academic vocabulary, we therefore chose *RFL* article so as to convey the message of our investigation better. Moreover, adding other articles from various disciplines to our *RFL* data would have made the paper a very long one, exceeding the word limit of the journal and the patience of the readers.

Method

Material

There are many applied linguistics journals offering free access online and publishing articles on academic words. However, a potential for selection is *Reading in a Foreign Language (RFL)*, a scholarly international fully-refereed journal, published in April and October, from which a research article was randomly selected: Lexical threshold revisited: Lexical text coverage, learners' vocabulary size and reading comprehension (Laufer & Ravenhorst-Kalovski, 2010), available at <http://nflrc.hawaii.edu/rfl/April2010/articles/lauffer.pdf>. This paper is henceforth referred to as 'the *RFL* paper' for the sake of space and consistency. Furthermore, *RFL* publishes good work on vocabulary and reading, illustrating the importance of academic vocabulary in reading comprehension as well as writing within the articles.

Moreover, as a prestigious journal within the community that also conforms to published guidelines for writers, *RFL* follows the guidelines of the 6th edition of the APA style (*Publication Manual of the American Psychological Association*, 2010), published by the American Psychological Association (APA). This style, henceforth referred to as APA style, has been adapted by applied linguistics, psychology, education, social work, business, and many other behavioral and social sciences. The manuscripts, submitted to *RFL* that conforms to APA style, are not sent out for further review if they do not meet its requirements (Information for contributors, para. 3). The articles, published in *RFL* and based on APA style, conform to the organizational structure of abstract, introduction, method, results, and discussion (and conclusion) sections. As a result, *RFL* could be

considered as an appropriate candidate for and against verifying whether the academic vocabulary serve functions across disciplines in academic writing.

Analysis

The five main sections of the *RFL* paper (excluding the title, byline and author bio, keywords under abstract, notes, appendix, references, tables, and figures) were examined to determine the lexical coverage of the general service words, academic words, and technical words (proper nouns, and subject-specific and/or low frequency words beyond the 2,000 most frequent words (West, 1953) and AWL (Coxhead, 2000). Lexical frequency profiling software (VocabProfile, adapted by Cobb, (2002) from Nation & Heatley, 1996) was used to analyze the text. This program sorts the words into the following categories, based on (a) 1–1000 most frequent word families, (b) 1001–2000 most frequent word families (West, 1953), (c) AWL (Coxhead, 2000), and (d) “off-list” words, not occurring on any of the frequency lists above. Subsequent to the lexical profiling of the five sections, the AWL was analyzed in terms of functional classification across the five sections.

Results

Lexical profile of the RFL paper

The lexical analysis of the *RFL* paper indicates that the text includes 6,439 tokens (words in text) that represent 989 types (different words). Table 1 displays the lexical profile of the first 1,000, second 1,000, AWL, and other or off-list words for the whole paper and individual sections. The purpose of analyzing words by individual sections as well as for the whole paper is to give the readers an opportunity to compare the lexical coverage of this sample paper with the findings of other investigations and to observe the performance of the words across the sections.

Table 1. Lexical profile of *RFL* paper for the whole paper and its individual sections

	Word list	Tokens (%)	Types	Families
Whole paper	First 1,000	5,095 (79.13%)	537	348
	Second 1,000	211 (3.28%)	91	64
	AWL	468 (7.27%)	194	142
	Other words	665 (10.33%)	167	-
	Total	6,439 (100%)	989	-
Abstract	First 1,000	101 (75.94%)	51	47
	Second 1,000	4 (3.01%)	3	3
	AWL	7 (5.26%)	6	6
	Other words	21 (15.79%)	11	-
	Total	133 (100%)	71	-
Introduction (& literature review)	First 1,000	2,049 (78.84%)	355	261
	Second 1,000	78 (3.00%)	50	38
	AWL	200 (7.70%)	98	76
	Other words	272 (10.47%)	84	-
	Total	2,599 (100%)	587	-
Method	First 1,000	1,272 (78.86%)	270	202
	Second 1,000	59 (3.66%)	35	29
	AWL	123 (7.63%)	73	62
	Other words	159 (9.86%)	58	-
	Total	1,613 (100%)	436	-
Results	First 1,000	583 (82.81%)	149	119
	Second 1,000	23 (3.27%)	14	12
	AWL	36 (5.11%)	23	21
	Other words	62 (8.81%)	24	-
	Total	704 (100%)	210	-
Discussion (& conclusion)	First 1,000	1,086 (78.35%)	246	186
	Second 1,000	47 (3.39%)	27	22
	AWL	102 (7.36%)	66	60
	Other words	151 (10.89%)	50	-
	Total	1,386 (100%)	389	-

Table 1 indicates some statistical features for this text. For one thing, the first 1,000 words of high frequency perform a vital role in the whole paper and its individual sections, giving a low coverage of 75.94% in abstracts and a high coverage of 82.81% in results. It also covers 79.13% of the tokens in the whole paper. Second, academic words play a more important role than the second 1,000 most frequent words across the paper and the five sections. Its coverage approximately approaches two times that of the second band of high frequency words. The lowest and highest coverage for the second 1,000 word level is 3.00% in introduction and 3.66% in method but the least dense (5.11%) and densest (7.70%) section in the AWL use is results and introduction, respectively. Third, the AWL accounts for a

noticeable coverage, but well below the coverage reported for other disciplines: whole paper (7.27%), abstract (5.26%), introduction (7.70%), method (7.63%), results (5.11%), and discussion (7.36%). Fourth, as to off-list words that represent low frequency words, technical terms, and proper names, there are little differences in coverage between method/results sections and other sections. The higher coverage of off-list words in abstract section might be due to the information density and abstractness of the concepts summed up in that section, that call for the use of low frequency words to express more content within limited space (Nagy & Townsend, 2012). Fifth, the first 2,000 most frequent words and the AWL combined account for most of the lexical coverage across the whole *RFL* paper and its individual sections: whole paper (89.67%), abstract (84.21%), introduction (89.53%), method (90.14%), results (91.19%), and discussion (89.11%). This is still well below the minimal threshold level, 95% coverage, to assist the readers of the text in guessing unknown vocabulary, given they have content knowledge as Laufer and Ravenhorst-Kalovski (2010) ironically states.

Functional categorization of academic words

There are totally 468 academic word occurrences in the *RFL* paper, representing 142 word families (see Appendix). Each occurrence of the academic words was assigned to a functional category. In terms of the relative proportion of the assignment of academic vocabulary to the functional categories, the categories rank as follows: (1) states of affairs, (2) scholarly process, (3) intratextual, (4) extratextual, (5), metatextual, and (6) relations between entities.

Table 2. Representation of academic words in article sections

Functional category	Number of occurrences					Relative proportion
	Abstract	Introduction	Method	Results	Discussion	
Metatextual	1	0	12	2	3	18 (3.85%)
Extratextual	1	21	2	0	1	25 (5.34%)
Intratextual	0	14	6	0	10	30 (6.41%)
Scholarly process	0	30	49	24	14	117 (25%)
States of affairs	4	134	54	10	70	272 (58.11%)
Relations between entities	1	1	0	0	4	6 (1.28%)
Total	7	200	123	36	102	468 (100%)

In line with Hirsh (2010), we did not present the authoritative category at the interpersonal layer. The reason is that researchers use academic words to set the tone for their relationship with the readers. This aspect is suggested in various functions of words at the textual and ideational level. It therefore enables the researchers to present their writings as authoritative and scholarly, a mandatory requirement for publishing within the research and academic discourse community.

There are only seven academic word occurrences in the abstract section, assigned to functional categories, as displayed above. There is one occurrence of metatextual category, demonstrated in the use of the heading *abstract* and one instance of extratextual category through the use of the word *version* that indicates a borrowed method or tool of analysis (example 1):

- (1) Vocabulary size was measured by the Levels Test, lexical coverage by the newest *version* of Vocabulary Profile....

The category of intratextual was not represented, perhaps due to the short length of the abstract section (i.e. 133 tokens). Laufer and Ravenhorst-Kalovski (2010) do not describe the processes they undertook to collect or analyze the data in the abstract section. They emphasize their findings instead. It might account for the existence of four academic words to represent the category of states of affairs whereas the category of scholarly process is not represented by academic words in the abstract section. The category of relations between events is represented once by the word *contribute* in the abstract, probably because the study attempted to reveal a relationship (example 2). The following are the academic words used in the abstract section: *abstract*, *adequate*, *contribute*, *minimal*[1], *text*[2], and *version*[1].

- (2) Results show that small increments of vocabulary knowledge *contribute* to reading comprehension....

In the introduction section, there exist 200 occurrences of academic vocabulary, accounting for 76 (13.36%) word families out of the 570 word families in the AWL. Each of these occurrences was assigned to a functional category. The category of metatextual was not, however, represented as 'headings' in the introduction section of this paper

because the introduction section does not carry a heading to involve an academic vocabulary at all. Metatextual was not represented as in-text cues either. It seems that the authors of the *RFL* paper mostly link their text to other researchers and assist the readers accordingly. Therefore, 21 occurrences of academic vocabulary have been assigned to the category of extratextual. One way of doing this is by referring to and building on previous research, as illustrated in the following examples (*researchers* and *previous*):

- (3) Most *researchers* agree that general reading skills can operate most efficiently when the reader possesses a critical mass of L2 knowledge referred to as the threshold of L2 knowledge (Bernhardt & Kamil, 1995; Carrell, 1991; Clarke, 1980; Cziko, 1978; Lee, 1997).
- (4) Moreover, this study was carried out with a much larger sample (745 students) than any of the *previous* studies.

Academic vocabulary use in the intratextual function in the introduction section of this paper is associated with conjunctions (*subsequently*, *hence*, *obviously*, and *consequently*) and carrier words (*factor*, *issue*, and *approach*). For instance, consider the causative *hence* which reflects one clause affects another (example 5) and the carrier word *factor* that creates a semantic link. As carrier words, academic words are used as nouns to represent ideas discussed earlier or later within the text. In example 6, there is anaphoric (retrospective) link for the readers to follow the ideas:

- (5) For example, if readers encounter the word “hypothesis” in a text and the word is in their sight vocabulary, they do not need to rely on the surrounding context to comprehend its meaning. *Hence*, a large sight vocabulary contributes to reading fluency....
- (6) Lexical text coverage and the reader's sight vocabulary size are, therefore, two related *factors* of lexical threshold.

The introduction section develops the foundation for the research, partly through describing the scholarly process of the other researchers, referred to in this section. The authors get inspirations and hints as to the approach and processes they have to take in order to carry out their own research. Consequently, there are a large number of academic words assigned to the functional category of scholarly process. Thirty occurrences of academic words were detected to be

concerned with this category. The following two sentences illustrate it in the occurrence of *investigate*, *analysis*, and *predict*:

- (7) Hu and Nation (2000) also *investigated* the relationship between lexical coverage and reading comprehension.
- (8) A linear regression *analysis* showed that a 3,000 vocabulary level would *predict* a reading score of 56%, a 4,000 level would result in an additional 7 points....

Since the authors introduce their subject matter, the focus of their study, to inform the readers through building on existing knowledge, therefore they provide information on context, setting, participants, and their characteristics of their own research and those of other researchers referred to in literature review. As a result, the category of states of affairs is strongly represented by academic vocabulary in the introduction section. The examples below illustrate the assignment of the academic words (*circumstance*, *participant*, and *adequate*) to this category:

- (9) Of particular importance to us was this relationship at several reading comprehension levels which could be considered “adequate” in different educational *circumstances*.
- (10) The results showed that at 95% coverage there were significantly more *participants* with a score of 55 and above than with a score below 55.
- (11) With this coverage almost all learners have a chance of gaining *adequate* comprehension.

The category of relations between events is represented only once in the example below. The study focuses on the interaction between coverage, learners’ sight vocabulary size, and reading comprehension. As a result, it is expected for some instances of the category of relations between events to appear in this section. However, in the literature review, we come across only one instance (*contribute*) of the assignment of the academic words to this category, perhaps due to the use of the words from the GSL (e.g. the word *relationship* in the first 1,000 most frequent words), not included in the AWL, to perform this function.

- (12) ..., if readers encounter the word “hypothesis” in a text and the word is in their sight vocabulary, they do not need to rely on the surrounding context to comprehend its meaning. Hence, a large

sight vocabulary *contributes* to reading fluency and frees cognitive effort for higher level reading processes....

Method section includes 123 academic words out of 1,613 tokens, representing 62 (10.90%) of the 570 word families in the AWL. Five functional categories are represented in this section as displayed in Table 2. Twelve academic vocabulary occurrences are associated with metatextual in the heading of sections and sub-sections (3 instances: *method*, *participants*, and lexical coverage of *texts*, respectively) as well as in-text cues (9 instances).

(13) A passage from a practice test is in the *Appendix*.

(14) Each frequency level includes 30 items except the *academic vocabulary section*, which includes 36 items.

The category of extratextual accommodates two of the academic word occurrences in the identification of other body (the word *institute* and *evaluation* in example 15):

(15) This test is designed, administered, and marked by experts in testing who work at the National *Institute* for Testing and *Evaluation* (NITE) in

In contrast, the category of intratextual accommodates six of the occurrences in indicating the semantic links between ideas, both with the use of conjunctions (*prior* and *hence*) and carrier words (*function* and *assumption*):

(16) Such analysis rests on the *assumption* that these nouns do not belong to the lexicon of a particular language, and....

(17) Most of them (735) were students in an academic college in.... *Prior* to college, they studied English for eight years in high school.

(18) The academic vocabulary list includes words from the second to fifth frequency levels. *Hence*, it cannot be considered a separate level from the other levels.

Probably, due to the nature of this type of research with few references to bodies and the fact that method section includes the procedures, but not the presentation of ideas with a cross-link within the content of an investigation, few instances of extratextual and intratextual categories have occurred in this section.

The authors provide detailed description of the steps they took to test the participants, to administer the tests, to analyze the scores, and

so on. Therefore, the category of scholarly process comparably contains more assignments of academic vocabulary in method section, as in the following example:

- (19) We *analyzed* each test twice: once with the above new function and once without it.

The category of states of affairs is substantially represented here to give information about the characteristics of the context, setting, participants, and characteristics, as seen in the examples below:

- (20) Most of them (735) were students in an *academic* college in....
 (21) 495 *participants* were speakers of Hebrew, 167 of Arabic, and 73 of Russian.

The absence of the category of relations between entities might be attributed to the allocation of this section to the description of the steps taken in conducting the research. Therefore, the authors do not talk about the relationship between the variables, hence the lack of assignment of academic vocabulary to this functional category.

The results section of the paper contains 36 academic words, assigned to the functional categories. The words represent 21 (3.69%) of the 570 word families in the list compiled by Coxhead (2000). As Table 2 reveals, the word *section* represents the in-text cue metatextual functional category twice in results section (example 22). However, the categories of extratextual and intratextual are not represented by academic words in this section. It might be because of the short length of the results section (704 tokens) or due to the mere report of the results without comparing or contrasting them with the other studies or discussing them.

- (22) As mentioned earlier, in the *section* on measuring vocabulary size, we divided the learners by intervals of 1,000 words.

In reporting the results, Laufer and Ravenhorst-Kalovski (2010) mention the procedures and the statistical processes and analyses they used to obtain them. Consequently, the category of scholarly process is represented here far more than the other functional categories. Twenty four of 36 occurrences of the academic vocabulary in this section of the *RFL* paper are associated with this category, as in the following examples:

- (23) (This *analysis* did not include the top 10 students.) The *analysis* showed that the intercept was....
- (24) Moreover, the table shows how all three *variables* (coverage, vocabulary and reading) are related to one another.

Since the reporting of the results is concerned with the subject matter and the new findings on it, the category of states of affairs is represented in this section, as illustrated below. The category of relations between events, however, is not represented maybe because there is no discussion of the relationship between variables with the use of academic vocabulary.

- (25) *Participants* with 7K and 8K vocabulary did not score higher, but this is not very important as all of the ten were able to read independently.

The section on discussion (and conclusion) contains 102 academic words that are members of 60 (10.54%) word families of the AWL list. All the functional categories were represented by the academic words in this section, perhaps because the authors recapitulate everything here to inform the readers better and to draw conclusions. Academic vocabulary thus appears in the metatextual function as a heading: '*Concluding* remarks'. The metatextual function is also used as in-text cues, as appearing in the italicized words below:

- (26) As mentioned in the *section* on *Participants*, a score of 134 earns students exemption from studying English as a Foreign Language.

In discussion section, conjunctions or references to other researchers might be needed to link the ideas together. Thus, there might be some occurrences of academic vocabulary to represent the category of extratextual and intratextual. Actually, academic vocabulary is only seen once in the extratextual function in discussion section (*similar*) but several times in intratextual function, both in conjunction use (e.g. *despite*) and carrier word use (e.g. *assumption*) to recognize the cataphoric or advance link made in order to help readers follow the ideas discussed satisfactorily:

- (27) These results are *similar* to Hu and Nation (2000) and Nation (2006).
- (28) ...a score of 134 earns students exemption from studying English as a Foreign Language. The exemption rests on the *assumption*

that learners who received a score of 134 and above...can read academic material independently....

- (29) *Despite* these innovations, our data confirmed some earlier results regarding the percentage of text lexis and regarding the vocabulary knowledge required for reading comprehension.

The scholarly process is represented to explain the processes involved in a general way. We have detected 14 cases of such representation in this section:

- (30) *Despite* these innovations, our *data confirmed* some earlier results regarding....

The researchers discuss the results, approaching the focus of their subject matter from different perspectives. This might be the reason for the substantial representation of the category of states of affairs through academic vocabulary in discussion section. This category appears in 70 occurrences of academic words, as in the following example:

- (31) The aim of the study was to explore the relationship between *text* coverage, vocabulary size of the learners, and reading comprehension, particularly “*adequate*” reading comprehension.

Also, academic vocabulary represents the functional category of relations between events. This function is indicative of relationship between entities as observed here in the use of *beneficial*, *contribute*, *benefit*, and *affect* (example 32). Interested readers can refer to the article to verify the many instances or examples of all the occurrences of academic vocabulary in the functional categories, not presented here for the sake of economy of space:

- (32) The general reading skills of these students may have *affected* the reading score more than their vocabulary knowledge.

Note that our findings with regard to the academic vocabulary can be approached from different perspectives, such as functional grammar, English language pedagogy, discipline-specific discussion, and so forth. However, in discussion section below, we now turn to interpreting the results with regard to the *significance* of a general list of academic vocabulary and its *usefulness* in terms of reading and writing as these two skills are equally important in an EFL context for

academic achievement. Interpreting results in terms of other possible perspectives are beyond the purpose and scope of this research.

Discussion

The data for this study come from only one research article. Remember that the results and claims based on such limited data are hardly considered robust enough to constitute a meaningful contribution to existing literature. Yet, they are worth considering since they add further accumulating evidence for academic vocabulary.

The current small-scale study sought to apply the functional framework, suggested by Hirsh (2010), to a single research article in applied linguistics in the interest of illustrating the significance and usefulness of a general list of academic vocabulary within this field, thus confirming the results obtained by Hirsh through further evidence. In terms of the text coverage, the reported lexical profile of the paper under study, randomly taken from a recent issue of *RFL*, confirms the patterns of the findings of earlier researches concerning the relative proportion of academic vocabulary coverage of the running words in a sample academic text (Chen & Ge, 2007; Hyland & Tse, 2007; Li & Qian, 2010; Martínez et al., 2009; Vongpumivitch et al., 2009). Yet, some of these researchers support the need for specificity in academic vocabulary albeit in various degrees. In particular, our findings correspond with the patterns emerging from Li and Qian (2010) who investigated the corpus compiled from applied linguistics. Our results concerning text coverage also correspond with the text coverage reported by Hirsh (2010) who provided the framework for the current study. However, the coverage in the current *RFL* paper is below 10% which might be accounted for by our small corpus that is based on only one article, consisting of 6,439 running words. Despite providing a smaller coverage (7.27%) in our text, the AWL coverage in the paper under study corresponds with the overall patterns of lexical coverage in the studies above. That is, in all the studies cited above, plus the current research, the first 1,000 most frequent words provide the highest coverage, normally between 70–

80% in most of the corpora, and the AWL provides a higher coverage than that of the second 1,000 most frequent words. A larger corpus from the articles taken from *RFL* journal might put the coverage of the AWL higher than the above figure.

In terms of the assignment of the academic vocabulary to the functional categories, every individual occurrence of the 468 academic words in the *RFL* paper was assigned to a functional category, as listed in Table 2. In terms of representation by the number and percentage of academic words used by Laufer and Ravenhorst-Kalovski (2010) in the *RFL* paper, the functional categories are ordered as follows: (1) states of affairs, (2) scholarly process, (3) intratextual, (4) extratextual, (5), metatextual, and (6) relations between entities.

Note that some words might take on one or two functional categories simultaneously. This issue should not devalue our attempt since the focus of our paper is on illustrating the point that academic words assume an important subject-independent function in academic writing. The question of why they might take other functions falls beyond the scope of our research.

The assignment of academic vocabulary to the different functional categories varies extensively from one category to another but they are distributed in terms of the functions constituting the structure of a scientific and scholarly paper. In spite of the uneven distribution and assignment of the academic words across the categories, there is good news that academic words assume important subject-independent functions in writing academic papers in the field of applied linguistics, as illustrated in the distinct sections of a sample paper selected from *RFL*. This finding is in agreement with what Hirsh (2010) found across the various research articles he analyzed across different disciplines, despite some differences due to the unique nature of every discipline.

The assignment of the academic words to the functional categories is thus related to the requirements of the research community to disseminate information in a uniform manner. In our case, the uniform reporting standards, required in *RFL* journal, are based on APA style,

a conventional style commonly used in different disciplines. This is a major issue Hirsh (2010) illustrated in his volume that applies to many other fields as well.

What we want to argue for is that the impetus for launching this study is to provide further evidence in order to highlight the double significance of a general list of academic vocabulary. Firstly, the academic words take on functions that cross disciplines or subjects in academic writing as far as the areas of applied linguistics, biomedicine, arts, commerce, and law are concerned. Secondly, a general list of academic words is limited, but instead gives a good return for learning if we take into consideration the coverage (8–12%, based on the corpus-based studies cited above) they provide. This argument is against the position Hyland and Tse (2007) take in recommending a discipline-specific list of academic words.

Given the results and discussion above, there is implication for both reading and writing; a general list of academic words might have a good return for learning, as emphasized above. As the research by Li and Qian (2010) verifies, academic vocabulary comprises between 8–12 percent of the tokens in any text. Thus, students will practically be better off in reading many, if not all, texts of various fields through only learning a limited number of words within a short time. At the same time, these very words will serve as effective signposts for EFL learners to organize their concepts efficiently in writing for academic purposes. The list of academic words will actually develop coherence and cohesion within the texts the learners write for their academic purposes. Here, it is humbly acknowledged that the claims made thus far apply mostly to applied linguistics, biomedicine, arts, commerce, and law. As a result, in reading and writing scholarly papers, the academics in different departments in EFL contexts like that of Iran might benefit from a general list of academic vocabulary, compiled from a very representative corpus across the respective fields and disciplines.

In contrast to the position of Hyland and Tse (2007) or Wang et al. (2008) who disagree with the usefulness of general academic word lists across different disciplines, the findings and focus of this paper

are in line with the position taken by Nagy and Townsend (2012) concerning academic vocabulary which is a specific aspect of academic language. Academic language helps us convey the abstract, technical, and nuanced ideas of the disciplines. Likewise, it can help us think accordingly. Thus, academic language is a tool promoting some type of thinking different from the language used in social settings. The authors argue that we do not learn new words to carry out the same thing that could have been done with other words. Rather, “it is learning to do new things with language and acquiring new tools for these new purposes” (Nagy & Townsend, 2012, p. 93). We believe that, for foreign language learners, acquiring academic language is quintessential. One indispensable aspect of this language is academic vocabulary. However, what seems to be missing, to varying degrees, from vocabulary instruction is that learners’ attention or consciousness is not raised properly towards academic vocabulary. Learners are not virtually aware of the significance, extent of text coverage, and function of academic vocabulary in academic language and context. Therefore, it seems quite reasonable to develop this proficiency with a definite and limited number of words, be it the AWL or any other list to be designed in future out of a representative and least controversial corpus.

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Appendix

The *RFL* paper under study as a whole and its individual sections include the following number of academic word families (percentage of AWL families in our input), types, and tokens. The number within brackets after each word indicates the occurrence of the members of a word family, e.g. require [6] in Introduction section means that the members 'require require require required required requires' have occurred in that section:

The paper: AWL families: [142(24.96%):194:468]

abstract[1] academy[27] accumulate[1] achieve[6] acquire[1] adequate[34] adjust[2] administrate[1] affect[1] aid[1] alternative[1] analyse[11] append[1] approach[3] appropriate[1] approximate[3] area[1] aspect[1] assign[1] assume[4] assure[3] attain[1] attribute[1] automate[1] available[2] aware[2] benefit[2] circumstance[1] clarify[1] comprehensive[1] comprise[1] conclude[3] conduct[1] confirm[1] consequent[1] considerable[1] consist[4] constitute[1] construct[1] context[5] contribute[3] converse[1] convert[3] create[2] crucial[1] data[11] define[3] demonstrate[1] derive[1] design[5] despite[1] deviate[1] devote[1] distribute[1] element[1] enable[4] encounter[2] ensure[1] estimate[5] evaluate[1] evident[1] expert[2] explicit[2] factor[7] final[1] focus[4] format[1] formula[1] function[4] globe[1] goal[2] grade[2] hence[6] hypothesis[1] identical[3] ignorant[1] implicate[2] implicit[2] imply[1] individual[1] inevitable[1] infer[1] innovate[1] insight[1] institute[1] intelligence[1] interact[1] interval[1] investigate[4] involve[2] issue[2] item[8] logic[1] major[1] maximise[3] method[1] minimal[9] minor[1] notion[2] obtain[1] obvious[1] occur[3] option[1] output[2] overall[1] participate[12] percent[9] perspective[1] portion[1] precise[3] predict[4] previous[2] prior[1] process[1] proportion[1] prospect[1] quote[1] range[6] register[1] release[1] rely[2] require[11] research[7] reveal[1] revise[1] section[8] select[2] significant[1] similar[7] site[1] strategy[1] structure[3] subsequent[2] summary[1] survey[3] technical[1] text[67] uniform[1] valid[4] vary[7] version[10] via[1]

Abstract: AWL families: [6(1.05%): 6: 7]

abstract[1] adequate[1] contribute[1] minimal[1] text[2] version[1]

Introduction: AWL families: [76(13.36%):98:200]

academy[10] accumulate[1] achieve[1] acquire[1] adequate[25] adjust[1] administrate[1] analyse[3] approach[3] appropriate[1] assume[1] assure[3] aware[2] circumstance[1] clarify[1] comprehensive[1] conclude[2] conduct[1] consequent[1] considerable[1] consist[2] context[4] contribute[1] convert[1] create[2] data[4] define[3] demonstrate[1] design[3] element[1] enable[2] encounter[2] estimate[3] evident[1] explicit[1] factor[5] focus[3] goal[2] grade[1] hence[3] hypothesis[1] identical[2] implicate[2] implicit[1] inevitable[1] infer[1] interact[1] investigate[3]

involve[1] issue[1] item[1] minimal[5] minor[1] notion[1] obvious[1] participate[3]
percent[2] perspective[1] predict[1] previous[1] process[1] quote[1] range[1] rely[2]
require[6] research[4] significant[1] similar[1] structure[1] subsequent[2]
summary[1] survey[3] text[35] valid[1] vary[2] via[1]

Method: AWL families: [62(10.90%): 73: 123]

academy[10] analyse[4] append[1] approximate[3] assign[1] assume[1] attribute[1]
available[2] comprise[1] consist[2] construct[1] convert[1] data[2] derive[1]
design[1] deviate[1] enable[1] estimate[1] evaluate[1] expert[1] explicit[1] factor[1]
final[1] focus[1] format[1] function[2] globe[1] hence[2] ignorant[1] implicit[1]
individual[1] institute[1] intelligence[1] investigate[1] involve[1] item[7] logic[1]
maximise[3] method[1] obtain[1] occur[1] output[2] participate[5] percent[3]
precise[1] predict[1] prior[1] prospect[1] range[3] register[1] release[1] revise[1]
section[5] select[1] similar[3] site[1] structure[2] text[11] uniform[1] valid[2]
vary[1] version[8]

Results: AWL families: [21(3.69%): 23: 36]

achieve[1] adjust[1] analyse[3] assume[1] constitute[1] convert[1] data[3]
distribute[1] formula[1] function[1] interval[1] participate[1] percent[3] precise[2]
predict[1] range[1] reveal[1] section[2] similar[1] text[6] vary[3]

Discussion: AWL families: [60(10.54%):66:102]

academy[7] achieve[4] adequate[8] affect[1] aid[1] alternative[1] analyse[1] area[1]
aspect[1] assume[1] attain[1] automate[1] benefit[2] conclude[1] confirm[1]
context[1] contribute[1] converse[1] crucial[1] data[2] design[1] despite[1]
devote[1] enable[1] ensure[1] estimate[1] expert[1] factor[1] function[1] grade[1]
hence[1] identical[1] imply[1] innovate[1] insight[1] issue[1] major[1] minimal[3]
notion[1] occur[2] option[1] overall[1] participate[3] percent[1] portion[1] predict[1]
previous[1] proportion[1] range[1] require[5] research[3] section[1] select[1]
similar[2] strategy[1] technical[1] text[13] valid[1] vary[1] version[1]